

Volunteer Action in Relational System Formation:

A Preliminary Generative Relational Account of Historical Dynamics

Wanhong HUANG

huangwanhong@serendip.ngo

Abstract

This paper develops a preliminary generative relational (GR) account of the historical formation, reproduction, transformation, and dissolution of volunteer-supported relational systems. Its object is the changing configuration of participants, capabilities, practices, dependencies, recognition, and institutions across bounded episodes, rather than volunteer activity measured by output alone. The framework distinguishes ontological suspension, historically consequential relational configurations, and the manifestations through which their histories become observable. It proposes evidence-indexed descriptions of event orders, cooperation, trust and reliance, role succession, relational memory, rule formation, resource renewal, power, value circulation, and institutional transfer. Particular attention is given to historically feasible alternatives, uneven access and recognition, heterogeneous subjects, and the possibility that organisational disappearance may coexist with residual or successor capacities. A finite comparative trajectory grammar makes partial correspondences and unmatched historical features explicit. The associated research design separates documented occurrence, mechanism contributions, rival causal histories, effect identification, and domain-specific ethical, political-economic, democratic, and legal judgments. The formal dossiers and conditional classifications are local audit conventions: they are neither a common measurement scale nor proofs of causation, historical necessity, or normative legitimacy. Constructed cases and countermodels exhibit alternative explanations and limits of inference. The paper offers a conceptual architecture and a programme for historical verification; it reports no original field study, calibrated dynamical model, or universal empirical law of volunteer action.

Keywords: volunteer action; relational systems; historical dynamics; relational nucleation; institutional change

Preprint statement. This independent theoretical preprint (v1.1, 12 October 2026) has not been peer reviewed. Its cases are constructed illustrations; it reports no original fieldwork or institution-specific findings. The formal and causal models are proposed for criticism, not presented as empirically validated. See the preliminary pages on responsible use and disclosure, and the research provenance statement at the end.

Reading orientation. The paper is organised as an extended theoretical study. Sections 1–4 establish the historical unit of analysis, ontological restraint, event segmentation and initial coordination. Sections 5–10 investigate trust, shared capability, roles, memory, knowledge transmission and rule formation. Sections 11–19 address thresholds, timescales, resources, path dependence, heterogeneous value, networks, power, practice transfer and dissolution. Sections 20–24 examine heterogeneous subjects, participation, comparison, empirical verification and independent ethical, political-economic and legal judgment. Section 25 presents the synthesis and open research obligations. Appendices A–C specify typed evidence interfaces, causal-rival tests and limited formal proof obligations. The local dossiers are heuristic audit conventions; they should not be read as a validated common quantitative model.

Discussion Paper Note

This discussion paper develops a preliminary Generative Relational (GR) account of the formation, reproduction, transformation, and dissolution of volunteer-supported relational systems. Its historical object is a situated configuration of participants, practices, capacities, recognition, resources, and institutions. Organisational identity, the continued availability of practical capacity, and the persistence of an ethically defensible relationship are distinct questions: one can survive while another disappears.

The inquiry operates across three GR reality levels. At the ontological level, the ultimate status of persons, institutions, collectives, and other claimed beings remains suspended where exhaustive claims are unjustified. At the level of relational reality, the paper examines historically constituted configurations with consequential causal or generative efficacy. At the manifestation level, it examines the documents, categories, observations, interpretations, and metrics through which such configurations become accessible and may be altered. Evidence about manifestation does not independently settle ultimate ontology.

The analysis follows event segmentation, relational nucleation, cooperation, trust and reliance, role differentiation, memory, knowledge transmission, rules, and delegated authority. It also examines changing resource requirements, power, heterogeneous value circulation, network boundaries, practice transfer, and institutional succession. Attention to alternatives matters because a formally voluntary relation can contain unequal opportunities to refuse, depart, interpret requirements, or challenge decisions. Administrative survival and service outputs therefore do not by themselves establish continuing access, fair burden distribution, or responsible governance.

The paper proposes finite, evidence-indexed descriptions of historical trajectories. Similar labels or procedures can conceal different configurations of eligibility, recognition, practical control, and vulnerability. Comparative mappings are consequently partial: unmatched participants, events, obligations, and institutional conditions must remain visible. A silent archive is not sufficient evidence that the relevant practice was absent, and a sequence of recorded events does not itself identify the mechanism responsible for it.

Formal dossiers, classifications, and comparative rules are offered as inspectable research conventions, not a universal metric or a calibrated empirical law. Documented occurrence, credible mechanism contributions, effect identification, and normative or legal evaluation require different justifications. A supported historical claim does not directly authorize assistance or establish a moral duty, democratic legitimacy, or positive-law entitlement. These judgments depend on independent ethical arguments, jurisdictionally applicable rules, and institutional context.

The paper also considers heterogeneous subjects, including non-human animals and artificial agents, without assuming equivalence of experience, standing, or legal status. Practices of historical recognition can alter who is heard, protected, represented, or held responsible. The programme's subsequent papers examine suffering recognition, heterogeneous assistance and protection, and legal subjecthood in greater depth; this paper supplies a historical-relational setting rather than their final normative resolutions.

All cases and countermodels in this manuscript are analytical constructions. The research is internationally oriented and makes no factual assertion about a named hospital, aid agency, jurisdiction, or study participant. No original human-participant fieldwork was conducted. The present contribution consists of a provisional conceptual architecture and a research programme for historical verification, critical comparison, and examination of competing mechanisms. Readers should assess its claims within these limitations, the stated source-access boundaries, and the separate permissions and use notices that follow.

Responsible Use and Rights Reservation

This page records a request for responsible scholarly use separately from the legal terms of the licence. The ethical request does not amend the licence, restrict permitted exceptions, or create additional contractual conditions.

The author welcomes good-faith reading, discussion, criticism, teaching, and independent inquiry. When the provisional framework is adapted to aid, volunteering, healthcare, or humanitarian contexts, the author asks users to examine foreseeable effects on vulnerable persons, practical access, privacy, power, representation, and opportunities for contestation. A constructed analytical case should not be cited as evidence that a real institution follows the described practice. Likewise, the framework's description of relational capacities should not be used as a substitute for clinical assessment, participant consent, safety procedures, or the competent interpretation of applicable law.

The author retains rights as specified by the Creative Commons Attribution–NonCommercial 4.0 International (CC BY-NC 4.0) licence and may pursue remedies for breaches or violations of independently applicable rights where law permits. The legal permissions and obligations are determined by that licence and applicable law, not by this responsible-use request. Third-party materials, if present, remain governed by their respective rights. Exceptions and limitations, including fair use or fair dealing where applicable, remain available. Reuse does not imply endorsement by the author or by any cited institution or scholar.

The controlling licence text is available at <https://creativecommons.org/licenses/by-nc/4.0/>. Readers should consult the full legal code rather than rely exclusively on this summary.

Notices

This page records the publication status, legal permissions, research disclosures, and responsibility for the manuscript. Detailed methodological limitations and the bibliography follow the main text.

Status. Independent theoretical preprint, version 1.1 (editorial-template alignment), 12 October 2026. The argument and substantive sections are carried over from the reviewed version 1.0. The paper has not been peer reviewed and does not report an implemented intervention or a new field study. Formal constructions and historical explanations remain preliminary, open to criticism, and subject to later verification. The source package includes the bibliographic audit and revision reports.

Licence. Except where otherwise indicated, copyright © 2026 Wanhong Huang. The original work is made available under Creative Commons Attribution–NonCommercial 4.0 International (CC BY-NC 4.0). Subject to its terms, permitted noncommercial sharing and adaptation require appropriate attribution, notice of modifications, and a licence link. The licence does not authorize uses of independently protected third-party material beyond what law or its rightsholder permits. The rights and reservations recorded on the preceding page are separate from the licence permissions and do not narrow them. The legal code controls in the event of any discrepancy: <https://creativecommons.org/licenses/by-nc/4.0/>.

Statement on the use of language models. The development and preparation of this manuscript involved OpenAI’s ChatGPT for research dialogue, concept clarification, preliminary formalisation, source discovery, bibliographic scoping, LaTeX drafting, editorial and mathematical criticism, and production checks. Some sources were examined through bibliographic records, abstracts, or publisher descriptions; these checks do not establish that the full underlying works were read or that each interpretive claim was independently validated. The human author selected the research questions and directed the theoretical commitments, scope and manuscript revisions, and remains responsible for the definitions, models, claims, citations, limitations, conclusions, and errors. ChatGPT is not listed as an author. The accompanying source-support matrix identifies the differing levels of access and verification for cited materials.

Research ethics and institutional independence. The historical episodes and countermodels are constructed for analysis, rather than records of human-participant observation. No original human-participant study or institutional endorsement is claimed. The manuscript represents an independent theoretical research programme, not official advice or guidance from any university, hospital, non-governmental organisation, aid agency, regulator, or cited scholar.

Suggested citation. Huang, Wanhong. “Volunteer Action in Relational System Formation: A Preliminary Generative Relational Account of Historical Dynamics.” Independent theoretical preprint, version 1.1, 2026.

Contents

Discussion Paper Note	2	14 Path Dependence, Self-Reinforcement, and Institutional Alternatives	107
Responsible Use and Rights Reservation	3	15 Heterogeneous Values in Historical Generation and Circulation	116
Notices	4	16 Relational Networks, Boundary Changes, and Collective Coordination	125
1 Historical Significance of Volunteer Action in Relational Systems	6	17 Power, Counterweights, and Historical Control over Alternatives	132
2 Inherited Relational Entities, Actions, and Historical Descriptions	12	18 Practice Transformation, Institutional Transfer, and System Reconfiguration	141
3 Temporal Orders, Event Segmentation, and Historical Observation Windows	20	19 Dissolution, Failure, Residual Capacity, and Successor Relations	149
4 Relational Nucleation and Conditions of Initial Coordination	27	20 Heterogeneous Subject Conditions and Historical Recognition	157
5 Trust Genesis, Reliance, and Historically Differentiated Vulnerability	35	21 Collective Participation, Democratic Practices, and Historical Legitimacy	166
6 Historical Pathways of Local Cooperation and Shared Capability	43	22 Finite Historical Configurations and Comparative Trajectory Grammar	175
7 Role Emergence, Position Transformation, and Participant Succession	51	23 Verification, Process Evidence, and Historical Research Designs	182
8 Shared Practices, Relational Memory, and Reproductive Work	59	24 Interfaces with Ethics, Justice, Political Economy, and Jurisprudence	191
9 Knowledge Transmission, Recognition, and Manifestation Feedback	67	25 Foundational Historical Synthesis and Open Research Obligations	201
10 Rule Formation, Delegated Authority, and Institutionalization	75	A Typed Dossier Interfaces and Evidential Classifications	210
11 Historical Thresholds, Regime Changes, and Critical Transitions	83	B Mechanism Attribution, Rival Histories, and Causal Research Obligations	213
12 Fast–Slow Couplings in Volunteer and Institutional Trajectories	91	C Formal Claim Types, Identifiability, and Verification Obligations	216
13 Dependencies, Resource Renewal, and Historical Sustainability	99	Research Ethics and Source Provenance	218
		References	219

1 Historical Significance of Volunteer Action in Relational Systems

This opening section defines the historical object of the proposed inquiry: the possible contribution of volunteer action to the formation, persistence, transformation, and dissolution of historically constituted relational systems. Its objective is to determine what would make a local episode relevant to an account of longer-run relational change, which forms of evidence could support that judgment, and which competing explanations would have to be considered. The argument proceeds by distinguishing the histories of actions, relations, practices, and institutions; specifying the three generative relational (GR) reality levels; identifying candidate historical mechanisms; and developing a preliminary, evidence-qualified diagnostic architecture. The method is conceptual and comparative, informed by historical sociology and institutional analysis. All applications to volunteer aid remain provisional and require independent historical or empirical research.

1.1 Historical Objects, Bounded Episodes, and Relational System Boundaries

A volunteer may accompany one person to an appointment, translate a request, coordinate a distribution, repair a shared facility, or assist in an emergency. These activities can be described as discrete episodes. Their historical significance, however, depends upon the question being investigated, the relations affected, the interval of observation, and the later developments for which a connection is proposed. A single episode may leave no durable trace, temporarily alter an available option, consolidate a recurring practice, or participate in the formation of an enduring institutional arrangement. These alternatives require different evidence and should remain open during initial investigation.

For the present paper, a *relational system* is a bounded analytical designation for a history-bearing configuration of participants, positions, practical opportunities, recognizable practices, dependencies, and rules that condition one another across episodes. The term designates an object of inquiry rather than an assertion that the social world has a unique system boundary. Systems may overlap and nest: the history of a neighborhood volunteer group intersects with the trajectories of households, a municipal welfare arrangement, professional services, and personal relations. The position of a particular participant can belong to several such histories at once.

A historical question must therefore specify its analytical boundary. The history of a volunteer programme is different from the history of the persons it assists, even when the same documents mention both. Changes in organizational survival do not automatically establish improvement in participants' options; a programme's termination may coincide with its successful transfer of responsibilities to a more capable institution. Conversely, an apparently stable organization may persist by repeatedly transferring costs to participants whose withdrawals go unrecorded. The relevant history depends upon whose changing possibilities are at issue.

Relational sociology offers an established precedent for examining social phenomena as unfolding relations and for treating boundaries, causal explanation, and dynamics as research problems [28]. The GR approach developed here uses this orientation as an interlocutor, while retaining its own three-level distinction and its emphasis on conditional generative efficacy. The present work does not attribute GR concepts to that earlier sociology or assume an equivalence between their respective ontological commitments.

1.2 Volunteer Intervention and Historical Participation

The term *volunteer action* is used in a broad preliminary sense for situated contributions voluntarily undertaken to assist, support, sustain, or participate in some practically relevant relation. The operational definition of volunteer work, the legal recognition of particular activities, and the ethical status of volunteering may vary across jurisdictions and institutions. Paper I supplies a minimal action-and-assistance vocabulary; Paper VII addresses voluntary entry, role commitments, permission, and moral reasons. This paper uses those prior distinctions selectively to examine trajectories over time. Voluntariness

of initial participation is analytically distinct from the historical obligations that may develop through repeated undertakings.

Action becomes *historically participatory* in the present research sense when it forms part of an identifiable sequence whose subsequent relations can be investigated. A one-time escort may affect an individual's immediate access without reorganizing a durable practice. Repeated escort episodes may support a referral convention, shared logistical knowledge, and new expectations of availability. These expectations can become reliable practices, contested responsibilities, or fragile dependencies. The investigation must identify the intermediary events through which the trajectory occurred. Duration and repetition alone cannot substitute for such identification.

A further distinction separates the history of an act from the history of its meaning. A practical contribution can be retrospectively recognized as the beginning of a programme, while available records from its original moment show no such intention. Later classification may affect recruitment, legitimacy, or funding and thereby become causally consequential in its own right. Historical inquiry should record both the earlier episode and the subsequent processes of remembrance, attribution, and reinterpretation. The resulting account can contain several historically effective descriptions whose differences are part of the phenomenon under study.

The claim that volunteers *generate* relational systems thus has a restricted meaning. Participation may contribute to the conditions under which a practice, position, or relation emerges and becomes reproducible. Formation can involve beneficiaries, public officers, nonparticipants, donors, professionals, and existing institutions. A volunteer's contribution may be necessary under one documented set of conditions, substitutable under another, or peripheral to a broader process. Attribution of exclusive founding agency requires unusually strong evidence.

1.3 Three GR Reality Levels in Historical Inquiry

The GR framework distinguishes ontological reality, relational reality, and manifestation reality. The historical analysis employs this distinction as an epistemic discipline. Ontological reality refers to the ultimate status of the beings and processes under consideration, on which the framework maintains suspension. Relational reality concerns historically constituted, sufficiently stable and generatively efficacious relational beings, positions, and structures as analytically proposed. Manifestation reality concerns the contextual forms through which those relations become observable, expressed, interpreted, or recorded.

At the relational level, a service pathway can be meaningful because participants actually rely on it, adjust their actions to it, and encounter consequences when it is disrupted. At the manifestation level, the pathway may be represented by an attendance register, a contact list, a volunteer's account, or an administrator's category. Evidence of such representations provides access to the relation with qualifications about selection, recording practices, and interpretation. A changing attendance form can produce an apparent discontinuity in recorded service despite continuity of the underlying relation. Conversely, identical forms in two periods may conceal altered workloads, expectations, or practical permissions.

Ontological suspension also matters for the language of historical emergence. The assertion that a relational position *emerged* means, in this paper, that evidence supports its historically situated formation and practical efficacy under an explicit analytical description. It makes no claim to have settled the ultimate metaphysical nature of the relation. The three levels remain linked because historical manifestations may themselves change the relational configuration: a newly adopted classification can influence eligibility, self-understanding, recruitment, and institutional responses. This reciprocal conditioning requires attention to the history of representations as well as the history represented.

A three-level audit should identify, respectively, the ontological commitments being withheld, the candidate relational changes requiring explanation, and the actual manifestations supporting or disputing those changes. Such an audit is especially important when the language of trust, solidarity, dignity, or institutional belonging risks becoming an assumption embedded in an indicator. Those qualities may be

present, absent, ambivalent, or differently manifested across participating positions.

1.4 Event Sequence, Historical Duration, and Multiple Timescales

Historical effects involve order as well as elapsed time. Two otherwise similar interventions can have different consequences if one precedes an institutional decision and the other follows it. A volunteer initiative may begin during a temporary service interruption, before an eligibility revision, or after a public institution has already planned a replacement pathway. Its significance depends partly on the sequence of decisions and on the alternatives that were available at each moment.

The temporal unit therefore requires explicit construction. An *episode interval* can capture interaction during a service event; a *practice interval* can cover repeated performances, learning, and expectations; an *institutional interval* can encompass funding, staff succession, rule revision, or public responsibility; and a *long historical interval* can register changes in recognized positions and patterns of association. These clocks need not share a fixed duration. A slowly maintained referral convention may be disrupted by one regulatory event, while an immediate emergency intervention can generate records that influence practices years later.

Sewell's account of eventful sociology is a relevant historical-sociological predecessor for taking temporality and the consequences of events seriously [64]. Abbott's methodological work likewise establishes that temporal assumptions, boundaries, events, and turning-point descriptions are consequential to social analysis [2]. These works motivate historical methodological care; they do not establish any particular volunteer episode's long-run significance. The GR research question concerns the additional conditions under which a volunteer action participates in relational reorganization.

Historical observation also contains censoring and delayed manifestations. A follow-up ending immediately after a service launch may mistake temporary enthusiasm for stabilization. A study beginning after the consolidation of a practice may mistake a mature arrangement for an original institutional design. Discontinued programmes leave traces that are unequally preserved. The relevant temporal window must be defended with reference to proposed mechanisms, not selected merely because an attractive sequence fits within it.

1.5 Relational Nucleation and Conditions of Initial Formation

Relational nucleation is introduced as a preliminary GR term for an episode or short trajectory through which previously dispersed possibilities begin to acquire a recognizable and repeatable relational organization. The term is heuristic and carries no literal claim that social relations obey the physics of crystallization. Its substantive question is how scattered needs, capacities, offers, and permissions may become a coordinated practice with an identifiable locus of continuity.

Several candidate mechanisms can be distinguished. An initial act can connect positions that lacked a feasible channel of interaction; repeated encounters can create expectations about availability; shared language can make a practical problem recognizable to multiple participants; documentary routines can transmit knowledge beyond the first participants; and institutional permission can enable repetition. These mechanisms may reinforce one another or fail separately. The formation of a new contact channel is particularly different from the formation of trust: contact can occur without willingness to rely, while reliance may exist without a formal network link.

Granovetter's account of weak ties provides an independently developed network-theoretic basis for examining relations that bridge otherwise less connected segments and carry information across social groups [35]. The present paper does not identify weak ties with volunteer nucleation. A new bridge may enable cooperation, expose participants to extraction, transmit errors, or leave prevailing positions unchanged. Its historical role must be investigated through the subsequent uses, exclusions, and consequences of that bridge.

The threshold language sometimes associated with nucleation is especially vulnerable to overstatement. The existence of a first volunteer, a first meeting, or a first funding agreement gives an observable milestone. A *threshold* claim requires a defined change in the space of feasible future trajectories: for example,

a capacity for coordination becoming reproducible with participants other than its initiator, or a new procedure surviving the withdrawal of a central organizer. Whether that change is abrupt, gradual, or retrospectively assigned remains a research question. No universal numerical threshold is asserted here.

1.6 Stabilization, Reproduction, and Fragile Persistence

A relational arrangement may persist because participants continue to recognize and enact it. Stabilization is a stronger and more structured proposition: its reproduction becomes supported by identifiable routines, learning, coordination capacities, recognized roles, and mechanisms for handling disruption. Persistence can also be maintained by dependence on a single person, emergency improvisation, or an external subsidy whose continuation is uncertain. Accordingly, duration is a possible indicator of continuation, with additional evidence needed to infer resilience or autonomous reproductive capacity.

Institutional research provides several useful comparative perspectives. Ostrom's work on governing common-pool resources examines historical arrangements for collective self-governance and discusses both durable practices and the difficulty of reconstructing their origins [50]. Its original domain is the governance of common-pool resources. Volunteer-aid settings may share problems of coordination, monitoring, and rule revision while differing in rights, incentives, stakes, and the distribution of work. A GR translation should make those differences explicit rather than treat institutional success conditions as universally portable.

North's work on institutions and institutional change offers a separate account of how historically developed rules and incentive structures condition the opportunity sets of actors [48]. In the present inquiry, the resulting question is whether recurring volunteer activities change the practical opportunity structure for recipients, organizations, volunteers, and third parties. The answer may differ by position. An arrangement can stabilize the organization's schedules while destabilizing volunteers' household time, or stabilize access for one category while making access less reliable for another.

A relevant investigation would therefore include the actual labor of reproduction: the work of refreshing contact lists, handling exceptions, coordinating replacements, resolving conflicts, maintaining accessible facilities, and retaining participant knowledge. Reproduction can be expensive even when direct financial expenditure is small. The political-economic analysis of those burdens belongs to Paper VIII. Paper IX examines how their distribution affects the historical life of the relational configuration, including the possibility of transformation or collapse.

1.7 Transformation, Dissolution, and Reconfiguration of Historical Positions

Historical significance also includes the transformation or disappearance of a practice. A volunteer pathway can end because its initial need is resolved, because a public institution adopts the practice, because participants withdraw, because resources are redirected, or because the arrangement has become undesirable. Those outcomes should be differentiated by examining what relations cease, which capacities remain transferable, and whose practical alternatives improve or deteriorate.

The relevant identity criterion for a historical system must be declared. A programme name can continue while roles, boundaries, and practices change substantially. A programme can cease under its original name while its methods become embedded in several independent institutions. Tracking legal organizational continuity alone may therefore misdescribe relational continuity. Possible indicators of transformation include changed decision rights, new participant categories, redistributed burdens, altered referral practices, or a new way of identifying need. Dissolution concerns the disappearance of a historically specified configuration; it does not imply that its former participants or every relationship among them have vanished.

The notion of *attractor* may eventually assist in describing recurrent practice regimes. In this introductory paper it remains a modeling option that requires defined states, transition rules, perturbations, and evidence of convergence or return. The observation that a group habitually meets at the same time does not suffice to demonstrate an attractor in the dynamical-systems sense. Likewise, historical irreversibility

can refer to lost practical options, sunk relational investments, or altered norms; the claim should specify which reversibility property has been investigated.

Positive, negative, and mixed historical effects can coexist. A volunteer initiative may generate new cooperation while reproducing a restrictive classification. An institutional replacement may reduce direct volunteer labor while strengthening procedural rights. The meaning of transformation cannot be inferred from whether a particular organization survives, nor from a single aggregate count of services delivered. This requires plural and position-sensitive description before a defensible evaluative judgment can be made.

1.8 Conditional Historical Significance and Rival Mechanisms

The paper’s central explanatory problem is the connection between an intervention and a later relational configuration. For that purpose, the present section proposes a *conditional historical-significance dossier* as a structured research obligation. Let e be a candidate volunteer episode or bounded sequence, B the declared relational boundary, $[t_0, t_1]$ the historical interval, and κ an evidential standpoint. Equation 1 records a diagnostic organization of the evidence.

$$\mathfrak{S}_{e;B,[t_0,t_1]}^{\kappa} = (\mathcal{D}_e^{\kappa}, \mathcal{M}_e^{\kappa}, \mathcal{A}_e^{\kappa}, \mathcal{P}_e^{\kappa}, \mathcal{U}_e^{\kappa})_{B,[t_0,t_1]}. \quad (1)$$

Here $\mathcal{D}_e^{\kappa}$ records candidate relational differences across explicitly matched observations; $\mathcal{M}_e^{\kappa}$ records proposed mediating mechanisms and the traces expected from them; $\mathcal{A}_e^{\kappa}$ records the competing episodes, policies, resources, and external developments that could explain the outcome; $\mathcal{P}_e^{\kappa}$ contains temporal and source provenance, including recording and permission limits; and $\mathcal{U}_e^{\kappa}$ retains unresolved, disputed, or unobservable matters. None of these components is assumed complete. The dossier is a typed research instrument, not a numeric index of social importance and not a theorem of causation.

A strong attribution would require more than a sequence of correlated events. The researcher would specify a candidate mechanism, investigate intermediate traces, reconstruct relevant opportunities and competing processes, and consider counterexamples. For instance, a previously planned administrative reform could explain the emergence of a referral pathway regardless of a particular volunteer intervention. Alternatively, volunteer work could have supplied the information or political support that altered the reform’s design. Distinguishing these explanations requires documents and testimony about actual timing and decisions. The counterfactual is typically only partially observable and should remain qualified accordingly.

Path dependence calls for an additional test. Pierson’s original account makes increasing returns central to a specific conception of politically path-dependent processes [54]. Repetition, persistence, and lock-in should therefore be distinguished. An arrangement may recur because external circumstances remain stable, even if each episode provides no growing advantage to the established practice. A stronger increasing-returns claim would identify how prior adoption changes relative future costs, available capacities, incentives, or access to alternatives. Whether other mechanisms of historical dependence operate remains open to analysis under their own descriptions.

1.9 Evidence Audit for Historical-System Formation

The conditional dossier needs practical guidance regarding observable traces. Table 1 identifies seven domains through which a researcher might investigate the historical reorganization of volunteer-aid relations. Each domain admits positive findings, counterevidence, and unresolved cases. The table is intended for question-specific selection, since a bounded inquiry need not collect every category of data to produce a useful and ethically appropriate account.

The table also guards against interpreting collective history solely from institution-produced evidence. Participants may have different abilities or permissions to generate records. Administrative archives may be especially complete for grant cycles while offering limited visibility into unpaid household labor, informal refusal, or a recipient’s interpretation of support. A relationally adequate account should

Table 1: Candidate evidence for historical significance of volunteer action and corresponding inference limits.

Historical object	Possible dated traces	Key discriminating question
Initial connection	Introductions, consented referrals, first contacts	Did the act enable a previously unavailable feasible relation?
Repeated practice	Dated procedures, shift histories, role learning	Was the practice reproduced beyond a single organizer or circumstance?
Trust and reliance	Testimony, retained cooperation, reasons for refusal	Did participants acquire justified opportunities or risky dependence?
Role transformation	Delegations, assignments, contested responsibilities	Who obtained or lost authority, competence, and practical alternatives?
Shared valuation	Recognition, reciprocal support, participants' accounts	Whose values were recognized, discounted, or transformed?
Institutional revision	Rule changes, review outcomes, policy histories	Which decision mechanism connects earlier actions to later rules?
Dissolution or transfer	Withdrawals, successor practices, exit records	Did the specified relation end, migrate, or change its identity?

investigate whose manifestations enter the archive and how their inclusion affects the historical description. That requirement creates a methodological and ethical problem, since expanded observation can itself burden or expose participants.

1.10 Constructed Comparisons of Historical Trajectories

Three hypothetical cases illustrate the distinctions without reporting any real institution's practice.

Case A: multilingual navigation and the emergence of a referral practice. Imagine several volunteers who initially interpret directions for people navigating a public-service process. Over successive months, workers develop an informal referral list and a shared repertoire of explanations. A later unit establishes a formally supported language-navigation procedure. One plausible historical account credits repeated volunteer encounters with revealing an access barrier; another credits an independently planned accessibility programme; a third identifies an interaction between both processes. Evidence would include dated initiation records, actual uses and refusals of the pathway, participant accounts, formal decision records, and alternative plans under consideration. The formation of the procedure could improve access while changing volunteers' roles. The case does not support a claim about any actual hospital or public agency.

Case B: shared neighborhood transport and fragile relational reproduction. Imagine a small volunteer transport arrangement sustained by two highly experienced coordinators. The arrangement appears durable for several years but becomes unavailable when both coordinators step away. A first account treats the collapse as evidence that the arrangement was never stabilized; another identifies meaningful stabilization during the earlier period combined with concentration of tacit knowledge and insufficient succession mechanisms. A more precise inquiry distinguishes reliable provision to recipients from institutional reproductive capacity, records failed recruitment and replacement attempts, and examines whether successor arrangements preserved accessible travel. Long duration and fragility can coexist without contradiction.

Case C: emergency assistance and transferred capacity. Imagine a volunteer network that organizes accommodation after a disruption. Its original group dissolves when emergency needs decline, but municipal and neighborhood actors preserve the network's coordination practices. The group's disappearance may represent a successful transfer, an adverse exclusion of volunteers, or the gradual exhaustion of an unsustainable practice. Differentiating these histories requires information about the recipient population, access after transfer, actual changes in decision rights, household burdens, and the relationship between the initial intervention and successor procedures. Organizational dissolution need not be equivalent to relational failure.

Each case can be analyzed at all three GR levels: ontological suspension concerning the ultimate status of the represented systems; candidate formation, persistence, or transformation at the relational level; and the particular manifestations through which the history becomes investigable. The examples highlight the limitations of linear stories in which a benevolent initial intention reliably generates a beneficial historical outcome. The historical meaning of an intervention depends on the relations it participates in and on whose subsequent trajectories are included.

1.11 Research Programme Interfaces and Section-Level Obligations

The remainder of the paper will develop more precise accounts of relational nucleation, trust, role formation, stabilization, historical feedback, attractor-like practice regimes, transformations, and dissolution. Later sections will also examine distributed generative value, collective practices, political and democratic implications, and the conditions for empirical or formal testing. These are research objects rather than conclusions established by the introductory dossier.

The conceptual inheritance from earlier papers is selective. Paper I's dyadic action vocabulary and Paper II's mediation structures help describe local contributions; Paper III addresses the historical constitution of subject positions; Paper IV examines positional and psychoanalytic interpretations; Paper V addresses aesthetic qualities of support; Paper VI concerns relational justice; Paper VII concerns normative reasons and responsibility; and Paper VIII concerns resource, labour, governance, and power constraints. Paper IX asks a distinct question about the trajectories of relational systems themselves. An observed economic redistribution can contribute to historical transformation, while historical reorganization cannot be reduced to a financial return. A stable trust relation may be significant for participants without generating a general obligation, public legitimacy, or an independently established democratic benefit.

The proposed account consequently keeps three levels of claim separate: descriptions of historically ordered manifestations; explanations of proposed generative mechanisms; and evaluations of their practical or normative significance. A historical narrative can be accurate while a causal explanation remains contested. A causal explanation can be well supported while its ethical implications require additional argument. The GR approach aims to make these boundaries investigable within a common relational vocabulary while preserving their irreducible epistemic tasks.

This section establishes the paper's object, its first diagnostic distinctions, and its admissible use of neighboring scholarship. The subsequent section will specify the inherited entities, episode types, and cross-paper compatibility rules needed before stronger historical formalization becomes possible. The working hypotheses remain revisable in light of incompatible cases, missing records, and independent scholarly criticism.

2 Inherited Relational Entities, Actions, and Historical Descriptions

This section specifies the analytical entities and descriptions that Paper IX can inherit from the preceding generative relational (GR) volunteer-aid studies. Its objective is to make historically situated actions, participant positions, relational practices, institutional arrangements, and evidence records mutually interpretable while retaining their distinct types and inferential limits. The argument proceeds through selective theoretical inheritance, the three GR reality levels, action and procedure individuation, coupled participation, historical identity, manifestation and archival access, evidence-qualified translation, and three constructed applications. The method is a conceptual reconstruction accompanied by a deliberately partial formal schema. The section establishes a vocabulary for later investigation of historical trajectories; it neither derives a general law of social change nor establishes that any volunteer intervention produced a particular institutional outcome.

2.1 Selective Inheritance and the Historical Unit of Analysis

Paper IX inherits from an extensive research programme whose previous papers have different objects of explanation. Paper I analyzes minimal dyadic support relations and their procedural, epistemic, and formal conditions. Paper II investigates coupled three-position arrangements in which mediation, witnessing, authorization, or other third-position activities alter the interpretation of local relations. Paper III concerns the co-formation of subject positions through interaction and history. Papers IV and V examine, respectively, positional and psychoanalytic interpretation and the aesthetic qualities of supporting. Papers VI and VII develop distinct questions about justice, ethical intervention, reasons, and responsibility. Paper VIII analyzes material resources, labour, valuation, decision power, and institutional conditions of aid. These are selectively inherited analytical resources. Their vocabularies do not constitute interchangeable descriptions of the same object.

The unit appropriate to the historical paper is a *bounded, history-bearing relational configuration* associated with a specified research question. A configuration may contain multiple episodes, participating and affected positions, repeated practices, institutional constraints, manifestations, and arrangements that persist after particular volunteers withdraw. In a longitudinal inquiry, the object is not fixed solely by the list of people active at one moment. Membership, roles, recognition, feasible alternatives, and the definition of the relevant boundary may themselves change. Such changes can be part of the historical phenomenon being investigated.

Relational sociology provides an independently established reason to examine unfolding relations and analytical boundaries rather than presuppose a static inventory of social substances [28]. Eventful historical sociology similarly makes the order and historically situated significance of events a substantive problem [64]. Paper IX proposes its own GR reconstruction of these concerns within volunteer aid. Neither precedent supplies evidence that the programme's particular formal entities exist as independently measurable social objects, nor do they settle the historical contribution of volunteer activities.

Selectivity also protects the boundaries of the earlier papers. A dyadic encounter can be part of a longer history while remaining a meaningful object for procedural analysis. A triadic mediator can reshape access without becoming an administrator. An economic resource can enable cooperation without exhausting the trust, practical meaning, or institutional status of that cooperation. The appropriate historical inheritance therefore consists of explicit, question-dependent correspondences between records, together with an account of what their translation leaves behind.

2.2 Ontological Suspension, Relational Efficacy, and Historical Manifestation

The three GR reality levels apply to every principal inherited concept. At the *ontological* level, the ultimate status of subjects, relations, and systems remains suspended. Formalized histories do not establish that society is literally a geometric complex, dynamical field, or closed system. Their utility depends on the questions they enable researchers to formulate and test, the distinctions they preserve, and their susceptibility to correction.

At the *relational* level, sufficiently durable or causally consequential arrangements may be modeled as historically constituted relational beings or configurations. A volunteer role, referral practice, or organizational boundary can condition subsequent opportunities even when none has an immutable essence. Relational efficacy must be investigated through traces of actual constraints, enabled actions, revisions, or dependencies. Calling a practice *historically efficacious* is a candidate explanatory claim whose evidential warrant remains separate from the working definition of a relational configuration.

At the *manifestation* level, histories become accessible through dated actions, testimonies, registers, material arrangements, correspondence, changes of procedure, remembered refusals, and other partially situated expressions. A written rule and its actual enactment can diverge. An administrative record can document a referral while omitting that its intended recipient could not reach the service. A participant's account can disclose an experience that is poorly represented in official records while remaining subject to interpretation, memory limitations, or contested attribution.

These levels are analytically coupled. A newly introduced classification may initially appear as a

manifestation in a document; if subsequently enacted and repeatedly relied upon, it can participate in the reorganization of relational positions. In a different history, the document may have little practical effect. Its causal role must be established through evidence of use, authorization, affected alternatives, and historical sequence. The three-level account therefore provides a disciplined method for tracking such possibilities without treating evidence production, relational change, and ultimate ontology as identical.

2.3 Participants, Positions, and the Boundaries of Historical Agency

A participant and a relational position constitute different analytical categories. A person may occupy several positions during a single historical interval: prospective volunteer, recipient of assistance, coordinator, caregiver, institutional employee, neighbor, advocate, or person contesting a procedure. Conversely, a formally stable position may be occupied by a changing succession of people. Historical continuity of a coordinator role can thus coexist with substantial changes in the lived practices through which it is enacted.

An *agent* in a historical description is an attributed source of a specified action under an explicit evidential and conceptual rule. Agency need not be attributed exclusively to one person for an episode to be meaningful: committees, shifting volunteer teams, households, and institutions may contribute through distinct decisions and enactments. The account should identify who acted, who authorized the action, who was affected, and who could contest its description. An institution's public label, a participant's self-description, and a historian's later reconstruction can each impose a different boundary on the purported agent.

The formation of positions is particularly important when interpreting voluntary participation. A person described as a recipient may become a peer organizer; a volunteer may become formally employed; an informal translator may acquire an officially recognized coordinating role. These transitions can alter both capacities and constraints. A change of title alone supplies a manifestation of altered classification. Evidence about decision rights, actual opportunities, practice, and reciprocal expectations is needed to determine whether the relational position changed materially.

The analysis also retains absent and indirectly affected positions. A repeated volunteer service can be experienced as a gain by participants who receive support and as an exclusion by people who never become eligible, receive an invitation, or appear in the surviving records. An historically bounded inquiry should declare whether such nonparticipants fall within its scope, what could be learned about their alternatives, and the ethical limits of collecting their data. Recognizing a potential position is an analytical invitation, not a claim to know an unobserved person's preferences or a determination of that person's legal status.

The possible involvement of animals or artificial systems requires still greater specificity. Their physical participation, assigned functional role, recognized legal standing, potential interests, and moral status belong to different inquiries. Historical descriptions can document the presence or use of such entities under a declared representational scheme while suspending controversial conclusions about consciousness, moral patienthood, or independent legal responsibility.

2.4 Action Episodes, Procedural Orders, and Volunteer Attribution

Paper I distinguishes locally individuated actions from the procedures in which they are embedded. Paper IX retains that distinction because the same apparent act can have different historical consequences depending on its order, authorization, and reception. A translation occurring before a consent decision can alter the person's feasible participation. The same translation offered after the decision may affect subsequent understanding while leaving the initial decision unchanged. A record that contains only the occurrence of a translation loses this difference.

An *episode* is an analytically delimited occurrence or set of closely related occurrences. Its segmentation depends on the research question. An accompaniment can be coded as one episode for service scheduling, as several events for consent and information exchange, and as part of a longer sequence for the development of a recurring referral practice. Researchers should document the segmentation rule,

observation interval, and evidence supporting its use. Temporal aggregation can be appropriate, provided that it does not erase distinctions necessary to the proposed explanatory mechanism.

A *procedure* is a partially ordered arrangement of relevant events: invitation, interpretation, request, refusal, authorization, performance, feedback, revision, and withdrawal are possible elements. Partial order matters when activities overlap or their precise chronology is uncertain. A later researcher may know that authorization preceded service delivery while lacking sufficient evidence to order all intermediate exchanges. The reconstruction should retain the known precedence relation and the unresolved orderings. Time stamps from two databases need not be directly comparable when their clocks, reporting delays, or event definitions differ.

Volunteer attribution is likewise a historical research problem. One observed act may depend on prior training, public infrastructure, institutional resources, collective coordination, and requests originating outside the volunteer group. The researcher can specify a volunteer contribution without reducing the entire outcome to volunteer action. Counterfactual claims about whether a service would otherwise have existed require evidence of alternatives and competing processes. Likewise, an act carried out with a supportive intention may lead to exclusion, dependency, or a beneficial practice that participants later redesign. Describing an act as volunteer support does not resolve its causal or evaluative standing.

A historically defensible account consequently connects the episode boundary to its procedure, participant positions, enabling conditions, and observed consequences. Attribution may be distributed, qualified, or unresolved. That openness is substantive: it leaves space to recognize both collective generativity and the possibility that an apparently decisive local act occurred within a transformation already under way.

2.5 Coupled Participation and Third-Position Historical Effects

Paper II's coupled triadic record inherits dyadic components while requiring compatibility between them. A third position can witness a conversation, interpret a request, certify an entitlement, control access, mediate disagreement, or introduce a new rule. Its significance derives from the specific operation and circumstances rather than from the presence of three named participants. Paper IX uses this inherited insight to ask whether third-position participation leaves enduring traces in a history of practice or institutional organization.

Consider a volunteer, a person seeking assistance, and a coordinator. An initial request might be understandable only through the volunteer's interpretation, while the coordinator determines which service is authorized. Later, the institution might adopt a multilingual procedure that distributes these roles across staff. The historical question concerns the transformation of the coupled arrangement: which informational pathways, permissions, expectations, and practical alternatives persisted, changed, or disappeared. One can investigate this without assuming that the three pairwise relations reconstruct a unique common history.

Partial dyadic shadows should remain partial. Two participants may describe their encounter similarly while an institutional archive records an authorization they never perceived; conversely, a formal decision can exist without becoming accessible to its intended recipient. Joining these records calls for declared correspondence, compatible temporal boundaries, credible provenance, and lawful or otherwise appropriate access. Failure of a join may signal an empirical contradiction, an omitted participant, incompatible classification, or insufficient evidence. These possibilities need discriminating investigation rather than automatic reconciliation.

A relationship involving more than three positions likewise exceeds a fixed triadic reconstruction. A committee, households, rotating volunteers, and external service providers can form a changing multi-position configuration. Triadic records may capture specific mechanisms inside that configuration, but they should not be counted as a complete decomposition of the collective without an independent compatibility argument. Historical explanations must retain relevant system-level practices, shared constraints, and emergent consequences that cannot be reconstructed from the locally observed pairs alone.

2.6 Practice, Institution, and Historically Changing Identity

A practice can recur without the persistence of a named organization, and an organization can remain legally continuous while altering almost every participant-facing practice. Historical identity therefore requires an explicit criterion for the object being followed. For a volunteer network, possible criteria include continuing legal registration, overlap of participants, continuity of routines, transmission of skills, persistence of rules, sustained availability of a service, or retention of an authorized decision arrangement. Each criterion answers a different question.

A practice history may be represented through recurring forms of action and expectations whose realization varies over time. A referral procedure, for example, can survive a change in personnel while its language access, consent arrangements, or practical reach deteriorate. Conversely, the procedure may improve through revision and thereby become recognizably continuous for one purpose and transformed for another. Historical identity is thus a qualified relation between bounded configurations under a declared comparison scheme. It is not guaranteed merely by a shared label.

Institutional rules deserve separate treatment. North's account establishes an influential institutional-economic perspective on the historical conditioning of incentives and choices [48]; Ostrom's work examines historically situated self-organization in common-pool-resource contexts [50]. Neither supplies a universal continuity criterion for volunteer programmes. A municipality's authorization rule, the operating expectations of a voluntary association, and an informal household practice can interact without becoming the same institution. Paper IX borrows the question of institutional change while developing the particular historical descriptions required for aid settings.

An account of *succession* needs to distinguish transfer, imitation, institutional absorption, displacement, and coincident independent innovation. The new organization may adopt a prior volunteer procedure; it may independently create something superficially similar; or it may retain only an administrative name while changing the actual practice. Evidence of training, drafting, decision processes, resource transfers, and participant experience can help discriminate these histories. The mere survival of a recognizably named programme does not establish that its enabling relational capacities have been preserved.

This identity discipline also changes the interpretation of dissolution. The withdrawal of an organization can mark failure to reproduce a necessary practice, a successful transfer into public services, a decision to end a harmful arrangement, or reduced need. A historical account must state which carrier ceases and which, if any, successor relations persist. Later sections will examine these alternatives with more specific temporal, institutional, and normative warrants.

2.7 Manifestation Records, Archives, and Evidential Asymmetry

Historical descriptions frequently depend on records produced for purposes other than research. A volunteer roster records assignment; a service log may record attendance; an administrative decision records formal authorization; a participant's testimony can disclose interpretation, refusal, or unrecorded consequences. The same dated episode can therefore produce manifestations with different objects, units, and degrees of accessibility. Abbott's methodological work treats time, events, and causal explanation as central social-scientific concerns [2]. The present GR reconstruction applies those concerns to the evidential asymmetries of volunteer-aid histories.

A contemporaneous document can be reliable about an administrative entry while incomplete about the interaction it describes. A retrospective interview can provide access to a participant's experienced history while containing uncertainty about dates and causal order. An absence of entries may indicate a genuinely missing service, a recording gap, an excluded category, a changed data system, or a decision to withhold information. A careful history distinguishes these possibilities without converting an archival absence into a documented social absence.

The production of records is itself potentially generative. A new eligibility category can redirect future referrals; a training manual can stabilize expectations; a public report can influence recognition, resource allocation, or the apparent legitimacy of a practice. Such feedback requires its own causal argument. A document's existence establishes a manifestation, whereas changed opportunities require evidence that

relevant people or institutions used, received, interpreted, or enforced it.

Evidence access can be unequal across participant positions. Staff may create an extensive formal archive while recipients have limited opportunities to contest official interpretations. Volunteers may document their visible labour while households supply unrecorded support. A researcher who incorporates only the most accessible archive can reproduce the institution’s classification scheme as an apparently neutral historical description. Supplementary testimony, alternative traces, and systematic missingness analysis may help, subject to consent, privacy, and research-ethics requirements. Expanded data collection itself changes practical relations and must be justified for the people affected.

These qualifications affect the GR reality-level analysis. Ontological status remains suspended, the relational configuration is modeled through evidence-qualified hypotheses, and manifestations are both imperfect access paths and, in some cases, historically consequential interventions. Their mutual conditioning may be the object of the later historical study, but the model should avoid treating a record as a transparent copy of the social relation it purports to represent.

2.8 Typed Historical Records and Evidence-Qualified Translation

Paper IX requires a bounded structure within which inherited observations can be compared. Let B identify a declared relational boundary, I a finite or explicitly delimited historical interval, q a research question, and κ the available evidential standpoint. Equation 2 proposes a *typed historical-description record* for this purpose.

$$\mathfrak{H}_{B,I;q}^{\kappa} := (\mathcal{E}, \mathcal{P}, \mathcal{A}, \mathcal{C}, \mathcal{M}, \mathcal{U}, \Pi)_{B,I;q}^{\kappa}. \quad (2)$$

Here $\mathcal{E}$ contains bounded event descriptions with declared segmentation and ordering constraints; $\mathcal{P}$ tracks participants and positions under explicit identity and role criteria; $\mathcal{A}$ contains candidate actions and partially ordered procedures; $\mathcal{C}$ records proposed or supported correspondences across time and between the included types; $\mathcal{M}$ contains accessible manifestations such as documentary entries and testimonies; $\mathcal{U}$ registers missing, contested, excluded, and unresolved information; and Π retains provenance, permissions, recording conditions, and revision history. Every component can be partial. The structure is an audit instrument for specified evidence and questions, not a complete state of a social system. In particular, $\mathcal{C}$ contains correspondences tagged by their evidential standing; a proposed link is not thereby established.

The dossier conventions used in subsequent sections are *locally typed views* of this historical-description record. Similar letters in distinct sections need not denote identical components, observation units, scales, or admissibility criteria. A proposed comparison requires an explicit partial mapping between fields, a statement of what the mapping preserves, and a record of unmatched or excluded information. The formal operation is performed on descriptions and evidential claims; it does not demonstrate a literal historical transformation, establish an actor’s authority, or identify a causal effect. A dossier may be valuable even if many entries remain unknown.

A translation from an earlier paper’s record family into $\mathfrak{H}_{B,I;q}^{\kappa}$ is generally partial and type-dependent. An action record may preserve procedure order but omit household burdens; an ethical assessment may identify reasons relevant to conduct while supplying no dated observation; a political-economic register may describe dependencies while lacking a history of recognition. We therefore reserve the symbol $\tau_{j \rightsquigarrow H}^{\kappa}$ for a declared partial translation of an admissible record of type j . Its admissibility requires an explicit domain, retained attributes, and a record of omitted or transformed information. A translation alone creates no new causal or normative warrant.

Joining two translated records creates a separate evidential obligation. Let r and s be candidate record entries, and write $\text{supp}_{\kappa}(x)$ when a specified requirement x has positive support at the declared standpoint. Equation 3 defines a sufficient *admission rule* for a proposed cross-record correspondence, with each criterion evaluated in the same case context. The permission guard concerns whether evidence may be processed and linked within the research design; it does not determine whether historical participants held a legitimate mandate to act.

$$\text{Join}_{\kappa}(r, s \mid B, I, q) := \bigwedge_{d \in \{\text{type}, \text{identity}, \text{time}, \text{provenance}, \text{permission}\}} \text{supp}_{\kappa}(d(r, s \mid B, I, q)). \quad (3)$$

For the specific provisional-join predicate in Equation 3, $\text{supp}_\kappa(d) = 1$ means that the criterion d is affirmatively supported under protocol κ , and 0 means only that this positive support is not established. Thus the Boolean conjunction is an admission gate, not a three-valued verdict on historical existence. Each failed gate receives a separate annotation distinguishing an affirmative contradiction, insufficient evidence, and research-access restrictions. A failure to admit a join can reflect unavailable evidence, a type mismatch, an affirmative contradiction, or restrictions on research access. These outcomes require different annotations. In particular, an inaccessible record does not constitute evidence that the historical relation never existed.

Equation 3 inherits the cautious cross-register discipline developed in Paper VIII while keeping the historical question distinct. Type compatibility asks whether the described objects can meaningfully correspond; identity asks whether the claimed shared participant, event, position, or practice is appropriately supported; time asks whether their dated relations are jointly possible; provenance asks whether sources and their interpretation are sufficiently grounded; permission asks whether the proposed use is admissible. A failed or unresolved criterion withholds this particular join. It does not prove that the represented historical relation was absent. Permissions and evidential standpoints can change, so previously admitted joins require re-evaluation when their premises change.

The minimum interface obligations shared by later domain-specific dossiers are catalogued in Appendix A. The appendix does not impose one fixed tuple or one common substantive guard list on trust, roles, resources, value, power, and normative standing. Local definitions in Equations 2 and 3 remain the primary reference points for record typing and admissible linkage.

The distinction between translation, join, and inference remains consequential. Validly joined statements that a funding rule preceded a volunteer assignment and that the assignment concerned a subsequent service do not by themselves demonstrate that funding caused the service outcome. A well-documented role succession does not establish that trust was successfully transmitted. A historically observed pattern does not by itself determine whether an intervention was just. Causal attribution requires mechanism evidence and comparison with rival histories; ethical and legal judgments require appropriate independent premises. The Section 1 historical-significance dossier in Equation 1 provides the higher-level research obligations to which these admissible records can contribute.

2.9 Compatibility Audit Across the Earlier GR Papers

Table 2 summarizes the inherited record families and their principal historical limits. The table is deliberately organized around *translation obligations* rather than a presumed unification of all eight studies. A research design should select the families justified by its question and observational possibilities. The table also states why a coherent cross-paper description can leave substantial remainders.

A consistency audit should also ask whether the same term changes its referent across sections. *Support* may mean an intentional act, an available service, an effective opportunity, a participant's evaluation, or an institutional duty. *Recognition* can name a document, an experienced acknowledgment, an organizational status, or a normative requirement. *Continuity* can refer to participant identity, recurring conduct, usable capacity, or legal existence. Each research claim should identify the operative sense and relevant evidence, especially when comparing changes over time.

Historical accounts require sensitivity to scale. A record valid for one dyadic interaction need not represent the whole volunteer programme. An institutional rule can condition many episodes without dictating their exact outcomes. A population aggregate can conceal simultaneous gains and losses among particular positions. Retaining these differences avoids both unwarranted micro-to-macro generalization and a macro-level history that omits the relations through which participants experienced change.

The partial translations also help expose genuine disagreements among neighboring theories. A historical reconstruction may show that institutional recognition increased while personal trust deteriorated, or that an administratively efficient procedure generated a new exclusion. The historical account can record these differences while justice, ethics, aesthetics, or economic evaluation proceeds according to their own premises. Such discrepancies are theoretically informative; they do not need to be eliminated

Table 2: Selected inheritance from Papers I–VIII and limits of historical translation.

Source and record type	Historical contribution that can be considered	Distinct compatibility and inference obligation
I: dyadic action and procedure	Encounter, permission, action attribution, feedback and revision	Preserve segmentation, event order and attribution; an episode alone supplies no long-run mechanism
II: coupled positions	Mediation, witnessing and third-position constraints	Verify shared history and coupling; pairwise records may fail to reconstruct the whole
III: subject and role formation	Successive positions, participant succession and changed recognition	Specify identity and role criteria; a continuing name is insufficient
IV: positional interpretation	Historically situated expectations, defensive or interpretive positions	Distinguish interpretive reconstruction from observed motive or diagnosis
V: aesthetic manifestation	Experienced qualities, practice sensibility and interpretive feedback	Preserve situated viewpoints; aesthetic value is not a universal numerical score
VI: justice questions	Hearing, standing, participation and possibilities of contestation	Require independent normative premises; historical frequency supplies no verdict
VII: ethical deliberation	Consent, reasons, responsibility and intervention constraints	Distinguish descriptive records from reasons, duties and authorization
VIII: political-economic conditions	Labour, resource access, classification, valuation, decision control	Recheck missingness, time and compatible joins; resource feedback is one mechanism among others

by assigning every observation one composite GR score.

2.10 Constructed Cases of Inheritance, Identity, and Incomplete Joins

Case A: language support and the identity of a referral pathway. Imagine a volunteer interpreting a service request, a staff member authorizing a referral, and an administrator subsequently revising a multilingual guidance document. The dyadic record captures request and interpretation; a coupled record captures the staff member’s authorization; a historical record follows the later rule and actual uses. Shared reference numbers may suggest a common episode, yet mismatched dates or permission limits may prevent a supported join. Even when the records can be connected, further evidence is needed to determine whether the volunteer’s interpretation influenced the document revision or whether a pre-existing administrative plan explains both events. A new document could coexist with unchanged access for intended users. The case is entirely hypothetical and makes no claim about a particular hospital.

Case B: neighborhood transport after coordinator succession. Imagine a volunteer transport group whose original coordinators retire. A successor association retains the group’s name and schedule but loses the informal arrangements that made pickups accessible to people with mobility limitations. An organization-based identity rule classifies the arrangement as continuous; a participant-opportunity rule may identify a significant discontinuity. Alternatively, the name could disappear while the practical pickup capacity remains reliable under a public service. Records of staffing, routes, refusals, accessible vehicles, and participant experience would discriminate these histories. A long series of completed trips does not establish self-reinforcement or trust, and a change in organizational name does not determine success or failure.

Case C: emergency accommodation and contested transfer of practices. Imagine emergency volunteers developing a temporary allocation practice that a municipal body later adopts. Volunteer records describe rapid provision; administrative records describe standardized eligibility; households report changed support burdens. A political-economic history could examine who paid for the transition. A justice inquiry could ask whose claims became heard. An ethical inquiry could examine consent and privacy in transferring records. The historical account asks which practices persisted, what changed, and whether the later arrangement depended on earlier volunteer coordination. Each investigation has

a different admissible inference. Some documents may be legitimately inaccessible to the researcher, and the resulting limitation belongs in the historical description rather than being treated as a negative observation.

These examples demonstrate the value of retaining several historical identity criteria and of recording failed joins. Their possible interpretations cannot be ranked without specifying the research question and relevant evidence. The original GR distinction between relational configurations and their context-dependent manifestations remains active throughout, with ultimate ontological claims suspended. Constructed examples provide counterfactual discipline and explanatory alternatives; they furnish neither institutional evidence nor estimates of the prevalence of particular mechanisms.

2.11 Historical Description Protocol and Open Analytical Obligations

The inherited architecture yields a practical protocol for later sections. A historical researcher first states the question and declares a case boundary; next distinguishes participants, positions, episodes, procedures, practices, and institutions; then fixes a defensible initial segmentation and observational period. The researcher records manifestations with their provenance, available permission, and evidential limitations; proposes only type-compatible historical correspondences; and retains unresolved or excluded records without silently deleting them. Candidate mechanisms and historical counteraccounts can then be attached to supported descriptions, with causal and normative warrants specified independently.

The protocol is iterative. Later evidence can require reidentifying an episode, splitting a practice into different phases, revising the boundary of a system, or withdrawing a previously supported cross-register join. Such revisions should remain visible through versioned definitions and traceable decisions. The aim is to make competing historical reconstructions comparable without assuming that earlier research decisions are irrevocable. Event boundaries, identities, and the relevance of data can depend on the eventual question; their revision therefore represents methodological accountability, not merely an error to conceal.

The resulting account respects the historical specificity of volunteer settings. A form of assistance can emerge because of administrative failures, mutual aid, community capacity, solidarity, opportunity, or multiple interacting processes. Its durability may be compatible with changing participants and contested meanings. Its termination may leave important capacities or burdens behind. The task of historical theory is to identify the conditions under which particular developments can be convincingly described, explained, and compared, while allowing outcomes that differ from their initiators' intentions.

The next section will analyze temporal orders, event segmentation, and historical observation windows in greater detail. Questions about trust genesis, collective coordination, role and institutional transformation, critical transitions, path dependence, and dissolution will receive their own mechanism-specific treatments. The present section supplies the inherited objects, qualified translation rules, and evidence discipline on which those investigations depend. Its formal schema remains provisional until historical casework, explicit countermodels, and independent scholarly review establish where it succeeds, where it requires revision, and where the research object exceeds its expressive capacity.

3 Temporal Orders, Event Segmentation, and Historical Observation Windows

This section establishes the temporal conventions required to investigate the historical development of volunteer-aid relational systems. Its objective is to distinguish event order, interval duration, action and institutional timescales, the segmentation of continuing practices into records, and the visibility constraints introduced by bounded archives. The discussion proceeds from multiple temporal referents to evidence-qualified precedence, event individuation, observation windows, incomplete and selectively preserved records, comparative periodization, and three constructed histories. The method combines conceptual historical analysis with a partial, auditable representation of temporal evidence. Its formal

vocabulary supports descriptions and research design; causal significance, trust formation, institutional durability, and normative value remain questions for later analysis.

3.1 Historical Time as a Plural Analytical Coordinate

The time of an event can refer to its occurrence, the period during which an action is carried out, the moment a participant recognizes its significance, the date at which a record is produced, or the date at which that record enters a research archive. These times can differ substantially. A referral may occur during a hospital visit; the participant may discover its effect days later; an administrative classification may be entered retrospectively; and the historian may encounter that classification after the procedure has been revised. Collapsing these temporal dimensions into one date risks attributing a later description to the circumstances of an earlier action.

A historical record should therefore distinguish at least *event time*, *validity time* of an institutional statement when such a distinction is warranted, *recording time*, and *research access time*. Event time concerns the alleged occurrence. Validity time concerns the interval during which a rule, assignment, or permission is represented as effective. Recording time concerns when the statement was made or entered into a system. Access time concerns the evidential standpoint at which the researcher may lawfully and reliably inspect it. Some source types support only a subset of these coordinates. The appropriate entry is then unresolved rather than a plausible-looking imputed date.

Temporal plurality also concerns the scale of the research object. The arrival of a volunteer, the enactment of a recurring service, the transfer of responsibilities to a municipal office, and a change of institutional culture may unfold on different scales. Their relation is a matter of investigation. The interval during which a worker is present need not be the interval over which an institutional practice is reproduced. Similarly, a single dramatic action may become historically important through a delayed reconfiguration of obligations, without an immediate visible consequence.

Abbott's treatment of time as a substantive methodological problem in social analysis supplies an independent precedent for this attention to temporal ordering and process [2]. Sewell's account of historical temporalities and eventfulness likewise motivates sensitivity to historically situated significance [64]. The distinctions developed here constitute a proposed GR description for volunteer action; these earlier works neither imply the particular GR types nor establish the causal importance of any example considered in this section.

3.2 Events, Intervals, and Partially Known Temporal Relations

A dated action is often represented by a point for administrative convenience. Many actions, however, are better represented by *intervals* with an onset, an end, and possible internal stages. An informal translation can overlap with clinical registration; several volunteers may jointly coordinate a shift; the handover of a procedure may take place through repeated conversations. Point dating is defensible when its granularity is adequate for the research question and the resulting loss of overlap information is recorded.

Let e_i denote an event description with an asserted interval J_i , whose endpoints may be known exactly, bounded, or unobserved. The relation J_i preceding J_j is different from the relation J_i overlapping J_j , and both differ from evidence that e_i caused e_j . Temporal-interval reasoning provides established methods for expressing ordering, overlap, inclusion, and other relations without reducing each occurrence to an instantaneous point [3]. The present section borrows only that methodological insight. Its evidential support conditions, case boundaries, and GR interpretation are newly proposed analytical conventions.

The available source material may determine a *partial order*. An authenticated message may establish that a volunteer's request preceded a coordinator's reply, while leaving the temporal relation between the reply and an independent eligibility decision unresolved. A meeting minute may establish that two actions occurred during the same session while providing no internal sequence. In another case, conflicting timestamps, clocks set to different zones, or retrospectively entered records can make a seemingly precise order doubtful.

The researcher’s task is to distinguish an observed timestamp, an interval constraint, an inferred ordering, and an uncertain relation. Transitivity can be applied to consistently supported precedence constraints when the event identities, temporal conventions, and premise scope match. It cannot supply an ordering from a pair of missing timestamps. Likewise, partial-order consistency is a property of the accepted constraints; it supplies neither complete chronology nor explanation of why the events occurred.

3.3 Evidence-Qualified Precedence and Temporal Consistency

The analytical problem is to represent supported precedence without treating incompatible sources or absent observations as positive evidence. The proposal uses the evidential standpoint κ , the bounded case B , an observation interval I , and the research question q already defined by the historical-description record in Equation 2. An evidential criterion $\text{supp}_\kappa(x)$ means that the specified proposition has the positive support required by the research design. The operation Join_κ in Equation 3 provides a separate check on whether records refer to compatible entities.

Equation 4 defines an admitted precedence claim between two separately individuated events. Its three requirements are positive support for the interval order, sufficient provenance and event individuation for each endpoint, and consistency with other accepted temporal constraints. A join of records about the *same* episode is a separate requirement when event identification depends on such a correspondence; chronological precedence between different events does not itself require identity of their participants or records.

$$\text{Pre}_{B,I,q}^\kappa(e_i, e_j) := \text{supp}_\kappa(J_i \prec J_j) \wedge \text{Ind}_\kappa(e_i, e_j \mid B, I, q) \wedge \text{Cons}_\kappa(e_i, e_j \mid B, I, q). \quad (4)$$

Here Ind_κ means that both event descriptions have adequately justified individuation, time indices, and provenance; if either description merges sources about an allegedly identical event, the relevant cross-record identity must first pass the separate join test in Equation 3. The intervals J_i and J_j may concern different people, undertakings, and institutions. $J_i \prec J_j$ means that the first represented interval ends before the second begins under a declared endpoint convention. Cons_κ checks consistency with material contrary time evidence without demanding a complete archive. Failure of this Boolean *admission* rule withholds the particular supported-precedence classification; it should be annotated as contradiction, insufficient temporal evidence, doubtful individuation, or prohibited evidential use rather than interpreted automatically as absence of temporal succession.

The relation of *occurrence before occurrence* need not meet the stronger *interval ends before interval begins* condition. For overlapping events, a researcher may instead construct an explicitly declared relation between onsets. A correspondence of two documents to one underlying event may warrant a same-event relation rather than either temporal precedence relation. The alternatives must be typed and specified before using their transitive properties. Mixing onset order, whole-interval order, and document-production order can create spurious cycles or apparently inconsistent accounts.

A further distinction separates temporal constraint consistency from historical completeness. The absence of a cycle in the positively admitted precedence graph establishes only that the listed strict precedence constraints admit at least one consistent order. It leaves open unrecorded events, unresolved overlap, incorrect segmentation, and the possibility that a different evidential standpoint will invalidate one of the premises. An admitted precedence claim also leaves causal direction unproven: an earlier event may be a necessary condition, a coincident marker, or an outcome of a still earlier common cause.

3.4 Event Individuation and Segmentation of Continuing Practices

Events enter a historical reconstruction through segmentation rules. A shift may be treated as one episode, a sequence of individual services, a coordinated procedure involving several participants, or a series of eligibility decisions. Each segmentation changes the number of recorded events, the temporal relations available for analysis, and the interpretation of repetition. The unit should be chosen with reference to the research question, the temporal resolution of the evidence, and the possibility of tracking affected participant positions.

Three segmentation choices deserve explicit notice. *Action segmentation* distinguishes what participants attempt, enact, suspend, or revise. *Procedure segmentation* identifies ordering dependencies among actions and the positions responsible for completing them. *Practice segmentation* treats recurrent episodes as candidates for a historically continuing arrangement. An action can be completed without a procedure being completed; a procedure can be performed repeatedly without becoming a stable practice; and an institutionally recognized practice can persist administratively after its practical accessibility has deteriorated.

The boundaries of an event can also be contested. A volunteer may describe a visit as beginning with an encounter in a waiting room, while an administrator counts only the logged service interval. A recipient may experience the event as continuing until an explanation is understood or an appointment is reached. Where these descriptions have different legitimate analytical objects, the research can retain several segmentation schemes and compare their implications. A single, retrospectively imposed scheme can silence significant aspects of the history, particularly the preparatory and reproductive work that permits a visible intervention to occur.

Event individuation should preserve the three GR levels. Ontological suspension leaves the ultimate nature of an event or relational system open. At the relational level, a segmented event may participate in the constitution of a practice, position, or constraint. At the manifestation level, recorded timestamps, narratives, schedules, signs, and traces permit situated access to the event. Segmentation is itself a manifestation-level scholarly decision whose categories can affect what becomes visible and, if adopted by an institution, can later affect relational reality as well.

3.5 Historical Observation Windows and Boundary-Dependent Visibility

A finite observation window is usually a methodological necessity. Let $I = [t_0, t_1]$ denote the researcher's declared temporal boundary. An episode crossing t_0 may have originated earlier; an arrangement still operating at t_1 may change or end later. If the window begins with the formal registration of a volunteer programme, it can omit the negotiations, mutual support, informal labour, and neighborhood relations that made registration possible. If it ends with the withdrawal of the original group, it can omit successor practices and redistributed burdens.

Several distinct incompleteness problems arise. *Left-censoring* concerns an event or onset known to precede the observable interval without a precisely known earlier date. *Right-censoring* concerns an unobserved future event or ending after follow-up, where its absence within the window is recorded. *Left truncation* in an event-history sample concerns selection or entry conditions that permit observation only for histories meeting the stated eligibility and survival conditions by entry. *Right truncation* can occur when only episodes satisfying an event-based inclusion rule before an administrative cutoff enter the sample. These are different mechanisms; terminology should follow the specific sampling and observation design. A record missing because it was destroyed or never produced is another problem again.

Event-history methodology has long developed methods for transitions, repeated events, and censoring in longitudinal research [4]. Paper IX invokes these as methodological precedents, without assuming that the required sampling frames, time-to-event variables, or statistical identification conditions already exist in a historical archive. A retrospective qualitative study can register an onset or ending as interval-censored, contested, or unobserved without fitting a statistical duration model. Quantitative modeling becomes appropriate only where its outcome definitions, risk sets, observation assumptions, and data quality can be justified.

Historical boundaries also affect the population of cases being compared. A set of completed services can be systematically more visible than attempted but unsuccessful requests. A sample containing only organizations surviving to the present can omit dissolved groups that experienced the same initial conditions. The resulting apparent association between sustained participation and success may be an artifact of selection. The inquiry should document when the observed cases entered the archive, whose requests were eligible for recording, and what can be inferred about those outside the observed frame.

Table 3: Temporal observation audit for historically bounded volunteer-aid configurations.

Analytical object	Record or question required	Principal temporal or inferential hazard
Event assertion	Which action or occurrence, with whose attributed participation?	Event duplication or changes of individuation
Interval and timestamp	Occurrence, validity, recording, and access times distinguished	Clock mismatch, backdating, overlapping intervals
Ordering claim	Supported temporal relation and compatible record identities	Unsupported total order or false transitive link
Segmentation rule	Episode, action, procedure, or recurring practice criterion	Artificial repetition or concealed preparatory work
Observation window	Entry, end, eligibility, and follow-up conditions	Left/right censoring and truncation confused
State and recurrence	Declared state, transition, and continuity criteria	Counting administrative status as effective service
Archival coverage	Missing and excluded participants, failed episodes, destroyed traces	Survivorship and selective visibility
Provenance and permissions	Source production, alteration, consent and lawful use	Unauthorized linkage or retrospective attribution

3.6 A Bounded Temporal Observation Record and Evidential Reminders

For integrated research, the source material needs a temporal record that remains compatible with the typed historical-description schema. Equation 5 proposes the corresponding bounded record, indexed by case, observation interval, question, and evidential standpoint.

$$\mathfrak{T}_{B,I;q}^{\kappa} := (\mathcal{E}_I, \mathcal{J}_I, \mathcal{O}_I, \mathcal{G}_I, \mathcal{W}_I, \mathcal{X}_I, \mathcal{U}_I, \Pi_I)_{B,I;q}^{\kappa}. \quad (5)$$

Here $\mathcal{E}_I$ contains event descriptions with declared inclusion rules; $\mathcal{J}_I$ records point and interval assertions with their distinct temporal referents; $\mathcal{O}_I$ contains supported, excluded, and unresolved ordering claims; $\mathcal{G}_I$ stores alternative segmentation and granularity conventions; $\mathcal{W}_I$ describes observation windows, sample entry, and follow-up; $\mathcal{X}_I$ records transitions, recurrences, and proposed continuities under specified criteria; $\mathcal{U}_I$ retains archival gaps, censored or truncated histories, disputed accounts, and other evidential reminders; and Π_I preserves provenance, permission, source production and access histories, and revisions to the research record. The record may omit components that are irrelevant or unsupported, provided the omission remains visible.

Equation 5 can be linked to the historical-description record of Equation 2 through a declared, partial translation that preserves source identifiers and segment definitions. An event that appears in both records should retain an audit trail explaining whether the two descriptions concern the same event or different analytical resolutions. A changed permission, corrected timestamp, revised segmentation, or altered boundary can invalidate a previously admitted correspondence. Rechecking the relevant joins then becomes part of the research workflow.

Table 3 presents the proposed minimum audit questions for temporal research. The table is intended as a design aid for finite cases and does not mandate exhaustive collection of sensitive personal histories.

The primary gain is epistemic traceability. A finite historical account can state what is temporally supported while retaining uncertainty about the remainder. The schema cannot guarantee a representative sample, identify causal effects, or generate legal authorization. Nor does it transform recollected significance into a dated fact. Its value depends on disciplined use of partial evidence.

3.7 Retrospective Archives, Silences, and Asymmetry of Documentation

The production of historical evidence is itself socially and institutionally organized. A coordinator may retain task assignments and completion counts while a recipient has access principally to personal recollection. The official archive may document authorized volunteers more thoroughly than informal

helpers, rejected applicants, or people who declined the offered arrangement. Disagreements can arise because the participants witnessed different aspects of an episode, were subject to different information rules, or interpreted its significance differently.

Source criticism should record the production conditions of each trace. A file date can be a modification timestamp rather than the original event date. A daily report can summarize several underlying episodes. A classification introduced late in a programme's history can be applied retrospectively to earlier cases. A celebratory institutional account may omit dissent or failed attempts; an individual retrospective narrative may be selective through memory, changing expectations, or later experiences. Neither type is automatically privileged solely by being administrative or personal.

When histories contain politically or ethically unequal positions, archival asymmetry matters especially. Some participants may have fewer opportunities to contribute records or contest official descriptions. Research involving vulnerable people or sensitive institutional settings must also consider confidentiality, consent, proportionality, and limits of lawful access. A researcher should not seek to repair archival incompleteness by reconstructing identities or personal experiences without suitable authorization and protection. Epistemic incompleteness can be an appropriate conclusion.

The manifestation level of GR includes both the evidence left by historical events and the conditions that make particular traces visible. Manifestations may influence the ongoing system: a repeated narrative about volunteer success can shape funding decisions, staff responsibilities, and participant expectations. Such feedback is a proposed mechanism requiring dated evidence about how the narrative circulated and what decisions relied on it. The mere existence of a report provides neither proof of its reception nor of the consequences attributed to it.

3.8 Sequence, Duration, Recurrence, and Candidate Mechanisms

Chronology supports several different descriptions. An *ordered sequence* records a series of event relations under a declared granularity. *Duration* concerns the time between specified beginnings and endings, which may remain uncertain or interval-bounded. *Recurrence* concerns the reappearance of events or practices under an explicit similarity rule. *Persistence* concerns the continued presence of a selected organizational, relational, or practical property. The choice of property determines what can count as continuous.

These distinctions are important for proposed mechanisms of trust genesis and institutionalization. Repeated visits can establish that similar actions occurred more than once. They may provide opportunities for participants to learn and adjust expectations. Evidence of actual reliance, changed vulnerability, willingness to continue, refusal, repair after failure, or negotiated commitments is additionally needed to assess whether the relevant trust relation changed. A programme can persist administratively while the participants, recipients, and practical conditions of service turn over substantially.

Historical explanations should identify an intermediate pathway connecting proposed causes and effects. Suppose recurring language assistance precedes the establishment of a dedicated hospital navigation desk. Plausible accounts include learning through volunteer experience, increased patient demand, an independent institutional policy change, an external funding programme, or several mutually conditioning mechanisms. Temporal precedence can rule out certain impossible sequences, provided the dates are reliable. It cannot by itself discriminate among the remaining accounts.

A historically informed GR explanation should therefore track counterevidence and alternatives. The question is what each candidate mechanism predicts about transitions, decisions, capacities, and surviving traces, and what observations would count against the explanation. The dynamical vocabulary of feedback or critical transition can help articulate hypotheses, but its use does not establish a physical bifurcation or attractor. Such terms require domain-specific operational choices and stronger empirical or mathematical support in later sections.

3.9 Periodization, Boundary Sensitivity, and Comparative Histories

Periodization groups historical intervals into analytically meaningful phases. A researcher might describe initiation, repeated enactment, formal recognition, transfer, and dissolution. This classification can clarify the changing conditions of a volunteer practice, especially where the interval boundaries correspond to documented changes in authority, membership, accessibility, or coordination. Yet phase boundaries remain provisional analytical judgments, sensitive to the research object.

One programme may have been informally active for several years before official recognition. Periodization based on incorporation dates would record a short institutional history; periodization based on actual shared work would include an earlier phase. A history centered on recipients may begin when access was first materially possible. These can be legitimate, partially overlapping descriptions. Comparative work should identify which temporal boundaries, inclusion rules, and continuity criteria can be aligned across cases, and what remains outside each aligned projection.

The basis of a meaningful comparison is therefore more demanding than matching calendar dates or institutional titles. Episodes should be comparable with respect to relevant action types, population entry rules, observation completeness, and historical alternatives. Temporal orders can be compared even when exact durations are uncertain, provided the supported precedence structure is preserved. Duration comparisons demand stronger time measurement and consistent beginning and ending criteria. A comparison of rates or hazards demands a defensible denominator, risk set, and censoring account.

Boundary sensitivity should be examined as part of the research design rather than treated as a statistical afterthought. If a purportedly transformative action becomes insignificant when the interval begins a year earlier, the earlier causes and their traceability deserve attention. If an apparently stable practice dissolves immediately after the chosen endpoint, the endpoint was consequential for the claim of stability. Such tests can reveal dependence on narrative convenience without proving the correct boundary uniquely.

3.10 Constructed Cases of Ambiguous Chronology and Historical Coverage

Three hypothetical cases demonstrate the distinct problems of temporal relation, observation-window design, and source asymmetry. They are deliberately constructed analytical examples, not reports about named institutions or research participants.

Case A: overlapping language-support episodes. A volunteer translates an appointment instruction during a clinic visit. A physician explains a separate administrative requirement around the same time, and a receptionist completes a record later that day. The log shows the same date for all three entries. A retrospectively produced narrative attributes successful navigation to the volunteer intervention. A stronger reconstruction distinguishes overlapping activity intervals, the moment the requirement became accessible to the patient, and the later data-entry time. Without finer temporal or participant evidence, the ordering of the explanations and their separate contributions remain uncertain. Calling the recorded sequence a completed causal chain would exceed the archive.

Case B: selectively observed neighborhood transport. A community transport effort begins informally among neighbors, later registers as a volunteer group, and eventually receives public funding. A researcher obtains only the post-registration ledger, which includes completed trips and excludes unsuccessful requests made through informal channels. The formal start date truncates much of the group's prior history, while the ledger's sample may be selectively concentrated on successful episodes. Apparent improvement in reliability after registration can reflect genuine coordination, changed inclusion rules, external resources, or archival selection. Different methods and additional evidence would be needed to estimate any effect of formal registration.

Case C: emergency assistance with an unobserved ending. After a local disruption, volunteers help coordinate temporary accommodation. The archive closes while the programme remains active, and later records are unavailable. The group may subsequently transfer its procedure to a municipal service, end the assistance, or remain active under another name. A responsible account records the observed recurrence and the open-ended follow-up; it preserves alternative successor histories. The lack of a documented

ending at the archive's cutoff is compatible with several materially different trajectories and supplies no positive evidence of indefinite continuity.

At the ontological level, each case maintains suspension regarding the ultimate constitution of historical social objects. At the relational level, it presents rival possibilities concerning coordination, access, institutionalization, and continuity. At the manifestation level, it foregrounds dates, categories, testimony, administrative logs, and missing records through which a candidate history becomes visible. The cases show how temporal method can protect relational analysis from both false precision and unwarranted narrative confidence.

3.11 Historical Inference Obligations and Interfaces with Later Sections

The temporal framework supplies conditions for describing the historical emergence of a volunteer-aid relational system. It makes action individuation explicit, supports partial temporal ordering, distinguishes event and record times, and preserves windows of observation and missingness. A proposed account of nucleation can use these descriptions to ask which first contacts and coordination constraints were present. An account of trust genesis can ask whether repeated actions preceded documented changes in reliance. A study of role emergence can examine when a formal title, practical capacity, and recognized authority changed relative to one another.

The limits of the method are equally constitutive of its usefulness. A well-supported chronology can be historically significant without establishing that a specific volunteer action caused a system-level change. A plausible event segmentation can aid interpretation without uniquely determining the event ontology. A documented recurring practice can be valuable for participants without establishing general justice, democratic legitimacy, or legal obligation. Such conclusions demand additional evidence and disciplinary premises.

Subsequent sections will investigate the mechanism-specific conditions of initial coordination, historically situated trust, capability formation, role succession, and practices that acquire institutional durability. The present section supplies the timing and observation conditions for those inquiries. Its procedures remain revisable under improved archives, disagreement among participants, alternative periodizations, and stronger formal or empirical tests. The working claim is a scoped methodological one: explicit temporal distinctions make historically conditional propositions more open to audit, counterexample, and responsible revision.

4 Relational Nucleation and Conditions of Initial Coordination

This section develops a preliminary account of relational nucleation in volunteer-aid histories: the circumstances in which initially separate actions begin to form a recognizable, potentially reproducible arrangement of interdependent positions and practices. Its role is to connect the historical-description and temporal conventions of Sections 2 and 3 with the later analyses of trust, role emergence, and institutionalization. The objective is to specify what would count as evidence of initial coordination, how a candidate arrangement differs from a coincident encounter, and which alternative explanations could defeat a claim of historical initiation. The section proceeds through encounter opportunities, reciprocal adjustment, three-level GR descriptions, an evidence-indexed nucleation dossier, boundary and threshold conditions, failure cases, reproduction prospects, institutional conditions, and constructed comparisons. The mode of argument is conceptual and historical, supported by a deliberately limited formal representation. Nucleation is treated as a question-dependent analytical designation; it implies neither an established physical phase transition nor an intrinsically beneficial social development.

4.1 Initial Encounter, Coordinated Episode, and Relational Formation

An initial encounter is an occasion on which positions become mutually accessible in a particular setting. A volunteer may notice an unaddressed practical difficulty, a recipient may ask for assistance, or a

coordinator may identify an opportunity to bring distinct contributions together. These occasions differ in whether participants know one another, share expectations, possess permission to act, and can alter one another's practical opportunities. In a historical account, the first *recorded* encounter also differs from the first *actual* encounter. An archive may begin when a practice becomes administratively reportable, long after informal episodes have occurred.

A coordinated episode involves a stronger proposition. At least two analytically distinguishable positions contribute actions whose temporal order, practical fit, or mutual adjustment matters to a jointly relevant undertaking. Such coordination can be brief, unequal, tacit, or mediated. It can also fail to address the original need. For example, a volunteer who translates a direction while a receptionist changes an appointment procedure may participate in one coordinated episode if their contributions actually fit together in making access possible. Simultaneous presence at the same reception desk establishes only an encounter opportunity until the relevant action correspondence is supported.

Relational formation is a historically extended claim. It concerns the emergence of a patterned arrangement whose roles, expectations, procedures, or capacities become available to subsequent episodes, possibly with different participants. The early appearance of these properties may be tentative and contested. A research design should therefore distinguish an *encounter*, an *initially coordinated episode*, a *candidate relational nucleus*, and evidence of *reproduction or stabilization*. The latter stages have their own evidential obligations; they cannot be retrospectively read back into the earliest meeting merely because the eventual institution became durable.

The word *nucleus* identifies a bounded set of relations that may support further organization, not an indivisible natural object or a predetermined developmental sequence. A nucleus can dissolve immediately, be displaced by an established service, persist through repeated enactment, or become the starting point of an institution. It may also generate exclusionary routines or unequal burdens. Historical significance consequently turns on the particular trajectories and alternatives investigated, including persons and practices that did not enter the resulting arrangement.

4.2 Activity Settings and the Availability of Encounters

Opportunities for coordination emerge within historically organized settings. A public-service corridor, a community meeting, a neighborhood communication channel, or a temporary response center can make certain needs and competencies mutually visible. Their spatial and administrative design determines who can enter, whose presence is recorded, and which kinds of action are recognized. The creation of a shared venue can increase occasions for contact without assuring mutual understanding or a subsequent practice.

Feld's account of the focused organization of social ties emphasizes the role of activity foci in structuring interactions and friendship-network patterns [30]. It supplies a useful but delimited sociological precedent for examining how practical settings concentrate opportunities for encounter. The present inquiry extends the question to volunteer-aid coordination with a different outcome variable: the historical formation of a supported practice or relational arrangement. Feld's original study neither reports such volunteer-aid cases nor establishes that repeated contact produces ethical support.

The encounter setting should be described through its opportunities and exclusions. A multilingual notice may invite one group while remaining inaccessible to another. A registration requirement may make a volunteer's contribution legitimate within a service and simultaneously obstruct informal participation. A digital coordination channel may reduce scheduling costs for connected participants while excluding those without devices or linguistic access. Thus, the density of encounters observed in the archive may be an effect of selection and visibility rather than a reliable measure of generalized coordination.

The relational boundary is likewise conditional. A receptionist, interpreter, applicant, accompanying family member, and external referral office may participate in a single episode even when their organizational memberships differ. Conversely, nominal membership in one volunteer association does not establish that all members contributed to the same coordination. A defensible initial-nucleation claim specifies the setting, participant positions, action types, observation interval, and plausible adjacent arrangements that may independently explain the observed event.

4.3 Reciprocal Adjustment and Practical Interdependence

An initially coordinated action sequence can be identified by evidence of practical interdependence: one contribution shapes what another can do, when it can be done, or which option becomes accessible. Interdependence may operate through direct communication, complementary timing, the transfer of an object, delegation, or a mediated procedure. Its direction and strength are historical questions. A recipient who changes the proposed task, a volunteer who adapts to a participant's refusal, and a staff member who adjusts a queue all exemplify possible contributions to the configuration.

Interdependence should be assessed against a concrete alternative. In one setting, translation is necessary for a particular referral to become usable; in another, existing accessible material would enable the referral without a volunteer. The proposed relation can therefore be consequential under one condition while redundant under another. Such conditionality is compatible with an account of formation. It also prevents retrospective stories from crediting an early volunteer encounter for an institutional service that would have emerged through a fully independent policy process.

Reciprocal adjustment does not require balanced bargaining power, equal effort, or symmetric benefit. A participant may have limited means of expressing an objection, and institutional authority may constrain the options of several parties. The research object is the historically organized relation among their contributions, including accommodation, resistance, refusal, and unilateral imposition when these appear in evidence. One-sided compliance can produce an orderly-looking sequence without the reciprocal practical adjustment that a stronger coordination claim would require.

Researchers should identify evidence at the level of the selected actions: dated requests and responses, revisions to an instruction, accepted and rejected referrals, corroborated handovers, or independently documented changes in task allocation. Statements that the parties "worked together" have limited analytic content until the claimed coordination is linked to demonstrable episodes. Records describing only completed services risk omitting unsuccessful approaches, unrecognized care work, and individuals who withdrew from a proposed arrangement.

4.4 Three-Level GR Analysis of Initial Relational Formation

The three GR reality levels provide different functions in analyzing initiation. At the *ontological level*, the ultimate nature and independent persistence of the represented relation remain suspended. Describing a volunteer-aid practice as a new relational being commits the analysis to a usable historical abstraction, with its criteria and limitations made explicit, rather than to a metaphysical discovery of an independently bounded social substance.

At the *relational level*, the object is a historically efficacious configuration of positions, capacities, dependencies, and possible reciprocal adjustments. A candidate nucleus may matter because it introduces a workable pathway, changes who can address a practical difficulty, or creates a role that can be occupied in later episodes. This requires evidence of the specific contribution. A single unrepeatable intervention may have substantial effects without creating a reproducible practice; an emerging practice may have limited immediate benefit while generating a new coordination capacity. Relational efficacy and later stability therefore remain analytically distinct.

At the *manifestation level*, initial formation becomes accessible through records, memories, rules, representations, and situated conduct. The first recorded role title may follow an already established informal division of work. A newsletter can celebrate a programme's founding while omitting preceding contributions or failed alternatives. Manifestations may also enter the history as actions: naming a coordinating group, publishing a meeting time, or documenting a common procedure can alter who participates and what expectations become feasible. A claim of manifestation feedback requires evidence of such uptake and effects, not only the existence of a document.

The levels are related without being collapsed. An archived meeting minute can support the existence of an institutional communication; in conjunction with action records, it may support a claim that contributors coordinated. It cannot by itself demonstrate that the coordination was effective, consensual, just, or institutionally legitimate. The distinction protects the research against both treating paperwork as a

complete historical reality and dismissing symbolic acts that may themselves alter the practical trajectory.

4.5 Evidence-Indexed Dossier for a Candidate Relational Nucleus

To record a candidate formation episode, let B denote a declared relational boundary, I a bounded observation interval, q the historical research question, and κ the evidential standpoint. Let h designate a proposed initiation history assembled from admissible event descriptions. Equation 6 proposes a typed dossier whose elements are separately inspected before a nucleation claim is admitted.

$$\mathfrak{N}_{B,I,q}^{\kappa}(h) := (O_h, P_h, A_h, C_h, R_h, X_h, U_h, \Pi_h)_{B,I,q}^{\kappa}. \quad (6)$$

Here O_h specifies encounter opportunities and their access conditions; P_h identifies participant positions and the scope of claimed correspondence; A_h contains bounded actions and procedures; C_h proposes supported practical couplings; R_h records candidate re-entry, transfer, or reproduction conditions without presuming their realization; X_h lists competing initiation histories and relevant external enablers; U_h records missing, contested, excluded, or out-of-scope information; and Π_h preserves source provenance, temporal conventions, and permission restrictions. The dossier is a research object assembled from typed entries. It is neither a probabilistic generative model nor a sufficient explanation of the emergence of an institution.

The distinction between C_h and R_h is especially important. A sequence of interdependent actions may be well documented even where nobody is able or willing to repeat it. Conversely, a future-oriented schedule may be written before any coordinated service occurs. Neither one alone establishes an historically realized recurring practice. The dossier separates evidence of an initial coupled episode from evidence of a workable possibility of continuing the arrangement, and from later observations of actual continuation.

The inherited historical-description record in Equation 2 and its qualified join rule in Equation 3 supply prerequisites for assembling P_h , A_h , and Π_h . The temporal record in Equation 5 specifies how event and recording times, interval relations, and observation windows constrain h . A dossier containing records from different institutions or participant positions should preserve their identity and authorization conditions; a common case label does not make all reports compatible.

4.6 Minimal Admission Conditions and Histories of Nonformation

A candidate nucleus should be admitted only under declared and positively supported conditions. The purpose of the admission rule is to prevent an analyst from identifying formation merely because several people were present or because an outcome occurred after their meeting. Let $\text{supp}_{\kappa}(g)$ mean that condition g is positively supported at standpoint κ and for the specified case, while retaining its underlying evidence and qualification. Equation 7 gives a sufficient rule for recording *supported initial coordination*.

$$\text{NucAdm}_{B,I,q}^{\kappa}(h) := \bigwedge_{g \in \{\text{Type}, \text{Correspond}, \text{Time}, \text{Coupling}, \text{Provenance}, \text{Permission}\}} \text{supp}_{\kappa}(g \mid h, B, I, q). \quad (7)$$

The type condition requires compatible position and action types; correspondence requires a supported relation among the relevant descriptions; time requires an admissible temporal arrangement; coupling requires evidence that at least two distinguishable positions contributed interdependent actions to the same bounded undertaking; provenance identifies the sources and their production conditions; and permission concerns the legitimate use of those sources. In a single directly observed episode, a cross-record join may be trivial, but the claimed identity and temporal conditions remain explicit. The rule records a *candidate coordinated nucleus*, not evidence of its growth, durability, trust, or beneficence.

The rule has three evidential outcomes. A *supported* claim meets its guards. An *excluded* proposed history conflicts with positively established facts or a validated scope condition, such as evidence that purported participants were at mutually incompatible locations or that the alleged actions concerned separate cases. An *unresolved* claim lacks sufficient information to decide. Failure of the conjunction in

Equation 7 does not entail historical nonformation; a missing record and a decisive contrary record have different implications. A stronger assertion that no relational nucleus formed requires an observation strategy adequate for meaningful negative evidence.

A historical dossier can also distinguish failed *attempts* at coordination from the absence of any attempt. A meeting may reveal incompatible expectations, an authorized role may remain vacant, a request may be rejected, or a proposed procedure may lack a workable handover. Failed attempts may still alter later relationships by informing participants, creating new boundaries, or discouraging future contributions. Such significance must be examined on its own terms rather than described retrospectively as an early successful nucleus merely because a different service eventually emerged.

4.7 Participation Thresholds, Complementarity, and Early Coordination

Initial coordination depends partly on the configuration of capacities and participant expectations. Certain undertakings need complementary contributions within a narrow interval: accessible instructions, a translator, a scheduling authority, and an actually usable appointment slot. Others can begin through a single offer and later recruit additional contributions. These different structures require different conditions for an undertaking to become available.

Granovetter's threshold model demonstrates how collective participation outcomes can depend on the distribution of actors' thresholds, beyond group averages [34]. It is a specific binary-choice model of collective behavior, and it should not be equated with volunteer-aid formation. A recipient's permission, competing care responsibilities, and procedural authorization may be irreducible to a simple number of preceding participants. The relevant insight is that early participation patterns can condition what subsequent actions become feasible; the proposed threshold vocabulary must be matched to the actual mechanism and evidence.

Two groups with similar numbers of volunteers can have different prospects for forming a shared practice. One may have the relevant complementary skills, safe access, a recognized referral route, and a process for resolving incompatible availability. Another may have more individuals but no shared time or authorization to coordinate. Conversely, a narrowly concentrated competence can make coordination possible in the short term while increasing succession fragility. The question is not whether there are sufficient persons in the abstract, but which typed contributions can be jointly deployed under the case's actual constraints.

A useful comparative design examines both positive and failed initiation episodes while measuring initial conditions independently of the eventual outcome. If the existence of a successful procedure is used to infer that compatible conditions must have been present, the argument becomes circular. Evidence should instead specify contemporaneous resource and action opportunities, relevant invitations and refusals, permitted coordination channels, and the sequence in which the necessary contributions became mutually available.

4.8 Shared Expectations, Conditional Cooperation, and Initial Reliance

Mutual expectations can facilitate the transition from isolated assistance to a shared practice. Participants may expect an agreed meeting time, a reciprocally intelligible response, a safe means of communicating changes, or reliable follow-through on a delegated task. Such expectations can exist before personal trust and without a common moral ideology. They can be provisional, established by explicit procedural rules, or inferred through a limited history of interaction.

Ostrom's account of collective action and evolving social norms examines heterogeneous participant types and the effects of groups, goods, rules, and information concerning earlier conduct [51]. Those findings and models concern collective-action problems in their own scope. The GR application proposed here asks how similar categories of information might shape volunteer-aid coordination while preserving the different legal, practical, and ethical characteristics of helping relationships. Nothing in the cited account establishes a general tendency for volunteer groups to become trustworthy or democratically legitimate.

An initial episode can create expectations through observed conduct. A promised interpreter arrives, an organizer honors a recipient's refusal, or an institution visibly repairs a failed handover. Such observations can alter what participants expect on the next occasion. The historical question is whether the relevant expectation was actually updated and whether the change affected subsequent choices. A first successful episode supplies an occasion for learning; it does not conclusively demonstrate the genesis of trust, which will receive a distinct treatment in the following section.

Some expectations are unequal or coerced. An institutional rule may make an applicant anticipate compliance without believing the arrangement is trustworthy. A vulnerable recipient may rely on an offered procedure because no accessible alternative exists. A volunteer may return because of organizational pressure rather than freely renewed commitment. Analyses of nucleation should register these possibilities alongside consensual cooperation. The formal dossier records observable or credibly reported expectations and action constraints rather than converting repeat participation into evidence of positive regard.

4.9 Early Boundaries, Refusal, and Participants Outside the Nucleus

Every candidate nucleus has a boundary determined partly by the research design and partly by the historical conditions of participation. A service may define eligible recipients, a particular schedule, language requirements, or volunteer qualification rules. These restrictions can coordinate action by clarifying responsibility and safeguarding sensitive tasks. They may also create overlooked groups whose needs are absent from the resulting service records. Early boundaries are therefore relevant to the system's historical formation, independent of whether a later normative judgment approves them.

A relational history should identify nonparticipation where the evidence permits. Some people never received an invitation; others could not enter the proposed setting, refused its terms, or participated informally without being classified as volunteers. Their circumstances can explain why a visible arrangement formed in one part of the network while other relational possibilities were foreclosed or remained dormant. A history inferred only from registered members risks treating a selected administrative set as the full population of relevant positions.

Refusal is an action with possible generative consequences. A person who declines an unsuitable referral may lead organizers to redesign the procedure; repeated refusals may instead cause a proposed service to end. Such outcomes should not be redescribed as cooperation simply because they later influenced a programme. The analytical object can be the emergence of a new relation of negotiation or contestation, distinct from the formation of a service-delivery practice.

Historical evidence about nonparticipation is often asymmetrical. Registries frequently record accepted participants more systematically than rejected applicants or unsubmitted requests. Consent and privacy rules can appropriately restrict the reconstruction of individual experiences. When the absent population cannot be bounded, a study should report the limitation rather than infer a universal participation rate or comprehensive inclusiveness from the accessible records. This lesson carries forward the bounded-inference discipline of Paper VIII without treating Paper IX as another political-economic scorecard.

4.10 Conditions of Re-Entry, Repetition, and Relational Reproduction

A candidate nucleus becomes relevant to a longer system history when it leaves possibilities for later entry, adjustment, or reproduction. A volunteer may preserve a process note, participants may agree on a subsequent meeting, or an agency may make a referral contact reusable. These traces show different prospective affordances. A scheduled second encounter is an intention; a second enacted episode is an observation; a stable and transferable procedure is a stronger claim about the historical arrangement.

Reproduction can occur with partial change. A subsequent episode may involve different volunteers, modified language support, or a transferred contact list while preserving some aspect of the original coordination. The researcher must select the continuity criterion: personnel, task grammar, participant access, administrative authorization, practical competence, or collective expectations. Continuity along

one axis may coexist with discontinuity along another. An institution may retain its title while changing the accessible service; a recurring practice may survive after the original group dissolves.

This section proposes treating repetition as evidence about a selected action type and period, while leaving the genesis of trust, institutional rules, and distributive effects for independent analysis. The earliest recorded repetition can follow many unobserved attempts, and a continuing practice may depend on an external organization already supplying the necessary infrastructure. The capacity to reproduce a nucleus is therefore historically conditioned rather than contained solely within a founding act.

The practical test is to compare the purportedly reproduced relation across episodes: which participants or positions correspond, which procedure is carried forward, which conditions change, and what evidence of actual use survives. A comparison should remain sensitive to entry and exit of participants and to records of unsuccessful attempts. Where reproduction relies on significant unpaid care work or concentrated expertise, the longer-term question concerns how the arrangement is sustained and what costs it redistributes. These are possible downstream mechanisms, not prerequisites silently incorporated into the definition of initial coordination.

4.11 Institutional Enablers, Alternative Histories, and Causal Attribution

Relational nuclei arise within already structured environments. Public authority, material facilities, shared transport, communication infrastructure, funding, safety requirements, and professional knowledge can enable or constrain an initial arrangement. A volunteer's first visible contribution may depend on years of previous organizational work. Treating the volunteer as an isolated historical origin would hide the relations that made the action possible.

A stronger explanatory claim identifies a pathway through which initial coordination changed later feasible options. The pathway may involve skills transferred between positions, an adopted scheduling procedure, improved information access, or altered recruitment patterns. Candidate explanations should be compared with independent drivers: an external policy change, rising demand, an existing informal network, a funding renewal, or a broader institutional reform. Such factors may jointly condition the same observed outcome rather than compete as mutually exclusive stories.

The historical origin of a named group should therefore be separated from the origin of its constituent practice. A newly registered association may inherit methods already used by informal helpers; an independently organized volunteer group may develop within a longstanding municipal programme. The formal date of registration can be important for legal authorization and archive availability while representing only one transition in the relational history.

Causal attribution demands evidence that differentiates the candidate stories, such as contemporaneous decision records, changes in alternatives, process descriptions, independent testimony, and episodes where proposed inputs were absent. Observed coordination in a bounded case can be genuine even where its influence on subsequent institutional history remains unidentified. The next sections can then investigate trust, repeated cooperation, and institutional change using the initiation record as a qualified starting hypothesis, not as proof that a beneficial historical trajectory was set in motion.

4.12 Evidence Audit for Relational Nucleation Claims

Table 4 summarizes the evidence families required to separate encounter, coordination, candidate re-entry, and demonstrated formation. Its rows describe research obligations rather than a universal checklist. Each design must specify its own observation frame, counterevidence rules, permissions, and relevant types of participant position.

The table has implications for both positive and negative cases. A supported action coupling can warrant the claim that a coordination episode occurred even if continuation failed. A later functioning programme can warrant a claim of continuing practice even where its actual initiating interactions remain uncertain. The evidential burden must track the object of the claim. Historical formation, causation, legitimacy, and durability cannot be inferred from a shared administrative record without additional premises.

Table 4: Evidence requirements and alternative interpretations in the analysis of initial relational nucleation

Object of inquiry	Evidence needed for a supported candidate	Principal uncertainty or rival interpretation
Encounter opportunity	Dated and accessible setting, participant entry and interaction occasion	Selective attendance or administrative visibility
Position and identity	Supported identity or role correspondence across the proposed episode	Shared label, anonymous entry, or changed role identity
Temporal order	Compatible action intervals, onset and handover constraints	Retrospective dating, overlap, or conflicting clocks
Action coupling	Recorded adjustment, complementarity, or dependence among contributions	Simultaneous but independent activities
Re-entry opportunity	Documented invitation, transferable contact, workable next step	Unrealized schedule or inaccessible permission
Reproduction	Later corresponding enactments under declared continuity criteria	Organizational title retained with changed practice
Participation boundary	Eligibility, refusal, excluded positions and denominator where available	Selection into the archive and unobserved requests
Historical attribution	Mechanism traces, intervening choices, external drivers and counterevidence	Independent reform, demand shift, or retrospective founder narrative

Observational ethics also matters at initiation. The pursuit of more complete histories may expose people who declined help, acted informally, or were excluded by a service. An ethically acceptable study may retain unresolved identities or withhold sensitive records, preserving those limitations in U_h and Π_h of Equation 6. No information-collection activity is implied by the formalism, and identifying the existence of a coordination mechanism confers no institutional authority to collect personal data.

4.13 Constructed Initiation Histories and Section-Level Findings

Three constructed histories illustrate distinct relations among first contact, interdependence, and prospective reproduction. They are hypothetical analytical examples, without claims about actual institutions or participants.

Case A: language-navigation coordination. A volunteer notices that several visitors have difficulty locating an administrative office. On one occasion, the volunteer supplies a translated direction while a receptionist modifies the way appointments are communicated. Records show that the two actions concerned the same visitor and were mutually adjusted. A first coordinated episode is thus supportable. A later schedule proposes an informal language-support contact, but no subsequent enactment is preserved. The evidence warrants a candidate nucleus under Equation 7 if provenance and permission guards are satisfied. It does not warrant sustained trust or a durable programme. An alternative account in which an independent accessibility reform produced the later service remains open.

Case B: neighborhood transport and mismatched capacity. Three residents offer transport on different days to people attending a community appointment. Their intentions are compatible in the abstract, but no organizer aligns the times, the required vehicle is unavailable, and the only documented request is declined. The record supports an attempt to coordinate and may support a newly recognized shared problem. It does not meet the action-coupling requirement for a completed transport episode. A subsequent municipal service may use the group's suggestions, but an influence claim would require dated evidence of transmission and uptake. Labeling the unsuccessful offer the nucleus of the municipal service would exceed the presently described evidence.

Case C: emergency accommodation and institutional succession. Following a local disruption, volunteers and an accommodation provider agree on an initial handover procedure and use it for several episodes. The arrangement has documented reciprocal adjustment and later enactments, although it depends on a temporary facility. When the facility closes, a public office adopts a related procedure while most original volunteers leave. Several histories remain plausible: a successfully transferred practice, a separate new arrangement, or a partial succession whose access effects differ by recipient group. The candidate nucleus is distinguishable from the question of whether the *same* relational system persisted.

That question demands specific continuity criteria and evidence about access, authority, and procedure after transfer.

The cases identify a conditional historical claim: an initial configuration of interdependent actions can create opportunities for further coordination under enabling conditions, with several possible subsequent trajectories. The analytical object is the supported formation of a particular relation at a particular evidential standpoint. Trust, institutionalization, historical feedback, and normative legitimacy remain separate research questions. Section 5 will examine trust genesis and differentiated vulnerability in relation to these initial coordination histories, while preserving refusal, dependence, and institutional coercion as possible alternatives to freely established reliance.

5 Trust Genesis, Reliance, and Historically Differentiated Vulnerability

This section examines the historically conditional emergence of trust in volunteer-aid relations after, during, or independently of initial coordination. Its role is to establish a relational account of trust genesis with enough resolution to distinguish enacted cooperation, attributed trustworthiness, practical reliance, and exposure to another's discretion. Its objective is to identify which historical observations could support a trust claim, how asymmetrical opportunities modify its meaning, and why subsequent reliability, disappointment, and institutional support may generate divergent relational trajectories. The analysis first separates candidate trust phenomena, then reconstructs three levels of GR description and situated vulnerability, introduces an evidence-indexed dossier and a deliberately conditional admission rule, and examines learning, refusal, institutional mediation, competing mechanisms, and constructed comparison cases. The method is conceptual and comparative-historical, informed by independently developed scholarship on trust and supported by a limited formal vocabulary. The argument proposes an account of the circumstances in which particular trust relations can become historically consequential. It does not posit a general law that repeated help necessarily produces trust.

5.1 Coordinated Conduct, Practical Reliance, and Trust Attribution

A volunteer and a recipient may complete several coordinated actions without sharing an affirmative expectation about either person's conduct beyond the present task. A hospital visitor may follow a volunteer's directions because the service desk assigns that volunteer to the task, because no other directions are available, or because an earlier interaction demonstrated relevant competence. These histories can yield similar observable movement through a building while involving different expectations, alternatives, and degrees of discretionary reliance. Cooperation describes a relation among actions. Reliability concerns a pattern of performance assessed against a sufficiently specified undertaking. Dependence concerns the practical availability of alternative channels. A trust attribution concerns a person's or position's situated willingness to accept exposure to another's future action under some meaningful uncertainty.

The organizational-trust model developed by Mayer, Davis, and Schoorman differentiates antecedents of perceived trustworthiness, risk, trust, and relevant behavioral consequences [45]. Rousseau and colleagues' interdisciplinary treatment provides another precedent for linking trust with expectations and vulnerability across disciplinary boundaries [58]. These works originate in their own literatures and carry distinct assumptions; this paper develops a separate historical and GR reading of volunteer-aid action. In particular, an observed episode is a potential source of evidence about trust formation, not direct access to an internal psychological state or a guarantee about later conduct.

A retrospective statement such as "we trusted the volunteers" may express a current evaluation of earlier events, a relation experienced at the time, or a collectively adopted description of a successful programme. The research task is to retain the distinction among the statement's utterance time, the attributed relation's claimed time, and independent traces of relevant expectations or decisions. A record of service completion supplies performance evidence. Its contribution to a claim about the trust of a particular recipient depends on the recipient's informational access to that record, their opportunity to act

on it, and the referent of the alleged trust. Historical reconstruction therefore proceeds through position- and activity-specific claims rather than a single organizational trust score.

5.2 Historically Differentiated Trust Objects and Relational Positions

A trust relation requires an explicit object: the conduct, competence, discretion, commitment, or institution to which an expectation pertains. A visitor may trust a volunteer to communicate the location of a clinic while withholding trust concerning confidential personal information. A coordinator may entrust scheduling to a volunteer yet keep eligibility decisions with authorized staff. A volunteer may regard a recipient as a reliable narrator of immediate needs without expecting that person's access to relevant administrative information. Distinct histories can thus support issue-specific trust while leaving other domains unresolved.

The roles of trustor and trustee are historically located analytical positions. Their allocation may change from one episode to another. A recipient initially reliant on translation may later serve as a cultural mediator for new volunteers. A volunteer who earlier held task-specific discretion may later require assistance from a recipient-led group. These changes provide reasons to track the particular task, temporal interval, position identity, and decision rights of each attribution. The mere reuse of the same organizational label does not preserve the same relationship of trust across personnel, task, or governance changes.

McAllister's organizational investigation distinguishes cognitive and affective dimensions of interpersonal trust, drawing on a field study of managers and professionals [46]. The distinction suggests a useful research question about how accounts of competence, care, identification, and interpersonal familiarity develop differently. The empirical design and participants of that study differ from heterogeneous volunteer-aid settings. Here the proposed application remains conditional: locally interpreted evidence of care may alter reliance even where task performance remains uncertain, and repeated competent performance may enable coordination even where affective identification is limited. Neither pattern should be inferred from the duration of a relation alone.

5.3 Ontological Suspension, Relational Efficacy, and Historical Manifestations

At the level of *ontological reality*, the ultimate nature of trust and the existence of any universal social substrate are suspended. The present analysis can work with historically consequential expectations, choices, commitments, and attributed dispositions without resolving whether trust is fundamentally psychological, dispositional, normative, institutional, or some mixture of these categories. The formal descriptions below identify questions and relations useful for research; they make no claim to exhaust trust's ontology.

At the level of *relational reality*, trust may become a sufficiently stable, causally or generatively consequential configuration among historically constituted positions. Its significance can appear when a participant delegates an undertaking, accepts limited information, discloses a concern, permits discretionary judgment, or continues cooperation after an uncertain episode. Such effects remain conditional on power, resource access, expected performance, institutional guarantees, and the participant's opportunity to revise the arrangement. Relational efficacy includes changes to feasible action and patterns of reliance, even where the parties characterize their experience differently.

At the level of *manifestation reality*, trust becomes accessible through statements, referrals, protocols, records of delegation, observed reliance, expressions of gratitude or doubt, and the boundaries imposed by documentary or ethnographic access. A thank-you message, for example, may manifest appreciation, courtesy, relief, dependence, or an affirmative evaluation of another person's judgment. A research design can ask which of these interpretations the evidence supports and retain alternatives where the manifestations are underdetermined. Manifestations may also participate in history: public praise changes reputation, an adverse incident report changes monitoring, and an institutional classification changes who may exercise discretion. The three levels identify distinct analytical obligations rather than a hierarchy in which external expressions necessarily reveal a complete internal state.

5.4 Exposure, Alternatives, and the Historical Asymmetry of Reliance

Vulnerability is differentiated by the costs and reversibility of a prospective disappointment. A recipient waiting for a nonurgent appointment might tolerate a small navigational error; another whose interpretation channel is delayed during an urgent decision could face a substantially different exposure. A volunteer's risk of social embarrassment differs from a recipient's risk of disclosure, loss of access, or institutional sanction. These examples caution against representing vulnerability by a single common scalar without evidence concerning the participant-specific consequences under examination.

The ethics of trust also has a distinct philosophical literature. Baier's work on trust and antitrust is one influential reference point for examining the ethical significance of dependence and exposure [9]. This paper does not infer the full argument of that article from bibliographic metadata; the citation serves as a limited intellectual reference pending passage-specific verification. The present GR contribution concerns how particular exposures emerge, become represented, and change through historical interactions and institutional arrangements.

Practical reliance can be *discretionary*, *constrained*, or *unresolved* in respect of the decision under study. A person may choose one competent volunteer among several interpreters. Another may accept the only available path to an appointment while doubting the information provided. A third may have nominal choice but face prohibitive waiting times, language barriers, or transport costs. Each setting calls for evidence about feasible alternatives, authority to refuse, information available at the time, and repercussions of withdrawal. A formal declaration of voluntariness does not settle the practical conditions of choice.

Vulnerability and voluntariness may also differ within the same undertaking. A visitor may choose to ask a volunteer for directions while lacking any meaningful alternative for an institution's eligibility decision. Historical documentation must identify whose discretion is being entrusted and at which level of the procedure. Where a choice cannot be established, a researcher can still describe reliance and exposure while withholding the stronger conclusion that the reliance expressed discretionary interpersonal trust. This safeguard does not treat a person under severe constraint as incapable of trust; it limits what the available evidence supports in a particular instance.

5.5 Repeated Performance, Learning, and Competing Mechanisms

Trust may emerge through changes in what participants expect from one another after experience, testimony, or institutional recognition. Repeated help offers possible observations of punctuality, care, competence, respect for confidentiality, and the willingness to correct errors. The evidential meaning of a performance sequence depends on what participants could observe, remember, and independently verify. A coordinator's satisfaction survey, a recipient's direct recollection, and a system's completed-task log need not describe the same aspects of a relationship. Furthermore, successful outcomes may owe partly to standardized procedures, back-up services, or institutional supervision rather than the particular qualities attributed to a volunteer.

Learning can be discontinuous. An early breach of confidentiality may strongly condition later disclosure even after many successful logistical episodes. Conversely, a participant may revise an earlier negative expectation after an apology, a procedural change, and independent confirmation that the relevant problem has been addressed. Each trajectory requires a historically ordered account of signals, interpretations, decisions, and changed opportunities. A delayed or selectively recorded performance history may distort apparent learning. A sequence of observed successful episodes by itself establishes a performance record within a specified frame; inferring a transition in trust additionally requires evidence about a participant's expectations or discretionary reliance.

Alternative explanations remain important. The apparent growth of trust may reflect increasing familiarity with institutional rules, reduced availability of competing providers, changes in participant selection, deliberate self-presentation, or reporting incentives. A longer-running project may be observed disproportionately through its surviving participants, while persons who lost confidence and withdrew cease appearing in routine records. Historical significance should therefore be assessed with attention to

attrition, institutional changes, and the question of who remains available to testify about the relation.

Temporal discrimination among trust mechanisms. A trust-generating interpretation should specify which discretionary exposure changed before an increased willingness to rely, and which subsequent choice would be surprising under the main rivals. Repeated task completion can be explained by trust, more effective enforcement, improved training, narrower task assignment, or the departure of dissatisfied participants. The relevant comparison therefore follows the same participants where ethically and practically possible, records changes in actual outside options, and separates the timing of expectation formation from the timing of performance. A participant’s greater reliance following the removal of alternatives would provide weak evidence for growing trust, even if cooperation became more frequent. Conversely, a documented choice to delegate an avoidable, sensitive task after credible alternatives remained open would bear more directly on discretionary reliance, although competence and organizational assurance still require scrutiny. Trust may also be a *consequence* of successful coordination, so a longitudinal account should examine both directions rather than assuming a fixed order. These are candidate discriminating traces, not a general psychological measurement instrument; the rival comparison and reporting limits are specified in Appendix B.

5.6 Evidence-Indexed Dossier for Trust and Reliance Histories

A compact analytical record can help distinguish reliance, expected performance, exposure, discretion, and retrospective attribution across episodes. Let q identify the historical research question, B its case boundary, I its observation interval, κ the evidential standpoint, a and b two typed relational positions, and ξ the bounded undertaking about which one position might rely on another. The proposed dossier is given in Equation 8.

$$\mathfrak{D}_{B,I;q}^{\kappa}(a, b; \xi) = (E_{ab}, X_{ab}, D_{ab}, F_a, L_{ab}, K_{ab}, M_{ab}, U_{ab}, \Pi_{ab})_{B,I;q;\xi}^{\kappa}. \quad (8)$$

Here E_{ab} is the evidence-supported, undertaking-specific expectation attributed to a about b ; X_{ab} the form and consequences of exposure to b ’s discretionary conduct; D_{ab} an account of delegation, requested assistance, or enacted reliance; F_a the historically feasible choices and withdrawal conditions available to a ; L_{ab} a temporally ordered performance-and-learning record; K_{ab} institutional safeguards, monitoring, or externally enforced commitments; M_{ab} manifestations and their audiences, including statements about trust; U_{ab} unresolved evidence, rival explanations, and counterevidence; and Π_{ab} evidence provenance, access conditions, and authorization. These components can contain heterogeneous source types, partial information, and explicitly unresolved fields. The notation gives a schema for historically located descriptions rather than a numerical estimator of trust.

The fields remain separate because each can change while the others remain stable. A provider may introduce a mandatory verification step, reducing the recipient’s exposure while leaving the expressed expectation unchanged. A volunteer may become more reliable without receiving greater decision authority. A recipient’s available alternatives may contract even as the number of interactions grows. A retrospective interview may add an expression of trust while the earlier action record stays constant. Treating these changes as distinct preserves the possibility that historical coordination, trust, and dependence have different temporal trajectories.

The common evidential envelope in Appendix A concerns source compatibility and review states only. The discretionary-acceptance and exposure guards of Equation 9 remain necessary to the specific claim of discretionary trust; a generic field list would not justify their replacement.

The dossier inherits the typed entities and evidence-qualified historical joins developed in Section 2, the partial temporal ordering of Section 3, and the initial-coordination distinctions of Section 4. A proposed joining of two dossiers must retain their relation types, time semantics, provenance and permission. A plausible shared name or a matching episode number is insufficient for an authenticated historical identity. In particular, historical trust attribution cannot be mechanically generated by composing a completed-action record with a positive evaluation recorded by a different person and at a different time.

5.7 Conditional Evidential Admission for Discretionary Trust Claims

The proposed dossier supports an additional distinction between a *candidate description of trust* and an *admitted, evidence-qualified discretionary-trust claim*. For a particular undertaking, define five question-relative guards: g_E for supported evidence of an affirmative, undertaking-specific expectation, g_X for meaningful prospective exposure, g_D for documented acceptance or entrustment of the relevant discretion, g_F for a sufficiently examined context of choice and practical constraint, and g_Π for admissible temporal correspondence and provenance. Each guard can take the values $+$ (supported), $-$ (specifically defeated), or $?$ (unresolved) for a declared evidential standpoint. Equation 9 gives a deliberately narrow admission rule.

$$\text{DTr}_{B,I;q}^\kappa(a, b; \xi) = + \iff \bigwedge_{r \in \{E, X, D, F, \Pi\}} (g_r^\kappa(a, b; \xi) = +). \quad (9)$$

The conjunction admits a supported claim of *discretionary* trust only under its explicitly defined conditions. A positive g_F means that the practical choice context has been investigated sufficiently to substantiate the *character* of the entrustment; it does not require an abundance of alternatives. A known constrained setting can support a careful account of trust in a limited discretionary subtask, with the constraint retained in the interpretation. A negative guard defeats the proposed narrow claim for the relevant question, whereas an unresolved guard withholds admission while preserving possible additional evidence. The equation is an evidential decision convention, with neither psychological completeness nor logical converse guaranteed for every possible conceptualization of trust.

The separate classification *supported constrained reliance* remains available when exposure and reliance are documented while discretionary entrustment is specifically unsupported. A supported-coordination record may also exist without evidence sufficient to assess either trust or a trustee-specific expectation. Institutional compliance, institutional legitimacy, generalized goodwill, and durable trust require additional criteria. The admission rule should not be interpreted as a legal test of informed consent or as a warrant that a particular aid relation is morally acceptable. Decisions affecting privacy, clinical interpretation, or legal eligibility remain subject to their own governance requirements.

The rule provides falsifiable research obligations. If an interview attributes trust but the participant had no knowledge of the volunteer's role when the decision occurred, the temporal premise behind g_E deserves examination. If a positive performance record is assembled from service logs while the recipient's decisions were never recorded, g_D may remain unresolved. If the only documented option involved institutional coercion, the meaning of discretion must be narrowed to an actually authorized, observable subdecision or withheld. These cases illustrate why a formal device for *admissibility* can be useful without serving as an automated detector of trust.

5.8 Institutional Assurance and Cooperation with Limited Trust

Historical cooperation can continue under strong guarantees, compulsory procedures, or monitoring arrangements even where interpersonal trust remains limited. Cook, Hardin, and Levi give a prominent account of mechanisms sustaining cooperation independently of strong interpersonal trust, including credible commitments and institutional safeguards [23]. Their analysis concerns complex social relations and governance, and the present volunteer-aid examples are proposed applications of that distinction. An institution may structure activities so that a visitor need only rely on a formal appeal procedure and verified instructions rather than placing open-ended confidence in an individual volunteer.

Assurance mechanisms alter the distribution of risk. A documented referral protocol, privacy training, a second-person check, and a clear complaint channel can reduce uncertainty or exposure even where participants' perceptions of personal trustworthiness have changed little. Conversely, a reassuring organizational name may conceal weak or inaccessible correction mechanisms. A trust history should register the precise safeguards available at each period and the practical ability of affected participants to invoke them. Formal rights to review can be historically inconsequential where no accessible language channel, time, or authority enables their exercise.

Reliance on an institution can itself be issue-specific. A person may regard a scheduling process as predictable yet distrust the fairness of classification or the confidentiality of information. A volunteer may accept the administrative rules governing shifts while questioning the system's treatment of recipient refusals. An organization's reputation can travel across events and influence newly arriving participants, but the resulting expectations depend on the claims, audiences, and distributional consequences involved. The development of stable procedures may accordingly increase some forms of practical reliance, diminish the need for discretionary interpersonal trust, and reallocate vulnerability to actors who control the procedures. These trajectories need independent examination.

5.9 Refusal, Boundary Revision, and Changes in Trust Relations

Refusal is historically significant as an action in its own right. Declining assistance may express informed preference, fatigue, incompatible needs, distrust, privacy concerns, loyalty to another provider, or the presence of an adequate independent capability. A refusal should be located within the feasible alternatives and publicly or privately communicated reasons accessible to the study. Disagreement with a coordinator may coexist with trust in a particular volunteer's competence; acceptance of institutional assistance may coexist with continued distrust of the organization. Hence the history of trust requires relational and task-specific descriptions of the scope of a negative evaluation.

Trust can be revised through negotiated boundaries. A recipient who hesitates to disclose personal information may accept assistance limited to non-sensitive directions after the volunteer clarifies the task and refers medical questions to qualified personnel. A coordinator may respond to a failed handover by restricting delegated tasks and introducing double checks. A group may redistribute responsibility across more than one participant, enabling cooperation without making any one person the necessary trusted intermediary. Such changes in procedures and roles may be jointly produced by participants with unequal authority; their effects require investigation beyond formal declarations of agreement.

Withdrawal also affects historical archives. People who choose another service or leave a volunteer programme may disappear from repeated-participant datasets. Records of those who remain can create an appearance of steadily improving confidence. Historical designs should seek evidence about exits, unsuccessful referrals, prohibited disclosures, and cases of continued reliance despite expressed dissatisfaction. Where exit is infeasible, repeated use is particularly weak evidence of increased trust. The significance of these distinctions remains conditional on the question and should not be reduced to an all-purpose presumption that trust is absent whenever dependence is present.

5.10 Trust, Power, and Differentiated Opportunities for Recognition

A relation's power conditions influence which forms of trust become visible and which are rewarded. Organizations can solicit endorsements, publish testimonials, restrict informal communication, or treat expressions of satisfaction as evidence of successful service. Recipients may be reluctant to criticize those controlling access, while volunteers may express loyalty to secure continuing roles. The resulting archive can overrepresent socially desirable statements. The analyst should specify who could speak, through which medium, with what confidentiality, and under what practical consequences. Attribution of a collective trust relation to an entire recipient population requires sampling and representation arguments beyond an accumulation of favorable comments.

Trust is also potentially generative and potentially exclusionary. A trusted interpreter can enable participation by a previously isolated person; the same reliance may entrench dependence if alternative language channels disappear. Close cooperation among volunteers can facilitate learning and shared capability while reducing the visibility of outsiders or people who decline the preferred procedure. These mechanisms can evolve together and call for a historically differentiated assessment of beneficiaries, nonparticipants, and those bearing the costs of coordination. Positive trust reports are evidence for particular experience claims, subject to their provenance; they supply neither a distribution-wide measure of inclusion nor a normative verdict on the arrangement.

Table 5: Evidence obligations for historically situated trust and reliance claims.

Analytical object	Candidate evidence and historical questions	Important evidential limit
Task-specific expectation	Contemporaneous statements, expressed predictions, dated choices	Retrospective praise may change the attributed time
Exposure and vulnerability	Consequences of delegated discretion; reversible and irreversible risks	Severity varies by participant and task
Discretionary reliance	Authorized requests, accepted delegation, feasible withdrawal	Continued use under compulsion may indicate dependence
Reliability and learning	Repeated task records, error correction, available feedback	Performance evidence alone does not establish a changed expectation
Institutional assurance	Monitoring, safeguards, complaint access, appeal records	Formal guarantees may be inaccessible in practice
Refusal, exit, and revision	Declined offers, alternative services, constrained withdrawal	Missing leavers can bias historical narratives
Manifestation and recognition	Interviews, compliments, complaints, reports, public recognition	Selection, audience and incentives condition expressions
Historical identity and provenance	Typed parties, activity scope, record dates and permissions	Shared labels cannot authenticate person or relation identity

The political-economic analysis of control over alternatives belongs to Paper VIII, while the present section asks how expectations, reliance, and vulnerability develop through histories of interaction. At their interface, the same change can support more reliable service and generate dependence at different relational positions. A future integrated case study could use linked yet distinct records for resource availability, institutional authority, and trust-related action while preserving their evidential guards and chronology. Theoretical integration is productive when differences among those explanatory questions remain visible.

5.11 Evidence Audit Across Trust-Related Historical Claims

The evidential obligations considered in this section are summarized in Table 5. Each row identifies a distinct research object; a single observation may enter several rows only when the relevant inferences are independently supported. The categories facilitate the drafting of historical inquiries and do not purport to exhaust the meanings of trust in the philosophical or social-scientific literature.

The GR three-level interpretation qualifies the table throughout: ontological commitments remain suspended; relevant expectations and arrangements are modeled as historically efficacious only under stated conditions; and manifestations are analyzed as partial, situated records with possible effects on later conduct. A reviewer may establish a well-supported account of cooperation without an equally well-supported account of trust. The descriptive absence of a trust classification in an archive should therefore remain distinguishable from an evidenced claim that participants distrusted one another.

5.12 Constructed Historical Cases and Rival Trajectories

Case A: multilingual hospital navigation and discretionary disclosure. A volunteer successfully directs a visitor between reception areas on three occasions. On the fourth visit the volunteer offers to communicate a sensitive concern to qualified staff. Three hypothetical archives can record the same earlier episodes: the visitor has no independent interpretation channel and accepts out of necessity; the visitor could approach an authorized interpreter but asks this particular volunteer after observing careful conduct; or the visitor refuses and seeks a private consultation. The first supports evidence of reliance under constrained choice, the second may support an undertaking-specific discretionary-trust claim if exposure, expectation, and provenance are documented, and the third supports a boundary decision whose interpretation depends on

its recorded reasons. None of the histories establishes a clinical relationship, actual hospital practice, or permission for a volunteer to process sensitive information.

Case B: neighborhood transport and institutional assurance. Volunteer drivers initially arrange rides through personal messages. A later coordinator introduces identity verification, scheduling records, back-up drivers, and a complaint process. Service reliability improves in the constructed history, although interviews describe mixed personal confidence among riders. Some riders shift to new drivers because the system now provides adequate institutional safeguards; others remain with familiar volunteers. A historian comparing only ride completion rates might infer growing trust, whereas a question-specific archive permits a distinction between reliable coordination, reliance on an institution, and interpersonal expectation. A period of lost access for riders lacking a digital connection raises a separate inclusion and vulnerability issue.

Case C: emergency accommodation and revision after breach. During a disruption, an assistance team organizes short-term accommodation. A volunteer discloses an eligibility concern through a channel later judged inappropriate by a recipient. The recipient subsequently accepts logistics support under a revised confidentiality protocol but declines assistance involving discretionary decisions about personal information. The same team continues operating and reports high completion counts. In this constructed history, operational persistence, limited renewed confidence, and an enduring boundary of distrust may coexist. The historical analysis requires dated evidence about the breach, changed procedures, alternatives, and participants' distinct positions. A later organizational report claiming universal restoration of trust would exceed the specified evidential base.

These cases test three different explanations: reliance compelled by limited alternatives, coordination supported through institutional assurance, and relation-specific revision after an adverse episode. They also illustrate how historical accounts depend on which participants are included, what temporal window is considered, and which activities fall within the object of trust. The cases serve as analytical counterexamples; they supply no original human-participant evidence or empirical rates.

5.13 Historical Research Propositions and the Interface with Cooperative Capability

Three provisional propositions guide subsequent research. First, under documented discretionary choice and exposure, learning about another's undertaking-specific conduct may help explain increased reliance beyond an independently observed improvement in the service system. Second, institutional safeguards may sustain coordination while modifying the necessity, object, or distribution of interpersonal trust. Third, changes in choice, authority, documentation, and participant succession can create divergent trust histories despite similar visible cooperation rates. These are explanatory hypotheses with identifiable rival mechanisms; they remain open to revision and counterexamples.

Research designs can compare contemporaneous statements with dated choices, track participants who exit as well as those who remain, and inspect the actual availability of alternate channels. Interviews, authorized institutional records, and observation may illuminate different aspects of the relation, and each raises its own privacy and interpretive concerns. An appropriate study would preserve task boundaries and prohibit inferences from a volunteer's inferred goodwill to the recipient's informed consent or the legality of an undertaking. Where psychological measurement is introduced, construct validity and cross-position comparability become separate obligations.

The historical object of Section 5 is thus the conditional development and revision of task-specific expectations, discretionary entrustment, constrained reliance, vulnerability, and trust-related manifestations. These dynamics can interact with the coordination nucleus examined in Section 4 without constituting a mandatory developmental stage. Section 6 will study local cooperative capability and practical action combinations, including arrangements capable of functioning with limited trust. Subsequent sections will address role change, relational memory, governance, and historical reproduction. The proposed trust dossier provides a provisional interface among those inquiries while preserving the independence of empirical support, causal identification, and normative judgment.

6 Historical Pathways of Local Cooperation and Shared Capability

This section investigates how historically situated supportive actions may become jointly workable arrangements and, under further conditions, capacities available to more than one participant. Its role in the paper is to distinguish a coordinated episode from a feasible composite undertaking, an actually performed service, and a capability retained across changing circumstances. Its objective is to specify the relevant action relationships, their conditions of access and authorization, and the evidence needed to evaluate cooperation when participants occupy unequal or changing positions. The discussion first develops the conceptual types of cooperation, then distinguishes GR's three levels, establishes an evidence-indexed capability dossier and a bounded feasibility criterion, and analyzes negotiation, institutional assurance, breakdown, exclusion, and constructed comparative histories. Its method is conceptual and comparative-historical, using limited formal representations to organize possible investigations. The proposed framework neither assumes that participants share an identical intention nor equates a collectively completed task with an ethically desirable outcome.

6.1 Action Combination and the Object of Cooperative History

A local service can arise through several different relations among actions. A volunteer may deliver directions prepared by an administrator; two volunteers may independently perform interchangeable tasks; a recipient may clarify the need to which helpers adjust; and a professional may authorize a handover that other actors cannot legitimately perform alone. The resulting activity may appear in a register as a single episode of assistance. Its historical structure nevertheless depends on which contributions were necessary, which could be substituted, and which were coordinated through decisions made before or during performance. A description of assistance as "collective" leaves these distinctions unresolved.

The present analysis distinguishes at least four candidate relations. *Pooled contribution* aggregates resources or effort without requiring detailed reciprocal adjustment among individual actions. *Sequential dependence* links the usable result of one undertaking to the possibility of another. *Complementarity* denotes a question-relative combination in which distinct contributions jointly satisfy task conditions that the examined contributions, taken separately in the specified context, would leave unsatisfied. *Substitution* allows a task or position to be covered by alternative qualified contributions, potentially providing redundancy. These relations can coexist. A multilingual information service may require the complementarity of authorized information and linguistic communication while relying on several interchangeable volunteers for a particular timeslot.

A historical claim about *shared capability* asks a further question: which undertaking could the arrangement make available, to whom, during which interval, and under what access conditions? This requires a task description rather than a generic claim that cooperation "increased capacity." A functioning schedule can enhance the possibility of receiving timely assistance while leaving people outside the schedule unable to obtain it. The relevant historical object consequently includes both the cooperating positions and the positions whose practical options the arrangement changes.

6.2 Cooperative Agency, Collective Action, and Institutional Mediation

Bratman's treatment of shared cooperative activity specifies mutual responsiveness and commitments concerning a joint activity and mutual support within a planning-oriented account of acting together [16]. That account offers an independently developed philosophical distinction between jointly occurring behavior and a particular form of intentional cooperation. Its original emphasis on relatively small-scale interpersonal agency does not authorize identifying the intentions of all participants in an institutional aid system with a single shared plan. The present historical inquiry can use the distinction while retaining cooperative forms mediated by protocols, delegated authority, institutional assurances, and shifting positions.

Joint task achievement and shared intentional activity are thus different research objects. Two participants might actively adjust to one another and articulate a common undertaking. In another case, a

volunteer follows a written procedure while an authorized official performs a complementary task without either knowing the other's identity. Both arrangements may enable an interdependent service pathway; only the first, if the relevant evidence warrants it, supports the more specific account of shared intentional commitment. In yet another arrangement, cooperation is sustained through monitoring or enforceable procedures despite limited interpersonal trust, a possibility independently emphasized by Cook, Hardin, and Levi [23].

For volunteer-aid relations, "cooperation" should therefore be indexed to the phenomenon under study: reciprocal intentional action, coordinated performance, sustained organizational routine, or jointly accessible practical possibility. These descriptions are neither automatically interchangeable nor mutually exclusive. The historical analyst should avoid assigning an intention to an institution merely because its participants generate a common output. Likewise, a documented task outcome cannot establish the quality of deliberation, the voluntariness of participation, or the propriety of the institution's underlying purpose.

6.3 Ontological Suspension, Relational Composition, and Manifestation

At the level of *ontological reality*, the fundamental existence and ultimate form of a collective agent, an institution, or a shared capacity remain suspended. A typed description of combined action is an analytical representation rather than a metaphysical claim that group agency constitutes an irreducible substance. The same restraint applies to apparently individual capacities, which may rely on language, equipment, public infrastructure, training, and other historically constituted relations.

At the level of *relational reality*, positions, tasks, resources, procedures, and access paths can enter sufficiently stable, historically consequential configurations. A capability can be relational in the modest sense that the feasible undertaking depends on an organized combination of contributions. Its generative consequence may be a newly workable handover, an expanded set of accessible services, an ability to continue after a participant leaves, or the acquisition of a skill distributed among several positions. The relational description must still distinguish capacities that were merely anticipated from those that were available under historically documented conditions.

At the level of *manifestation reality*, cooperation is presented through task logs, public announcements, agreements, role descriptions, eligibility notices, testimonials, and assessments of quality. Such records make selected relations accessible to observers while also shaping subsequent participation. Publishing a service guide may allow people to discover a previously unknown assistance channel. A positive organizational report may attract recruitment, yet it may also omit failed requests and the labor sustaining the operation. Manifestations are therefore both partial evidence of past action and possible contributors to later relational change. The researcher should keep the time of the reported episode distinct from the time at which its meaning was publicly attributed.

6.4 Complementarity, Substitutability, and Feasible Action Configurations

A claim of complementarity is relative to a specified task and a historically bounded set of alternatives. Suppose assistance requires accessible information, qualified interpretation, and authorized routing. An interpreter's linguistic contribution becomes complementary to an office's approved information under conditions where neither contribution can complete the relevant service alone. If the office introduces an accessible multilingual system, the same task may become feasible without that particular interpreter. Complementarity is consequently contingent on the organization of resources, language access, permissions, and other workable alternatives.

Substitutability requires equal care. Two volunteers may be exchangeable for a short information task while having different language repertoires, training, availability, or permissions. Declaring them interchangeable from shared volunteer status would conflate a general role label with task-specific competence. A reserve volunteer improves continuity only if the substitute can be contacted, is qualified for the undertaking, has appropriate authority, and is available when the need occurs. An unused roster

provides possible inputs to capability, subject to those constraints; it does not establish the capability's realization.

The proposal treats *feasibility* as a conditional relation among a task, an action configuration, and a dated environment. A candidate configuration records which acts must occur, their ordering or permitted overlap, what each act requires, and how one contribution can be transferred to another. Feasibility can be maintained through repeated routines, but it can also be momentary. A sequence that was workable during a temporary emergency facility's opening may cease to be workable when that facility closes, even if the same participants retain willingness to help.

Several apparent gains deserve separation. Combining efforts may expand the kinds of tasks that can be attempted; it may increase reliability for existing tasks; it may lower burdens for one participant while shifting them to another; or it may make access more predictable without changing the set of nominally offered services. The assessment should identify which dimension changed and for whom. Where historical outcomes include dignity, safety, time, attention, and autonomy, a single aggregate performance score may conceal important differences among the affected positions.

Cooperative contribution and rival changes in opportunity. A claim that cooperation *expanded* feasible capability needs a comparison that holds the task sufficiently stable. Changes in intake composition, equipment, referral policy, permitted activities, or demand may change recorded success even if the underlying complementarity of participants is unchanged. A supported observation of combined performance should therefore be distinguished from a causal contribution claim about what the same task configuration could have accomplished under relevant alternatives. Histories in which jointly necessary competencies became separately available are particularly informative: a subsequent successful substitution would restrict claims of enduring complementarities without disproving that joint work mattered earlier. A failed undertaking during an exceptional demand surge, in turn, would not by itself refute a previously documented cooperative capability. The proposed design compares task-adjusted opportunities, permissions, independently observed actions, and alternative staffing patterns; it preserves shared contributions and third-party costs rather than assigning the whole effect to a single volunteer.

6.5 Evidence-Indexed Cooperative-Capability Dossier

A bounded research question requires a record that can separate a proposed combination from evidence of its practical use. Let B denote a declared system boundary, I a historical interval with explicit temporal conventions, q a question about a particular class of undertakings, and κ the specified evidential standpoint. Equation 10 introduces a *cooperative-capability dossier* as a typed description, to be read together with the inherited historical record in Equation 2.

$$\mathfrak{C}_{B,I;q}^{\kappa} := (\mathcal{P}, \mathcal{J}, \mathcal{F}, \mathcal{R}, \mathcal{O}, \mathcal{A}, \mathcal{M}, \mathcal{U}, \Pi)_{B,I;q}^{\kappa}. \quad (10)$$

Here $\mathcal{P}$ registers supported participants and role positions, including distinct task qualifications; $\mathcal{J}$ records candidate combinations, dependencies, adjustments, and substitutes; $\mathcal{F}$ contains conditional task-feasibility witnesses and constraints; $\mathcal{R}$ records resources, permissions, procedures, and assurance mechanisms; $\mathcal{O}$ records enacted outcomes, attempts, interruption, and observed quality under declared indicators; $\mathcal{A}$ records who could access the undertaking, who attempted to do so, and whose requests are missing or excluded; $\mathcal{M}$ records manifestations and their historical effects; $\mathcal{U}$ preserves uncertain, contested, or unavailable information; and Π contains record provenance, access limitations, temporal alignment, permissions, and revision history. The symbols label evidence families, not independently measurable quantities presumed to exist in each archive.

The distinction between $\mathcal{F}$ and $\mathcal{O}$ is particularly important. A documented plan and available equipment may support a feasible route without proving that a recipient received assistance. Conversely, an observed completed action may document performance without demonstrating a capacity reproducible for the next recipient or by a succeeding group. A feasibility dossier also does not imply that a task was desirable, that volunteers were legally competent to undertake it, or that a previously excluded participant

could use the same route. Such claims require separate evidence and, where relevant, professional or legal authorization.

A record can enter the dossier only within declared source and privacy conditions. Linking a recipient's request, a coordinator's decision, and a volunteer's performance requires provenance and legitimate access to each record, as well as an evidence-qualified correspondence among time, role, and task. These restrictions inherit the historical-join discipline of Section 2 and the incomplete temporal ordering of Section 3. The completed dossier is an instrument for research decisions, rather than a direct measure of a collective entity or a claim that all relevant histories have been observed.

6.6 Conditional Admission of Task-Specific Shared Capability

A more demanding inference concerns the proposition that the documented combination made a task τ available within B and I for a declared access class. Let $\mathcal{W}_{B,I,q}^\kappa(\tau)$ be a bounded set of candidate *configuration witnesses*: descriptions of specific combinations and the evidence offered for their operation. Each witness w is assessed using six three-valued guards. The task guard g_T checks the specified task and relevant role qualifications; g_J checks the compatibility of combined contributions; g_I checks the time and resource conditions needed for that combination; g_A checks the declared recipient's practical access route; g_L checks relevant institutional and legal permissions to the extent established by appropriate evidence; and g_Π checks temporal correspondence, provenance, and admissible use of the evidence. Each guard is $+$ when supported, $-$ when a specified necessary condition is positively defeated, and $?$ when unresolved. Equation 11 defines a narrow *supported task-specific capability* classification.

$$\text{SCap}_{B,I,q}^\kappa(\tau) = + \iff \exists w \in \mathcal{W}_{B,I,q}^\kappa(\tau) : \bigwedge_{r \in \{T,J,I,A,L,\Pi\}} (g_r^\kappa(w) = +). \quad (11)$$

Equation 11 gives sufficient and, by stipulated definition, necessary evidence for a positive finding *within this dossier convention*. It is not an empirical theorem that positive capability exists only when an archive meets these conditions. The witness must be specific enough to distinguish a reachable, appropriately authorized task path from a promotional statement or an undated intention. A supported witness may be supplied by an enacted combination with recorded conditions or by sufficiently demonstrated preparations for a specified prospective task; these two evidential bases must be reported separately. The positive classification does not imply that the action was in fact performed during the observation interval.

A negative capability classification demands affirmative evidence that the necessary configuration conditions fail for the declared alternatives, task, interval, and access class. A lack of records for a candidate witness establishes an unresolved claim, not proof of impossibility. If a viable authorized substitute lies outside the examined witness set, a negative inference may also be premature. The inference must therefore state how the candidate space was delimited and what evidence could reveal overlooked substitutions. A positive record is likewise scope-limited: availability to one access class cannot be generalized to all potential recipients, times, or needs.

A historically stronger claim of *capability expansion* requires a comparison with a properly described earlier or alternative configuration and positive evidence about the difference. Equation 11 alone admits a capacity claim for an index, not a causal change or an advantage over a counterfactual baseline. Identifying such an expansion would require evidence about alternatives, intervening mechanisms, opportunity structures, and rival histories, with changes in the task definition and measurement of access treated as possible confounders.

6.7 Negotiation, Adjustment, and the Distribution of Decision Rights

Negotiation supplies one route through which previously separate contributions become a workable sequence. Participants may revise handover times, clarify task boundaries, identify language needs, divide labor, or reject an assumed assignment. A negotiated plan can increase feasibility when information held in different positions becomes mutually available and tasks are redistributed without overriding

relevant constraints. It can also fail when participants lack time, the required institution cannot approve the proposed action, or one party's preferences remain unrepresented.

The historical record should distinguish an expressed proposal, its uptake, an agreement, and the enacted adjustment. A coordinator's documentation of "consensus" may reflect a procedurally valid agreement, a limited discussion, or a decision made without the participation of those most affected. Consent to receive a particular service, permission to process private information, institutional authorization to make an eligibility decision, and a volunteer's willingness to undertake a role are separate relations. Documentary evidence for one cannot automatically be transferred to the others.

Unequal positions shape both who can make a proposal and whose refusal can alter the outcome. A recipient may have the most accurate account of a barrier yet lack access to the scheduling system; a volunteer may contribute a workaround while having no authority to change an approved procedure. The record should include the people who declined participation or never reached the negotiation forum. An apparently stable cooperative pathway may be stable for the included participants while systematically unavailable to other positions. Its cooperative achievement and its distribution of voice require distinct evaluation.

6.8 Institutional Assurance, Information Channels, and Limited Trust

An arrangement can sustain effective cooperation through accessible information, task verification, and accountable procedures without requiring strong interpersonal trust among its participants. For example, an approved routing guide, a role-based escalation channel, and a documented substitution rule may preserve service continuity despite changes in volunteers. The conditions of institutional assurance remain historical: rules must be known, reasonably usable, implemented, and subject to an accessible correction route. The mere formal existence of a rule says relatively little about its use by someone unable to read the published language or contact its administrators.

Coleman's analysis of social capital identifies obligations and expectations, information channels, and norms as possible action-relevant features of social relations [20]. Its original empirical domain includes family, community, and educational outcomes. The historical volunteer-aid application proposed here examines a narrower question: when do channels and routines carry usable information across positions, and how does that change the feasibility of a task? Neither a high density of ties nor a norm of mutual assistance guarantees an authorized service pathway. Information can be accurate yet inaccessible; obligations may help one group and exert undue pressure on another; social closure can facilitate particular exchanges while limiting entry.

Ostrom's treatment of collective action and social norms offers independently developed reasons to examine conditional cooperation, participant heterogeneity, and rules within specific institutional settings [51]. The original analytical commitments and domains remain hers. The present GR reconstruction takes these as conceptual prompts, not as evidence that volunteer programmes reproduce common-pool-resource institutions. Across these perspectives, the historical contribution of assurance or information channels becomes an empirical question about actual access and action, rather than a consequence inferred directly from the existence of organizational rules.

Section 5 distinguished discretionary trust from reliance under constraint. The same separation is maintained here. A task can be feasible through a formal protocol even where participants remain cautious about each other; mutual trust can support improvisation but cannot replace necessary qualifications or permissions. Conversely, protocols may be experienced as assurance by some participants and as surveillance or exclusion by others. The distinct histories of interpersonal expectations, institutional safeguards, and task accessibility should be retained instead of collapsed into a single trajectory of cooperative success.

6.9 Performance, Persistence, and Historically Situated Reproducibility

An available capability, *an attempted task*, *a completed task*, and *a reproducible practice* require different historical observations. Feasible plans may never be requested or used. A task can be completed once

through improvisation that depends on unique personal knowledge. A recurrent task may remain successful through sustained administrative support even after the volunteer who first proposed it has left. The classification of each case depends on the observation window and on what constitutes the same task or practice across different settings.

Historical comparison should therefore track the conditions under which a recorded performance could occur again. It may require retained instructions, qualified successors, accessible equipment, available time, financial support, and a route for adapting to changed needs. None of these factors alone proves reproduction. A practice that persists only because a coordinator performs substantial invisible labor has a different reproduction mechanism from one sustained by openly documented, transferable routines. The difference matters when projecting future feasibility and accounting for burdens.

Records of “successful service” also require a declared outcome definition. An administrative record may mark completion when a visitor reaches an office, whereas the visitor may regard the undertaking as incomplete because accurate interpretation was unavailable. A transport service may record a ride despite a missed appointment caused by delays. These differences are not necessarily recording errors; they can reflect genuinely different task definitions and stakeholder positions. Historical claims should specify which outcome is supported, which perspectives can be compared, and which remain incomparable on current evidence.

6.10 Cooperative Breakdown, Negative Evidence, and Feasible Alternatives

Cooperation can fail through several mechanisms that have distinct historical consequences. Complementary actions may be individually competent but temporally incompatible. A recipient may be unable to use a technically functioning channel. A volunteer may refuse an undertaking exceeding their role. An institution may withdraw permission after discovering a safety problem. A task may be completed with significant harm or unauthorized information exposure. Recording each event as a generic “failure” conceals whether a plan was infeasible, an attempt was interrupted, a completed action was inappropriate, or an arrangement was later revised.

Countermodels can hold the reported outcome constant while changing the underlying relations. A referral may succeed because two volunteers coordinate, because an existing administrative process independently carries the task, or because an unrecorded professional solves a problem after a volunteer’s attempted handover. The same completion count then supports different accounts of cooperative agency and contribution. To discriminate among them, a study should look for dated coordination traces, authorized role boundaries, independently documented alternatives, and observations of failed or bypassed pathways.

Negative claims require particular restraint. If an archive contains no completed assistance during a short interval, it may reflect absent demand, selective retention, a closed office, or a genuine lack of capability. If it contains numerous completed cases, it may omit those excluded by registration, language, location, or digital access. A researcher should examine both observation opportunities and the denominator of relevant requests where lawful and feasible. Positive evidence of one blocked pathway does not establish that all other paths were blocked. The conventions introduced in Section 6.6 are designed to retain these distinctions without imposing an artificial scalar measure of success.

6.11 Asymmetric Capability, Burden Transfer, and Third Positions

Shared capability is indexed to a task and an access class precisely because the benefits and burdens of cooperation can diverge. A workflow may improve staff scheduling while increasing the waiting time of people unable to book digitally. Redundant volunteers may make coverage more reliable while leaving a single coordinator responsible for emergency decisions. New translation support may enable some recipients to participate and inadvertently redirect sensitive matters to personnel who lack the necessary authority. An inquiry that tracks only a central organizational output would miss these differentiated changes.

Table 6: Evidence and rival interpretations for historically situated cooperative capability.

Analytical object	Candidate source and comparative question	Distinct evidential limitation
Task and role specification	Service protocols, role qualifications, bounded requests	Role titles need not establish relevant competence
Action combination	Coordinated logs, handovers, decisions, mutual adjustments	Concurrent activity may be independent
Temporal and resource feasibility	Dated coverage, required tools, capacity and contingency plans	A nominal schedule may be infeasible in practice
Access and authorization	Eligibility paths, usable channels, approval and role boundaries	Formal availability may exclude particular access classes
Negotiation and refusal	Proposals, uptake, revisions, dissent and withdrawals	Recorded consensus can omit excluded participants
Attempt and performance	Requests, attempted pathways, completion and quality traces	Completion measures differ across participant positions
Substitution and reproduction	Replacement records, retained procedures, successor enactments	One successful episode proves little about repeatability
Third-position consequences	Transferred labor, displaced channels, downstream burdens	Selected beneficiaries do not represent affected populations
Alternative mechanisms and provenance	Independent services, dated reforms, source linkage and permissions	Missing alternatives and archive selection weaken attribution

For historical purposes, a third position need not be a formal third member of the cooperating group. It can be an affected recipient who did not participate in planning, a neighboring service bearing transferred work, a successor asked to maintain a routine, or an institution whose authorization conditions shape the actions of volunteers. The relevant boundary should be broad enough to capture plausible causal burdens but narrow enough that source and comparison obligations remain tractable. A possible nonhuman participant or artificial agent may enter an appropriate descriptive model when its role and evidential status are specified; legal personality, suffering, responsibility, and authority require independent analysis in their respective domains.

The political-economic questions about resource reproduction and concentration of control developed in Paper VIII intersect with this analysis at the point where sustaining a capacity requires labor, finance, attention, and decision rights. Paper IX’s additional historical question is how these burdens and alternatives evolve across episodes and successors. Capability reproduction may distribute expertise across people, or it may consolidate an indispensable gatekeeper. A beneficial service outcome does not resolve that distributive issue. Nor does the existence of a stable relation establish its normative legitimacy; ethical and justice-related assessments retain independent grounds.

A shared archival field or action label does not establish a feasible composite undertaking. The core compatibility criteria in Appendix A may be applied before the capability-specific feasibility and access tests of Equation 11; these tests answer different questions and should be reported separately.

6.12 Evidence Audit for Cooperative Capability and Historical Comparisons

Table 6 provides an audit structure for separating evidence of action combination, task feasibility, actual performance, and historical continuation. Its categories are question-relative. A source can support more than one analytical object when the corresponding inferential conditions are independently established, and different objects may remain unresolved despite a common record.

The evidence table has a direct relation to the cooperative-capability dossier in Equation 10. Role records and action traces help populate $\mathcal{P}$ and $\mathcal{J}$; resource and access records qualify $\mathcal{F}$, $\mathcal{R}$, and $\mathcal{A}$; performance and consequences contribute to $\mathcal{O}$; documentary presentations inform $\mathcal{M}$; unresolved alternatives and source limitations remain visible in $\mathcal{U}$ and Π . A table entry documents an obligation to investigate, not a source of automatic causal or ethical conclusions. The three GR levels remain relevant throughout: the historical record operationalizes selected relations without purporting to disclose ultimate ontology or to exhaust the experiences manifested through institutional records.

6.13 Constructed Histories of Complementarity, Substitution, and Exclusion

Three hypothetical histories expose different inferential risks. They are constructed analytical cases, contain no actual participant or institutional data, and do not describe approved practices of any named organization.

Case A: multilingual information and authorized referral. During an invented sequence of hospital visits, a volunteer identifies a recurring difficulty with locating a service and asks authorized staff for a verified, multilingual route description. Staff produce approved information, an appropriately qualified interpreter renders it accessible, and volunteers communicate the routing options without accessing clinical records. A dated task sequence supports a claim of complementary action: verified content and appropriate communication jointly enable a service that the described contributions alone could not have completed in that context. Under Equation 11, a positive task-specific capacity claim still depends on accessible channels, timing, role competence, authorization, and provenance. Completed visits support performance for those visitors; accessibility to people absent from the archive remains unsettled. The history cannot be used to confer clinical interpretation powers upon volunteers.

Case B: community transport and reserve coverage. In a fictional community arrangement, three volunteer drivers initially cover separate routes. A coordinator proposes a shared contact system, backup drivers, and an emergency change procedure. Several rides occur, and a written roster lists substitutes. For residents who can contact the coordinator and whose needs fall within the service's approved scope, the roster may support a prospective capacity witness once availability and acceptance of substitute assignments are documented. A resident without access to the contact method remains outside that established access class. A later missed appointment caused by a vehicle failure tests whether substitution was real or only nominal. Repeated ride completion establishes actual performances but cannot by itself show that the roster, rather than an independent municipal transport option, produced the improvement.

Case C: emergency accommodation and a failed handover. In a hypothetical disruption, volunteers collect information about accommodation needs and an authorized office assigns temporary spaces. One handover is completed, after which the same volunteers propose to make eligibility decisions during staff absence. The authorized office rejects that proposal because the necessary decision authority and safeguards are absent. The failed proposal therefore does not support a capability claim for independent eligibility determination, even if the volunteers possess sufficient time and goodwill. Subsequently, the office establishes a revised referral channel, and volunteers resume limited logistics support. The history records an initial composite service, a positively blocked unauthorized expansion, and a later reconfigured cooperation pathway. Their normative significance depends on independent standards and the positions of people whose requests were delayed or declined.

The cases distinguish workable complementarity from documented success, proposed substitution from usable contingency, and a justified refusal from generic organizational failure. They also show why the relevant historical unit may shift: participants and resources can remain nominally identical while the approved task, access conditions, or institutional authority changes. Any cross-period attribution of the "same shared capability" must therefore identify which task and constraints are held comparable. These constructed cases are countermodels and design aids, not evidence about expected rates or typical volunteer behavior.

6.14 Historical Hypotheses, Discriminating Designs, and Role Emergence

The analysis yields three provisional hypotheses suitable for historically bounded testing. First, under matched task and access conditions, documented complementarity among qualified contributions may explain the emergence of a capability that independently documented alternatives leave infeasible. Second, usable substitution pathways and institutional assurances may increase continuity despite participant turnover, provided time, authority, and access constraints remain satisfied. Third, coordination can simultaneously enlarge feasible tasks for a specified access class and transfer costs, discretion, or exclusion to other positions. These are candidate mechanisms with plausible rivals, not general empirical laws.

A research design could collect appropriately authorized task sequences and independently dated

procedural changes, compare occasions with and without accessible substitutes, and follow requests that were declined or left incomplete. Process evidence would need to connect a specific action adjustment to a specific changed task possibility, while recording competing reforms and resources. Selection into records, different task definitions, and temporal truncation should be treated as substantive threats to inference. A process comparison can clarify mechanisms without automatically identifying an intervention's causal effect; designs intended to estimate such effects need separate assumptions about selection, counterfactuals, and measurement. Research involving vulnerable people, private institutional records, or protected information requires suitable legal, ethical, and organizational permissions.

Section 6 has treated cooperation as a historically differentiated configuration of actions, decision rights, resources, access paths, and evidential conditions. Its narrow notion of shared capability describes task-specific, supported feasibility and leaves enacted performance, durable reproduction, causal expansion, and normative standing to additional tests. It follows from the analysis that a cooperative system can create new practical possibilities while also changing whose contributions are recognized and who is entitled to decide. Section 7 will examine the emergence of roles, transformation of participant positions, and succession across such histories. That transition preserves the distinction between a repeatedly executed task and the historically evolving subjects and positions through which it becomes possible.

7 Role Emergence, Position Transformation, and Participant Succession

This section examines how recurring supportive undertakings may generate recognizable roles, alter the positions occupied by participants, and permit or obstruct succession across historical intervals. Its role in the paper is to distinguish the formation of task-specific cooperative capability from the history of the positions through which such capability is sustained, contested, or discontinued. Its objective is to specify what counts as evidence for an emerging role, what may change while a role designation persists, and under which circumstances a successor can take over a task, a mandate, or a relationship. The argument first clarifies role terminology and the three GR levels, then develops an evidence-indexed historical dossier and a bounded admission rule, and finally considers accession, succession, conflict, exclusion, and comparative cases. The method is interpretive and comparative-historical. Formal constructs organize admissible inferences; they do not establish that a social role is a timeless entity or that successful succession is necessarily ethically legitimate.

7.1 Participants, Tasks, Positions, Roles, and Mandates

A person who performs a supportive act, the task that person performs, the position from which the act is performed, and the organizational designation attached to that position describe different historical objects. A participant may translate a public notice once without subsequently being expected to act as an interpreter. The same person may be a visitor in one interaction, a trained volunteer in another, and a representative of an association in a third. A hospital desk can remain continuously named while the people staffing it, the activities authorized there, and its recipients' access routes change. The apparent continuity of a name therefore does not settle the continuity of the relations it describes.

For the present inquiry, a *participant* is a question-relative actor or agent-position appearing in a record under conditions of warranted attribution. A *task* is a sufficiently specified undertaking with its own requirements, temporal location, and permissible performers. A *position* identifies a location in an organized relationship, such as request initiator, relay contact, scheduling coordinator, interpreter, or authorized decision-maker. A *role* is provisionally described as a historically recognizable pattern of activity and situated expectations attached to such a position. A *mandate* specifies the rights, permissions, duties, restrictions, or delegated authority relevant to action in that position. Position, role, and mandate can overlap without being equivalent: a practical expectation that someone will perform a task does not itself confer legal competence or institutional authority.

Biddle's review of role theory identifies the analytical importance of positions, characteristic behavior patterns, expectations, and disagreements among theoretical perspectives [11]. These distinctions provide

an antecedent for differentiating role expectations from individual behavior. The present GR reconstruction adds question-indexed historical evidence, access conditions, and succession comparisons for voluntary supportive action. It does not attribute to Biddle the dossier, admission rule, or normative cautions developed below. Role analysis may be especially important in aid arrangements because a recipient, a volunteer, a professional, and a coordinator can attach different expectations to an apparently identical designation.

7.2 Ontological Suspension, Relational Role Formation, and Manifested Identities

At the level of *ontological reality*, the ultimate status of a role, social identity, or organizational position remains suspended. Calling a recurrent relation a role is an analytical commitment to investigate its history, rather than a proof that a role exists independently of the actors and circumstances through which it appears. The same suspension applies to categories of personhood and agency implicated by nonhuman and artificial participants. A historical role description need not decide the metaphysical status of the participants to identify limitations on the inferences that can be made from their observable activities.

At the level of *relational reality*, roles can acquire historically consequential stability through interlocking expectations, competence, resource access, obligations, practical recognition, permissions, and the ability to re-enact tasks. A position becomes relevant to a relational system when other actions condition themselves upon it. A resident may call a named coordination channel because prior arrangements make a response reasonable to expect; the channel may in turn organize a volunteer's availability and an office's authorization. Such conditioning can continue when the original contributor leaves, while the requirements for continuity remain open to empirical assessment.

At the level of *manifestation reality*, titles, badges, work schedules, public websites, oral introductions, complaint records, and service manuals make selected positions legible. Manifestations are sometimes constitutive of a new expectation: publishing a contact number may produce requests, create an apparent obligation of responsiveness, or exclude people who cannot use the medium. A self-description as a "coordinator" can invite reliance before a stable coordinating capacity exists. Conversely, substantial unrecorded labor may generate a working position without producing a formal title. Role attribution therefore requires attention to both the manifest designation and its practical effects, with the moments of performance, recording, and public recognition kept temporally distinct.

7.3 Practical Role Emergence and Historical Differentiation

The emergence of a role is a claim about how historically dispersed undertakings become associated with a sufficiently recognizable position. One possible pathway begins with a recurrent gap: several people cannot navigate an information process, and different volunteers improvise explanations. A participant begins to collect approved public information, others direct inquiries to that participant, and a local procedure specifies how requests should be transferred. At each stage the task, social expectation, and potential accountability may differ. The resulting role could be informal, officially named, intermittently enacted, or subsequently discontinued.

The framework distinguishes *episodic task performance*, *incipient practical specialization*, *supported role formation*, and *institutionally constituted office*. Episodic performance concerns a bounded action; specialization concerns observed differentiation in who undertakes a kind of task; supported role formation requires independently traceable situated expectations beyond the analyst's retrospective label; an office additionally involves an appropriate constitutive act or recognized authority under applicable institutional and legal arrangements. These are analytical classes rather than a universal maturation sequence. An emergency appointment can constitute a formal office in one documented act; a long-standing informal role may never become an office; an assigned title can exist without practical uptake.

Historical differentiation also has alternative explanations. An apparent specialization may reflect unequal opportunity, a temporary absence of qualified alternatives, an institution's selective recording practice, or an outsider's tendency to assign a label to the most visible participant. A person repeatedly carrying out tasks may be constrained by others' withdrawals rather than voluntarily embracing a role.

An archive that disproportionately records formal coordinators may underrepresent the participants who make coordination workable. A defensible emergence claim therefore identifies the time, alternatives, expectations, and participants whose accounts can qualify or contest it.

7.4 Evidence-Indexed Register of Roles and Positions

A role-history record should represent changes in participants and expectations without assuming stable equivalence across intervals. Let B be a declared relational boundary, I an observation interval, q a specified historical question, and κ a bounded evidential standpoint. The *role-and-position dossier* in Equation 12 is proposed as a typed register linked to the inherited historical description of Equation 2. The ordered fields are families of questions and evidence, not numerical variables with independently established measures.

$$\mathfrak{R}_{B,I;q}^{\kappa} := (\mathcal{N}, \mathcal{T}, \mathcal{E}, \mathcal{O}, \mathcal{Q}, \mathcal{L}, \mathcal{S}, \mathcal{D}, \Pi)_{B,I;q}^{\kappa}. \quad (12)$$

Here $\mathcal{N}$ registers participant and position identifiers, with privacy-preserving correspondence rules; $\mathcal{T}$ registers tasks, qualifications, dependencies, and workable alternatives; $\mathcal{E}$ registers differentiated expectations and their sources, including disagreement; $\mathcal{O}$ records evidenced occupation, enactments, interruptions, and their temporal limits; $\mathcal{Q}$ records qualifications, situated learning and practical resources; $\mathcal{L}$ records relevant authorization, limitations and revocations; $\mathcal{S}$ describes entry, transfer, substitution, overlapping occupancy, exit and proposed succession; $\mathcal{D}$ registers access, dependency, burdens, exclusion and contestation across affected positions; and Π records provenance, record rights, linkage confidence, uncertainty, and revisions. The register is intentionally silent about the moral desirability of an arrangement unless a separate normative inquiry is supplied.

A participant may occupy several positions within I , and a position may have several participants at overlapping times. In the dossier, the question-indexed occupancy relation $\text{Occ}_{B,I;q}^{\kappa}$ is therefore allowed to be many-to-many and partially observed. An absent identifier should remain unknown when privacy safeguards, incomplete records, or retrospective anonymity prevent linkage. It would be misleading to assume that each named role corresponds to exactly one individual, or that the same personal identity can be followed over time without legitimate permission and adequate evidence. Group-level sequences can sometimes be compared without personal tracking; such comparisons have narrower inferential reach.

The dossier also separates *expected performance* from *authorized performance*. A call roster can reveal whom a coordinator planned to contact; a policy can delimit what a volunteer may do; an incident log can document what someone actually did. Contradiction among those records may be analytically informative and ethically sensitive. Recording a contested authorization does not resolve the dispute, and a witness's claim of competence does not establish the right to access confidential information. Data-minimization, legitimate research access, and appropriate retention controls are preconditions for any empirical use of the register.

7.5 Bounded Admission of Historical Role Emergence

A named role should not be inferred merely from a recurring task label. For a proposed position r , let $\mathcal{W}_{B,I;q}^{\kappa}(r)$ be a declared set of candidate historical witnesses. A witness may include time-aligned action records, independently sourced expectations, requests routed toward a position, relevant permissions, and evidence that the description refers to a practical relation rather than only a retrospective label. Six guards are evaluated as supported (+), defeated (−), or unresolved (?): g_T for a defined task-and-position scope; g_E for expectations attributable to specified actors or records; g_O for evidenced relation to a practically enacted or available undertaking; g_D for differentiation from the candidate alternatives; g_C for temporally supported continuity or a documented constitutive act; and g_{Π} for provenance, appropriate record use, and the time correspondence needed for the inference. Equation 13 specifies a deliberately narrow positive classification.

$$\text{ERole}_{B,I;q}^{\kappa}(r) = + \iff \exists w \in \mathcal{W}_{B,I;q}^{\kappa}(r) : \bigwedge_{j \in \{T,E,O,D,C,\Pi\}} (g_j^{\kappa}(w) = +). \quad (13)$$

The equivalence in Equation 13 belongs to this stated *evidential convention*; it is not a theory that a real role can exist only when its archive meets six conditions. Continuity in g_C may be supported by a documented appointment, delegation, or other constitutive act, even before repeated task performance. In a practice-derived account, it may instead require time-ordered independent traces of differentiated expectations and action. A formal designation is evidence of a mandate or intention only to the extent that the document is valid for the period and purpose under examination. Institutional validity itself requires an appropriate independent test.

A positive classification is bounded to B , I , q , κ , and the witness space. It supports the proposition that a role, in the stipulated research sense, can be historically described on the available evidence. It does not show that its occupant consented freely, that the role was indispensable, that its activities benefited recipients, or that the role was lawfully empowered to make every decision attributed to it. A ? result identifies unresolved evidence or ambiguous scope. A negative result requires positive defeats within the declared alternatives; missing files and unrecorded participation are insufficient. A fully alternative account that an apparent role label was imposed retrospectively must remain possible when relevant source dates and contemporaneous expectations are unavailable.

An analyst may also study *proposed* roles, failed appointments, symbolic positions, and emergent expectations that fall short of this admission threshold. Their historical importance is not diminished by refusing to code them as positively admitted roles. Such distinct dispositions avoid converting an archival limitation into a judgment about the reality or value of a participant's contribution.

7.6 Position Transformation Through Changing Activities and Expectations

The history of a position may include modification without either the replacement of its occupant or a change in its title. Consider a volunteer contact point that initially supplies directions to a public entrance, later manages requests for accessible routes, and eventually becomes responsible for routing requests to a professional service. The physical station and role name might remain constant while task qualifications, risk exposure, information access, and the recipient's expectations change. A claim of role continuity must accordingly specify the dimensions conserved and the dimensions transformed.

At least four distinctions are useful. *Task expansion* adds undertakings or complexity to an occupied position. *Authority transformation* changes permitted decisions or the relevant oversight relation. *Expectation transformation* alters whose requests or judgments are directed toward the position. *Boundary transformation* changes the populations, institutions, or affected third parties connected to the role. These changes may occur at different times. They may also conflict: a public notice may imply a broadened role while formal authorization remains unchanged, or a revised mandate may exist before recipients have learned of it.

Feldman's account of organizational routines as potentially changing through participants' responses to outcomes provides a carefully bounded precedent for treating enacted practice as a possible source of organizational transformation [31]. The present inquiry extends the question to volunteer-aid positions, with a separate emphasis on authorization, access, and historical evidence. Feldman's original account does not establish that a volunteer role will change through feedback, nor does it justify performing work outside its permissible remit. Some apparent adjustments are one-off accommodations; others become recognized expectations. The historical investigator needs the discriminating sequence rather than an assumption that adaptation equals institutional progress.

7.7 Entry, Situated Learning, and the Formation of Participant Identities

Entry into a role can entail a relation among an aspiring participant, experienced practitioners, tools, recipients, and procedures. Someone may begin by observing a routing task, proceed to perform bounded parts of it with supervision, and later become an independently assigned contact for a specified class of requests. Learning changes the prospective participant's practical capacity and may alter other participants' expectations, but the sequence remains contingent on the organization's training opportunities, safe limits of practice, and recognition of competence.

Lave and Wenger's theory of legitimate peripheral participation treats learning as a socially situated relation among newcomers, established practitioners, identities, and communities of practice [40]. Its examples and arguments concern situated practices with specific historical and social characteristics. The present framework draws on this orientation while allowing entry trajectories that are abrupt, discontinuous, institutionally credentialed, or unrelated to a community of practice. In a sensitive environment, peripheral access may be restricted for sound confidentiality and safety reasons. Participation alone does not supply the authority to access personal records or perform regulated tasks.

Training history should therefore be studied alongside available opportunities, individual discretion, verification of competence, and institutional obligations. A person may remain peripheral because of preferences or limited hours, because training was unavailable, or because a hierarchy excludes them. The visible endpoint alone cannot reveal which history obtained. A label such as "novice" may be a practical training category, a stigmatizing attribution, or a retroactive convention. Where a volunteer disagrees with a designation, the analyst should preserve the disagreement instead of silently treating the official category as an exhaustive account of identity.

Entry can also affect recipients and nonparticipants. A training exercise may consume staff time, lengthen a queue, or improve future communication. A transition that appears successful from the perspective of the trainee might remain inaccessible to a recipient using a different language or format. Claims of improved inclusivity or service quality consequently require independent access and outcome evidence, rather than an inference from a training certificate or increased volunteer headcount.

7.8 Participant Succession and the Multiple Tests of Continuity

Succession occurs when one or more participants cease to occupy, enact, or be expected to maintain a position and others become candidates to do so. The successor relation is question-relative. A person may take over a timeslot, a responsibility to answer requests, a regulated decision power, a body of situated knowledge, or a recipient-facing relationship. These objects have different evidence requirements. A shared title or a completed handover checklist does not establish that each dimension transferred.

For an empirical succession comparison, the record should identify at least *task continuity*, *practical capability continuity*, *authority continuity*, *access continuity*, *accountability continuity*, and *relationship continuity*. Task continuity asks whether the undertaking is still defined comparably. Practical capability asks whether qualified resources, information, timings, and coordination remain workable. Authority continuity concerns valid assignment and limits. Access continuity asks whether the relevant requesters can still reach the service. Accountability continuity follows records of review, complaints, remedies, and responsibility. Relationship continuity asks whether persons who relied on a previous occupant's responsiveness can reasonably expect the new arrangement to work and under what conditions.

These comparisons must be made across specified intervals and access classes. A substitute can be authorized and task-competent yet unavailable at the required hour. A successor may retain a familiar role name but serve a narrower population. Conversely, a service can remain reachable through an organizational channel even when no former interpersonal relationship carries over. A successor may also improve an arrangement while changing it substantially. The term *continuity* thus designates an explicit vector of partial comparisons in the prose of the dossier, rather than a unitary assessment derived from headcount or organizational branding.

A completed succession may distribute obligations differently. During a transition, outgoing and incoming participants can share tasks, overlap temporarily, or disagree about who is entitled to decide. Shared occupancy may support learning but produce double work or conflicting instructions. A reserve roster may appear to offer replacement while distributing disproportionate on-call burdens to a small group. These effects should be documented as historical changes to relational positions, not assumed away as implementation details.

7.9 Mandates, Informal Expectations, and Boundary Conflicts

A role's practical visibility can expand faster than its formal mandate. Recipients may reasonably ask a familiar volunteer for advice about an issue beyond that person's competence. Staff may informally rely on a capable participant to resolve difficult routing problems. A coordinator may publish a broad role description to improve recruitment. Each process can create expectations; none by itself establishes authority to provide clinical judgments, legal advice, eligibility decisions, or access to confidential information. In institutional settings, authority requires attention to applicable law, organizational rules, valid delegation, and any relevant professional obligations.

Role conflict can also arise among legitimately competing expectations. Biddle's review identifies role conflict among the established objects of role research [11]. In a volunteer-aid arrangement, a recipient's need for continuity may conflict with a volunteer's freedom to withdraw, while an institution's recordkeeping demands may conflict with minimizing private data collection. A volunteer occupying several positions may receive mutually inconsistent instructions. The GR question concerns the historically constituted pattern of those expectations, their sources, and the powers through which one expectation becomes enforceable. Resolving the conflict requires independent normative and institutional argument.

The boundary of the analyst's description should extend beyond named volunteers. Recipients, staff members, nonparticipants, neighboring agencies, family carers, and contracted workers may bear responsibilities when a role changes. Where artificial systems suggest referrals or maintain schedules, their functional contribution and the human or institutional responsibility for decisions must be separately documented. The presence of a task-performing technical component does not settle questions of legal personhood, consent, responsibility, or the treatment of vulnerable people. The role register may include heterogeneous participant types only to the degree supported by question-specific definitions and evidence.

7.10 Exit, Vacancy, Refusal, and Discontinuous Histories

Exit is itself a potentially consequential event in a relational system. When a long-standing contributor stops participating, a role may remain institutionally defined, become temporarily vacant, be redistributed, or disappear from practice. A person may refuse a new assignment, decline a successor nomination, or withdraw from an unsafe or burdensome arrangement. Such action can reveal constraints that routine performance concealed. Describing withdrawal solely as a failure of continuity would prejudice the actor's commitments and diminish the historical significance of refusal.

A vacancy can have several documentary appearances. A schedule may contain a blank position; a manager may list an unfilled post; requests may continue without response; a contact channel may be silently closed. Each record supports a different proposition. If the archive starts after the departure, a researcher may encounter an established replacement while missing the transition. If it ends before a planned successor performs a task, succession remains a prospective claim. Section 3 provides the temporal and censoring distinctions necessary to avoid misdating these events.

Discontinuity need not imply a disappearance of all historical effects. Knowledge may have been incorporated into an approved guide, an alternative service may remain, or former participants may carry their practical learning elsewhere. The position may end while a transferable element of its activity survives. Conversely, the continued presence of a guide or role title can mask the loss of the person able to interpret exceptions. Evidence should specify which residual capacity or relationship is claimed. A later section on relational memory will address these residual structures more directly; the present section concerns the role and succession dimension of such histories.

7.11 Recognition, Credit Allocation, and Unequal Succession Burdens

Historical role attribution may itself distribute symbolic credit and practical authority. A written report might recognize the coordinator who approved a process while overlooking the participants who maintained the actual contact channel. A visible volunteer may receive praise for an outcome that depended on reception staff, recipients' labor, or a pre-existing public service. Recognition may encourage participation,

Table 7: Evidence objects and rival interpretations in role formation and succession histories.

Evidence object	Candidate traces and questions	Rival explanation or inferential limit
Task and position scope	Task descriptions, requests, dated positions, boundaries	Similar labels may index different tasks
Expectations and recognition	Messages, independently reported requests, introductions	Retrospective attribution may create false continuity
Enactment and opportunity	Dated activity, available options, nonperformance	Unequal opportunity can mimic specialization
Authority and restrictions	Applicable policy, authorization, delegations, revocations	Practice and mandate may diverge
Entry and learning	Training opportunities, supervision, competence records	Credential receipt alone cannot establish practical capacity
Occupancy and transition	Rotas, handover dates, overlaps, exits, vacancies	Staff change is not necessarily role continuity
Access and responsibility	Request channels, response gaps, complaints, remedies	Continuity for one population may conceal exclusion
Burden and recognition	On-call time, uncredited work, contested titles, refusal	Visibility can obscure hidden maintenance labor
Alternative histories and provenance	Independent routes, source dates, linkage rights, redactions	Missing archives and selection limit causal claims

but it can also become a source of exclusion, ranking, and unequal access to decision-making. A history of role formation needs to record who assigned the role name, who accepted it, and which alternative descriptions were displaced.

The ethics of recognition cannot be inferred from the number of newly named roles. Formal titles can protect accountability where responsibilities are clearly limited, yet they can also strengthen one person's control over information or turn voluntary care into an expectation of indefinite availability. A succession arrangement may preserve service access by imposing an excessive burden on a successor. The distinct objects are the historical generation of a role, the distribution of the opportunity to occupy it, and the normative judgment of that distribution. Section 7.9 identifies conflicts of authority; further ethical and political-economic evaluation is reserved for the paper's later interfaces.

For historical description, the voices of people who declined, left, or were never invited may be crucial. Absence from a roster is often ambiguous: it may reflect a deliberate refusal, eligibility rules, exclusionary recruitment, care responsibilities, language barriers, or a recordkeeping decision. Only appropriately grounded evidence permits a stronger interpretation. Confidentiality and the right not to participate in research constrain the pursuit of those histories, particularly when an organization might infer sensitive personal information from narrative detail.

7.12 Evidence Audit for Role Formation and Succession

Table 7 organizes the minimum questions for a proposed historical account. Its rows cross-reference the fields of Equation 12 and identify rival readings that should remain available. The list is a research aid, not a claim that a complete set of records exists for any particular organization. Evidential access and privacy constraints may legitimately make some conclusions unresolved.

The audit should preserve positive, defeated, and unresolved assessments for each claim rather than collapse all fields into a maturity score. A verified authorization record cannot substitute for evidence of access; repeated performance cannot substitute for valid delegation; a signed handover cannot substitute for reliable task capability. Likewise, a transition that benefits one access class may affect another through delays, loss of familiarity, or additional unpaid support work. Evidence at the manifestation level can modify the relational configuration itself, while ontological conclusions remain suspended. These distinctions give the three GR levels separate analytical functions across the audit.

7.13 Constructed Histories of Role Formation and Succession

The following cases are wholly constructed comparisons. They contain no original fieldwork, private institutional records, professional determinations, or observations of identifiable organizations. Each case supplies a possible sequence whose interpretation can change under a plausible counterhistory.

Case A: multilingual wayfinding and emergent position differentiation. A fictional public-service facility initially asks several volunteers to direct visitors using an approved public map. A volunteer proficient in an additional language begins helping others use the map, and successive shifts refer relevant requests to that person. A desk note then designates a language-contact position, while authorized staff remain responsible for official information and decisions. The role-emergence dossier can support a specialization hypothesis if dated enactments, independently attributed expectations, and a usable task boundary are documented. A later badge calling the participant “interpreter” would be a manifestation requiring separate verification of what the position actually permitted. If the source record contains only that badge and a retrospective celebratory story, the emergence history remains unresolved. A replacement volunteer with equivalent language ability may take over communication tasks while still lacking an established relationship with frequent visitors. Task continuity, mandate limits, and interpersonal reliance are separate findings.

Case B: transport coordination with overlapping succession. In a hypothetical neighborhood service, a volunteer keeps a shared driving schedule and answers calls. When the volunteer plans to leave, two participants receive training and overlap in answering a limited class of requests. During the transition, one participant handles available drivers while the other verifies route eligibility. A public notice lists a single “coordinator,” although the practical position has been redistributed. A comparable task path remains supported for callers who can reach the new number, provided the qualifications, permission and response arrangements are actually evidenced. The historical object may be a transformed position rather than a single successor to the old role. A positive account of successful succession would be premature if older residents continue calling the discontinued number. An alternative public transport service also complicates the claim that the handover caused continued access.

Case C: emergency assistance and a rejected transfer of decision authority. In an invented short-term accommodation arrangement, volunteers collect non-sensitive logistics requests and route them to an authorized office. After a coordinator departs, an experienced volunteer agrees to manage the routing list. Colleagues assume that the successor can also decide eligibility because that activity had been closely associated with the departing coordinator. An authorized manager clarifies that eligibility determinations remain with designated staff. The successor’s task and the practical routing channel may continue while decision authority stays elsewhere. Recording the rejected transfer matters: it distinguishes warranted boundary maintenance from a failure to preserve every former expectation. If a report describes the succession as complete, the claim needs to be limited to the functions actually transferred. Recipient complaints about delays and volunteer concerns about excessive responsibility supply additional historical objects for assessment rather than automatic evidence for or against the successor’s quality.

Together the cases distinguish an emergent practical role from an imposed title, a successor from a redistributed position, and task handover from the transfer of legitimate authority. They show why neither a positive *ERole* classification nor documented successor occupancy suffices to establish equitable participation, lawful decision-making, durable capability, or the desirability of the role. Each constructed history also offers a countermodel for the assumption that institutional naming, reliable task performance, and shared recognition necessarily develop together.

7.14 Historical Hypotheses, Research Designs, and Relational Memory

The analysis yields several provisional, testable expectations. In settings where recurring tasks create independently visible cross-participant expectations, supported role differentiation may become detectable before formal job titles are issued. In settings where task instructions, permissions, and access paths are separately documented, participant replacement may preserve a specified task capability more readily than an informal succession dependent on one person’s private knowledge. In settings marked by unequal

recognition, the people most visible in official records may differ from those who maintain practical continuity. These are hypotheses conditioned by organizational history, alternatives, and record selection, rather than universal regularities or empirical results established here.

A future investigation could compare approved historical process records across voluntary transitions, unforeseen departures, and unfilled vacancies; triangulate them with authorized procedural versions, public access information, and non-identifying measures of failed requests; and explicitly track tasks whose definitions change. Inferences about causal effects would require counterfactual design, attention to selection, and independent assessment of concurrent changes. The more modest process claim could be assessed by whether time-ordered observations support the proposed intermediate mechanism and discriminate it from plausible alternative services or organizational reforms. Documentary silence must remain distinguishable from a positive absence of expectations. In any study involving participants or vulnerable recipients, recruitment, access, data protection, and research ethics would need appropriate independent authorization.

Section 7 proposes an evidence-bounded account of roles as historically differentiated relations among activities, expectations, participants, permissions, and access paths. The dossier and admission rule allow the analyst to articulate a role-formation claim while preserving questions of validity, authorization, causal attribution, and justice as independent matters. The consequences of succession lead directly to a further problem: which routines, informal skills, documentary traces, and responsibilities outlast a particular occupant, and what recurrent work is needed to keep them available? Section 8 addresses shared practices, relational memory, and the reproductive labor through which apparent continuity can be sustained or lost.

8 Shared Practices, Relational Memory, and Reproductive Work

The historical endurance of a supportive arrangement raises a question different from the continued occupancy of its roles: what enables a practice to be performed again, across changing circumstances and participants, and which work preserves that possibility? This section develops an evidence-indexed account of shared practices, relational memory, and the labor required for reproduction in voluntary aid and supportive cooperation. It first differentiates an action episode, an enacted practice, a retained capacity, and an asserted institutional tradition. It then examines embodied skills, material and documentary carriers, repair, access, exclusion, and succession before proposing a bounded formal register and comparative cases. The mode of argument is conceptual, interpretive, and comparative-historical. The formal vocabulary supplies research distinctions rather than a law of social reproduction; causal and normative conclusions require separate evidential and justificatory procedures.

8.1 Action Episodes, Practices, and Historical Re-enactment

An action episode is a time-bounded undertaking with participants, a task, an opportunity structure, and an evidentially specified outcome or interruption. A *practice*, in the narrower sense employed here, is a historically recognizable organization of potentially repeatable undertakings through learned expectations, material arrangements, available skills, and responses to recurrent circumstances. Recognizability is situated: participants may agree about the appropriate way to receive a request while disagreeing about the practice's purpose or whether its burdens are fairly distributed. A claimed tradition adds a narrative of continuity; such a claim can influence conduct but supplies neither a dated sequence nor a valid mandate by itself.

Three distinctions matter for reconstruction. *Repetition* refers to observed similarity among selected actions. *Re-enactability* concerns the availability of the participants, permissions, resources, and knowledge through which a sufficiently specified task could be undertaken again. *Historical reproduction* concerns the continuation or qualified regeneration of those conditions over a stated interval, allowing changes in carriers and procedures. An identical-looking episode can rely on a fragile one-person improvisation; an altered procedure can preserve a recipient's access even when its visible form changes. An analyst should specify the relevant task and continuity dimension before assigning a history of reproduction.

The practice object also depends on its question-relative boundary. Repeatedly welcoming visitors may be studied as an interpersonal greeting, a staffed reception practice, an accessible information service, or a relation between an institution and its visitors. Continuity at one boundary need not entail continuity at another. Sections 1 and 3 establish the inherited requirements for declaring relational boundaries and temporal evidence. Section 7 further distinguishes who occupies a role from what practice, if any, the role makes possible.

8.2 Ontological Suspension and the Three Reality Levels of Reproduction

At the level of *ontological reality*, the ultimate status of collective memory, shared routines, institutions, and their persistence remains suspended. The present account does not assume that a practice possesses a mind, that an organization literally remembers, or that a social form persists independently of its changing constitutive relations. Terms such as *carrier*, *retention*, and *reproduction* identify provisional objects of research, subject to revision by historical and empirical inquiry.

At the level of *relational reality*, an arrangement may acquire historically consequential persistence when participants can draw on learned dispositions, tools, response channels, mutual expectations, available authorization, and recurrent repair work. Memory in this register concerns retained conditions that influence later possibilities and performances, whether through one participant's competence, coordination among several people, or a material arrangement. A practice can be reproducible without each participant knowing its full history. Conversely, a group can possess an extensive narrative of past activity while lacking the people, time, access paths, or permissions needed to carry it out again.

At the level of *manifestation reality*, instructions, stories, training sessions, checklists, databases, timetables, gestures, labels, and visible task performances expose selected traces of retention. These manifestations are partial and may be consequential acts in their own right. Posting a new procedure can redistribute requests, make a task appear officially endorsed, or displace informal expertise. The printed or digital record is therefore both a possible source for historical inquiry and, under specified conditions, a participant in the later relational configuration. The three levels guide distinct questions: what ontological commitments are being withheld, which historically efficacious relations are provisionally modeled, and what evidence and interventions make those relations observable or alter them.

8.3 Situated Skills, Incorporated Memory, and Practical Judgement

Repeated undertaking may preserve practical knowledge in participants' skilled responses. A person who has learned when to refer a visitor to an authorized office can respond competently without consciously reciting the sequence by which the skill was acquired. Such capacity may involve bodily orientation, linguistic sensitivity, timing, recognition of exceptions, and learned awareness of professional or institutional limits. Knowledge retained in performance differs analytically from a verbal account of the practice; each may help reconstruct the other, but neither subsumes it.

Connerton's account of social remembrance gives particular importance to incorporated bodily practices alongside inscribed or representational modes of remembering [22]. The present argument uses that distinction as a conceptual precedent for investigating skilled continuity. It does not transfer Connerton's analysis of ceremonial and cultural memory wholesale into volunteer organizations. Local evidence would still need to establish which trained actions are retained, which can be taught to newcomers, and which change as contexts and participants change.

Tacit competence also has boundaries. Experience with familiar requests may coexist with uncertainty about infrequent emergencies, changed eligibility rules, unfamiliar languages, or encounters beyond the volunteer's authorized role. A historical researcher cannot establish competence from duration of service alone. Observation may reveal a particular successful performance; validated qualifications may authorize certain tasks; participants may describe unrecorded practical skill. Each supports a different kind of inference. A defensible account of practical memory recognizes both learned judgement and the conditions under which its exercise is safe, permitted, and accessible.

8.4 Routine Patterns and Variation Among Performances

Organizational research provides a useful vocabulary for the relation between the recognizable pattern of a routine and its particular performances. Feldman and Pentland distinguish the *ostensive* aspect, through which participants refer to and account for a routine, from the *performative* aspect, the situated actions of particular people at particular times and places; their analysis treats organizational routines as potential sources of both change and stability [32]. Feldman's earlier discussion likewise analyzes how participants' responses to performance consequences can transform routines [31]. These works motivate attention to variation, while the following evidence conditions and specifically volunteer-aid examples belong to the provisional GR extension.

A recurring service route may be described by a written schedule, enacted through daily decisions about who responds to requests, and modified after disruptions. Distinguishing a stated routine from its performances guards against two misreadings. Official stability can conceal substantial improvisation; observed variation can reflect competent adaptation to a changing task rather than disappearance of a shared practice. A claim of continuity consequently requires declared invariants relative to the historical question, such as preserved eligibility boundaries, reachable contact channels, safe referral conditions, or comparable access for a specified request class. These are methodological choices open to challenge by participants and affected nonparticipants.

Reproduction should also be distinguished from simple imitation. A newcomer may reproduce the service function through different materials or a revised assignment of responsibilities. Alternatively, a participant may copy the visible steps while silently losing an essential safeguard. The analyst therefore compares observed performances with task-specific constraints, access paths, and appropriate authorization, while preserving uncertainty when the available archive records only appearances. Historical identity at the practice level remains a supported, revisable description rather than a consequence of matching routine names.

8.5 Distributed Carriers and the Conditions of Relational Memory

A practice may be carried across several partially substitutable media: participants' embodied competences, oral instruction, annotated materials, recurrent meetings, routing systems, equipment placements, and relationships with neighboring organizations. Retention can also depend on persons outside a volunteer group. Recipients may know how to reach a service after volunteers change; administrative staff may retain crucial permissions; another association may supply replacement capacity. Treating memory as distributed does not imply that all carriers have interchangeable content or equal legitimacy.

Consider a record of how to route public information requests. A written guide may preserve permitted destinations and ordinary steps. A mentor may preserve sensitivity to hesitation and ambiguous requests. A public notice may direct people into the channel. An authorized staff member may determine the scope of information that can be released. A shared task is reproducible only with a sufficiently workable configuration of these dependencies for the case at hand. Even where the paper guide remains intact, departures, language exclusion, broken links, or withdrawn institutional permission can interrupt the practice.

The distribution of carriers introduces two historically important asymmetries. First, the carriers visible to the organization may differ from those on which practical service depends. Second, a carrier's disappearance may have very different consequences for different participant groups. A replacement website could improve access for people able to use it while making information harder to obtain for someone without the relevant device or language. A reproductive-history claim should therefore include the population and access conditions within which continuity is asserted, and the people to whom additional maintenance work is transferred.

8.6 An Evidence-Indexed Practice and Memory Register

The proposed *practice-and-memory dossier* records candidate relationships between actions, carriers, knowledge retention, and reproductive work without treating memory as a measured stock. Let B denote the declared relational boundary, I the historical interval, q the research question, and κ a specified evidential standpoint. Equation 14 defines a typed register whose fields may contain dated observations, qualified accounts, authorizations, disagreements, or explicit missingness. It inherits the evidence and temporal indexing of Equation 2 and does not imply that every field is observable in every case.

$$\mathfrak{M}_{B,I;q}^{\kappa} := (\mathcal{A}, \mathcal{P}, \mathcal{C}, \mathcal{K}, \mathcal{W}, \mathcal{U}, \mathcal{X}, \mathcal{V}, \mathcal{D}, \Pi)_{B,I;q}^{\kappa}. \quad (14)$$

Here $\mathcal{A}$ indexes bounded action episodes and their performance opportunities; $\mathcal{P}$ identifies task-relative practice patterns and their candidate invariants; $\mathcal{C}$ registers material, interpersonal, and documentary carriers; $\mathcal{K}$ contains bounded evidence of competence, instruction, situated judgement, and retention; $\mathcal{W}$ describes preparation, maintenance, repair, mentoring, and other reproductive work; $\mathcal{U}$ records permissions, practical resources, and institutional conditions; $\mathcal{X}$ registers requests, service accessibility, exclusions, and differential consequences; $\mathcal{V}$ records revisions, disruptions, departures, rival services, and historically plausible alternatives; $\mathcal{D}$ registers the distinctions among the claimed continuity dimensions and the available observations; and Π records provenance, source dating, observation limits, access rights, and uncertainty. Each field has a declared interpretation and can contain competing accounts.

The register is intentionally heterogeneous. A competence report is neither commensurate with a monetary maintenance cost nor convertible into an authorization document by aggregation. The same description may enter different fields only with its evidential function identified. A public manual might be evidence of a proposed procedure under $\mathcal{P}$, a carrier under $\mathcal{C}$, a manifestation under the three-level distinction, and a possible source of new requests under $\mathcal{X}$. The historian should retain these functions separately. Similarly, a missing account of repair work under $\mathcal{W}$ warrants an unresolved inference, not an assumption that repair was unnecessary.

8.7 Bounded Admission of Practice Reproduction Claims

For a proposed practice p and declared interval pair (I_1, I_2) , let $\mathcal{E}^{\kappa}(p; I_1, I_2)$ denote the admissible historical traces under a defined question, access protocol, and privacy restriction. A positive classification of *supported practice reproduction* requires more than two similar-looking episodes. Six guards are assessed as supported (+), defeated (−), or unresolved (?): h_T concerns a stated task, boundary, population, and continuity dimension; h_O concerns time-ordered evidence of relevant enacted or feasible undertakings in both comparison intervals; h_C concerns sufficiently traced carrier, learning, transfer, or regeneration pathways; h_U concerns applicable permission and practicable resources at the relevant times; h_X concerns task-relevant accessibility and an explicit treatment of material exclusions; and h_{Π} concerns provenance, record scope, temporal correspondence, and rival explanations. Equation 15 specifies a narrow positive coding convention.

$$\text{SRep}_{B,q}^{\kappa}(p; I_1, I_2) = + \iff \bigwedge_{g \in \{h_T, h_O, h_C, h_U, h_X, h_{\Pi}\}} [g(\mathcal{E}^{\kappa}(p; I_1, I_2)) = +]. \quad (15)$$

Equation 15 defines only the positive state of an evidence-indexed classification. When one guard remains unresolved, SRep remains unresolved for that claim; when independently warranted negative evidence defeats a necessary guard, the proposed positive claim is defeated. These are evidential dispositions, not propositions that the practice metaphysically ceased to exist. h_O can be supported by qualified feasibility evidence where the research question concerns capacity rather than observed performance, but the coding must explicitly say which object is being classified. Comparative alternatives under h_{Π} constrain causal attribution; the convention itself does not identify causal effects.

The six guards are dependent in practice and carry no weights. Historical research may find a period of productive transformation in which a former pattern ceases while a different, valuable practice appears.

Such a transformation may deserve a separate positive description rather than forced identity across intervals. Likewise, the loss of a practice may be ethically desirable where the former arrangement was unsafe or coercive. A positive *SRep* assessment is therefore neither a success score, a legal-validity test, a claim of participant consent, nor an unconditional indicator of social value.

8.8 Maintenance, Repair, and Reproductive Labor

Reproductive work comprises the activities required to preserve or regenerate the conditions under which a practice can recur: preparing materials, training successors, updating information, replacing equipment, coordinating availability, repairing handover failures, clarifying permissions, handling exceptions, and reconnecting participants with reliable alternatives. Its historical importance lies in the possibility that the continued availability of a service depends more on these recurrent activities than on the most visible episode of assistance. A task may appear effortless to a recipient precisely because prior preparation has reduced the recipient's burden.

Star and Strauss analyze how the visibility of work depends on the indicators and contexts through which it is recognized, including background and backstage activity [66]. Their analysis supplies a relevant warning for historical observation: records of public-facing assistance may selectively underdescribe coordination and upkeep. Applied to voluntary aid, this is a hypothesis to investigate, not an established empirical distribution of invisible work. A historian should seek appropriately authorized evidence concerning preparatory time, interruptions, maintenance transfers, and the distribution of recognition, while allowing that some labor may legitimately remain private or undisclosed.

This analysis links practice reproduction to finite capacity. Volunteer time, attention, skill acquisition, institutional supervision, accessible communication, and material renewal may all be scarce in a specified setting. Expansion of visible service episodes could coexist with deferred maintenance or concentrated burdens. Conversely, fewer episodes in a given period could reflect training, safety improvements, or legitimate refusals rather than relational decline. The paper therefore treats observed service volume and reproductive adequacy as distinct questions. Its wider political-economic interpretation, including value generation and extraction, will require the separate mechanisms and normative arguments developed in Paper VIII and later sections of the present study.

8.9 Handover, Redundancy, and Successor Learning

Succession may preserve a role title while changing the practical memory on which the associated undertaking depends. Three handover pathways can be compared. *Person-to-person mentoring* transfers elements of judgement through supervised activity; *material handover* transfers appropriate guides, supplies, schedules, or contact systems; and *distributed rehearsal* permits multiple participants to practice a limited undertaking and to identify dependencies before a departure. These pathways can be combined, but their sufficiency depends on the task, permissions, participants, and foreseeable exceptions.

Situated learning provides one antecedent for examining newcomer participation in historically constituted practices [40]. The present extension does not presume that participation alone yields competence or that a volunteer can legitimately learn restricted activities by experimenting on recipients. Where authorization, clinical safety, confidentiality, or safeguarding obligations apply, supervision and task boundaries constrain the activities available for learning. Refusal to accept a handover can be a warranted boundary decision, particularly when the successor lacks competence, time, consent, or authorization.

Redundancy can reduce dependence on one carrier while adding coordination costs. Multiple trained participants may preserve a routing channel when someone is absent, yet contradictory advice or unclear accountability may worsen the service. An archived instruction may improve transferability but go stale as contacts, permissions, or procedures change. Historical assessment should register both substitution benefits and the recurrent labor needed to keep substitute pathways viable. A claimed successor practice deserves testing under foreseeable ordinary conditions and appropriate exception handling, rather than only under a ceremonial handover demonstration.

8.10 Repair, Drift, and Historical Reconfiguration

Reproduction takes place within changing circumstances. A service may encounter new languages, accessibility requirements, altered regulations, staffing changes, new technologies, or shifts in the kinds of assistance requested. Participants may respond by repairing a small failure, adapting a procedure, or replacing the underlying arrangement. These changes may be related but should be described at the granularity supported by time-indexed records.

Repair refers here to an intervention intended to restore a specified task-relevant capability after an observed or anticipated disruption. *Drift* refers to a historically traced divergence between a declared practice description and enacted operations, without assuming either improvement or deterioration. *Reconfiguration* refers to supported changes in the participants, carriers, dependencies, or task boundaries significant to the research question. A repair could produce reconfiguration; drift could result from accumulated locally reasonable adjustments. Their classification does not predetermine causal explanations or moral assessments.

A formalized practice can create a false impression of stability when its documents remain unchanged while workarounds proliferate. An informal practice can also be robust when participants openly compare different ways of meeting a bounded task and retain safe alternatives. The historian should identify who can initiate repair, who absorbs its cost, whose objections are recorded, and whether a newly standardized process remains reachable by people with different resources. A change that improves the organization's metrics might burden recipients through new forms or inaccessible interfaces. Reproductive analysis is therefore sensitive to both continuity of capability and transformation of its distribution.

8.11 Access, Refusal, and the Normative Ambivalence of Persistence

The historical ability to reproduce a service is a descriptive accomplishment under the declared conditions. Its ethical and political assessment depends on additional questions: whether people freely undertake the work, whether recipients can access it without degrading treatment, whether decision-making authority is appropriate, and whether maintenance burdens or risks are distributed justifiably. A durable arrangement can maintain exclusions or unsafe practices. An interruption can result from participants exercising legitimate refusal, an institution correcting unauthorized activity, or beneficiaries choosing a preferable alternative. Persistence alone is therefore insufficient to warrant praise.

Exclusion can operate at the level of entry into the practice as well as access to its outputs. People may be unable to volunteer because training is scheduled at inaccessible times, communication relies on one language, or an informal network allocates desirable roles to familiar participants. They may also be unable to obtain support through a channel that requires particular devices, transportation, or documentation. The historical evidence should distinguish a practice's stated universality from the populations it could actually reach during each interval. Claims about discrimination or violations of rights require appropriately specific evidence and independent normative or legal standards.

Relational memory can also preserve the effects of harm. A former recipient's caution toward a volunteer channel, an unresolved complaint, or a history of exclusion may shape later reliance even when personnel and manuals change. Such histories should be considered without treating a person's silence, refusal to be interviewed, or absence from documentation as a deficit in historical evidence that must be cured through intrusive inquiry. Authorized, privacy-preserving methods may support some comparisons; other inferences properly remain unresolved. Reproductive work includes responsible discontinuation, archival correction, and appropriate referral where a past practice should cease.

8.12 Manifested Memory, Archival Selection, and Feedback

A practice becomes narratable through selected representations: training handouts, after-action reports, signed handovers, oral histories, and recurring procedural names. Such manifestations can coordinate later action. A guide that accurately lists a referral route may support successor learning; an outdated web page may continue generating misdirected requests; a commemorative report may lead an institution to protect

Table 8: Evidence objects, candidate traces, and alternative interpretations in shared-practice reproduction.

Evidence object	Candidate traces or research questions	Rival reading or inference boundary
Task and comparison boundary	Dated task specification, recipient group, continuity dimension	Unchanged name can conceal a changed undertaking
Performances and opportunities	Time-indexed requests, enactments, interruptions, feasible responses	Similar outputs may depend on unrelated providers
Skill and situated judgement	Training histories, appropriately observed practice, qualifications	Experience duration cannot certify competence
Carriers and handovers	Guides, equipment, mentors, systems, transfer records	Possession of a guide may conceal inaccessible tacit skill
Reproductive labor	Preparation, maintenance, repairs, mentoring, exception work	Public-facing logs can omit decisive background work
Authorization and resources	Valid permissions, supervision, material availability	Routine occurrence cannot legitimate restricted activities
Access and distribution	Reachable channels, language coverage, refusals, complaints	Aggregate continuation can conceal unequal exclusion
Adaptation and alternatives	Revision sequence, parallel channels, closures, external services	Apparent persistence may be replacement or independent change
Provenance and uncertainty	Source dates, record rights, omissions, disagreements	Selective preservation can mimic stability or discontinuity

a named practice even after its original function has changed. This is a bounded form of manifestation feedback, with temporal and causal questions that cannot be settled by the record alone.

Archival survival is selective. A person who completed visible assistance may appear in annual reports while those who arranged access, translated instructions informally, or repaired equipment remain unnamed. A formal procedure might be preserved for years; a crucial spoken correction may never enter the archive. The record of a gap might represent an actual interruption, an uncatalogued handover, or restricted access to confidential documents. Temporal ordering and source provenance, as specified in Section 3, remain necessary when reconstructing these histories. Where records are unsuitable for public release, confidentiality and data minimization constrain what can be presented even if details might strengthen an inference.

Section 9 will examine the transmission and recognition consequences of manifestations more fully, including the authority of categories and the politics of training and archival representation. The present section's narrower task is to establish when documentary and other manifestations may be treated as carriers or evidence of historically reproduced practice. A narrative of memory should remain linked to traceable work and feasible activity rather than gaining evidential authority solely through repeated institutional retelling.

8.13 Evidence Audit for Reproductive Histories

Table 8 sets out the evidence objects suggested by Equation 14 and the guards in Equation 15. It is an audit aid for a declared historical question. Evidence may be absent, legitimately inaccessible, disputed, or available only at an unsuitable granularity; the table supplies neither a mandatory collection protocol nor a uniform practice-maturity scale.

An audit entry should name the precise claim each source can support and distinguish independent witness accounts from repetitions of one originating report. Agreement among several copies of a procedure offers limited triangulation when they share an author and version. A checklist's presence may establish that a procedure was prescribed; a dated activity record may establish that a step was performed; a qualified access assessment may reveal whether a person could benefit from it. Comparisons of successive practice states require a credible join across the relevant tasks, populations, and observation intervals. Adverse evidence and undecidable cases are analytically important, especially where maintaining an apparently stable service relied on unacknowledged work or unsafe improvisation.

8.14 Constructed Comparisons of Shared Practice and Reproductive Work

The following cases are entirely constructed analytical comparisons. They assert no observed behavior of an identifiable hospital, aid organization, recipient, volunteer, or other institution. Their function is to expose distinct mechanisms and plausible counterhistories under controlled descriptions; they cannot estimate prevalence, demonstrate effectiveness, or identify causal effects.

Case A: a language-navigation guide with retained and lost capacities. A fictional visitor-information desk uses an approved multilingual wayfinding guide. A long-serving volunteer has learned to detect when a question concerns clinical interpretation and refers such questions to authorized staff. After the volunteer departs, the same guide remains and a successor can accurately direct ordinary visitors to publicly listed locations. The records support continuity in the narrow wayfinding task if relevant access and authorization conditions remain satisfied. They do not independently establish continuity of exception-recognition competence. A supervised handover might preserve part of that skill; a guide revision alone might not. A rival interpretation is that professional reception staff, rather than the volunteer procedure, sustained the accessible service throughout. The proposed dossier must keep these alternatives separate.

Case B: neighborhood transport with concealed maintenance work. A hypothetical volunteer transport group advertises an unchanged weekly pickup schedule. Public reports count completed journeys, while a participant informally checks vehicle readiness, calls drivers after cancellations, and updates the contact list. When that participant withdraws, several journeys still occur, but unanswered requests and last-minute disruptions increase. If the audit records only completed journeys, continuity may appear stronger than it is for the people whose requests never reached a driver. A subsequent shared rota for equipment checks and contact maintenance may restore a bounded response capacity, even though the performing participants and the underlying routine differ. The case tests the possibility that reproductive work, access, and visible output vary independently. It does not assume that the group's chosen model is socially optimal or that a specific person owed continued unpaid maintenance.

Case C: emergency-support protocol revised after a mandate boundary is clarified. In an invented temporary assistance network, volunteers have developed an informal way to collect logistical requests and pass them to designated staff. A handbook later describes the volunteers as deciding eligibility, although their valid authorization permits only intake and routing. During a safety review, the handbook is corrected, volunteers receive new referral training, and official eligibility decisions are reserved to authorized personnel. The old practice description no longer persists intact. Nevertheless, the task-specific routing channel may become safer and more reproducible if the revised process is implemented, accessible, and appropriately supervised. A celebratory narrative describing the original procedure as a successful tradition would obscure the correction. The case requires the historian to classify bounded continuity, changed mandates, potential service interruption, and independent legality questions without treating documentary persistence as self-validating.

Together these comparisons show why retained documentation, participant familiarity, successful service episodes, and ethically appropriate reproductive conditions have partially independent histories. Each requires its own evidence, temporality, and boundary. A supportive arrangement can survive a change of personnel while losing a tacit safeguard; remain apparently stable through concentrated uncredited maintenance; or transform in a way that appropriately discontinues an unauthorized practice. These countermodels limit simplistic claims that institutional memory is uniformly beneficial or that reproduction consists in copying past behavior.

8.15 Historical Hypotheses and the Interface with Knowledge Transmission

The framework yields provisional empirical hypotheses. First, where knowledge carriers are distributed across documented procedures, qualified participants, and maintained access channels, the abrupt loss of one participant may have fewer task-specific effects than in an otherwise comparable arrangement dependent on a single undocumented expert. This is an expectation about conditional resilience, not a general law; coordination problems and inconsistent versions are plausible countereffects. Second, where

maintenance activities are sparsely recorded, histories derived only from public performance logs may systematically underdescribe reproduction burdens. Third, where changes in manifested instructions feed back into request patterns, institutional narratives and recipient access may diverge across groups. Each hypothesis requires evidence with adequate time ordering, source coverage, alternative explanations, and appropriate ethical access arrangements.

A feasible research design could pair dated procedure versions with authorized process traces, records of training and handover, suitable aggregated service-access data, and nonintrusive assessments of maintenance capacity. Case selection should include apparent continuity, supported disruption, reconfiguration, and unresolved documentary histories. Process tracing can evaluate whether the proposed mediating steps occurred; causal effect estimation would additionally need defensible comparisons or counterfactual identification. Institutional archives may be incomplete, and access to recipient or volunteer records may be restricted for sound reasons. Missingness should therefore be recorded as part of the history's conditions of knowability.

Section 8 proposes an analytically limited conception of practice reproduction as historically traceable retention and regeneration of situated capability, sustained by identifiable labor and bounded conditions. The dossier and positive-admission convention make reproduction claims more inspectable while keeping ontological, causal, legal, and ethical questions open. The next section, *Knowledge Transmission, Recognition, and Manifestation Feedback*, can examine more directly who controls the categories by which practices are taught, remembered, credited, and publicly represented, and how those representations alter later relational possibilities.

9 Knowledge Transmission, Recognition, and Manifestation Feedback

Knowledge acquired through voluntary supportive action can outlast an individual performance only under historically specific conditions of access, interpretation, and renewal. The present section examines a further transformation: how retained practical knowledge becomes transmissible, how particular contributions and categories acquire recognition, and how their documentary or symbolic manifestations may reorganize subsequent opportunities for action. Its object is the historical coupling among learning arrangements, selective representations, and relational consequences, rather than an assumption that recorded knowledge or public recognition signifies institutional progress. The argument first distinguishes transmissibility, recognized standing, and actual changes in practice; then develops a three-level analysis, an evidence-indexed register, and a narrow admission convention; finally, it examines rival mechanisms, constructed comparisons, and implications for the later account of rule formation. Its mode is conceptual and comparative-historical, with formal devices restricted to the organization of potential evidence and the classification of bounded claims.

9.1 Transmission, Retention, and Historical Uptake

A remembered practice can remain locally accessible to one participant without becoming available to a newcomer. *Retention* refers to the persistence of conditions relevant to later performance, including skills, materials, access relations, and practical judgement. *Transmission* refers to situated processes through which another participant gains access to, interprets, and potentially acquires some of those conditions. *Uptake* designates a bounded response in which an available account or learned capacity informs an action, a decision, or a revised expectation. Transmission can occur without uptake; uptake can occur through reconstruction or discovery where a prior agent's explicit teaching is absent. These distinctions delimit different historical propositions.

Instructional availability deserves separate assessment from actual learning. A readable handbook may make procedures inspectable while leaving exceptions incomprehensible to a new volunteer. A successful demonstration may show an instructor's competence without establishing a learner's independent ability. A participant may acquire sound practical judgement yet lack access, time, consent, or authorization

to exercise it. Historical analysis should specify the intended task, the kind of knowledge at issue, the participating positions, and the observation window before naming a transmission episode successful.

The transition from Section 8 is consequently limited and substantive. That section examines carriers and the labor of preserving potential re-enactment. The present section studies the additional conditions under which a carrier, learner, evaluator, and consequential audience become connected. A historical pathway might preserve know-how without reproducing its earlier role, or reproduce an activity while changing which participants are permitted to interpret its knowledge. Continuity of a practice, transmission of its capacities, and institutional recognition of its narrators therefore require distinct evidence.

9.2 Ontological Suspension and Three-Level Manifestation Analysis

At the level of *ontological reality*, the study suspends judgement concerning the ultimate metaphysical standing of collective knowledge, shared identities, and institutional recognition. An archive, a certificate, or a social designation need not be treated as a self-subsisting knowledge-bearing subject. Likewise, the meaningfulness of a tradition for its participants does not resolve the ontology of group memory. The proposed objects are question-relative and revisable research constructions.

At the level of *relational reality*, knowledge transmission is provisionally modeled through historically consequential relations among participants, tasks, demonstrations, carriers, communication channels, permissions, evaluation practices, and future opportunities. Recognition is relationally consequential where a designation affects expectations, eligibility, access, resource allocation, or willingness to rely on someone. A person may receive public praise while remaining unable to influence task arrangements; another may exercise indispensable discretion without formal recognition. The analysis therefore separates a recognition act from the practical powers and vulnerabilities it may condition.

At the level of *manifestation reality*, manuals, qualification labels, photographs, public reports, oral histories, digital dashboards, training certificates, and participant testimony make selected relations visible. Such manifestations are evidence only within specified source and access conditions. They may also become interventions: a schedule can redirect requests, a new label can change gatekeeping, and a published history can attract resources or discourage dissent. A researcher should distinguish the manifestation as a historical source, its interpretation as evidence, and its possible subsequent effects as an object requiring an independently traced causal pathway. These levels are coupled in inquiry without being identified with one another.

9.3 Situated Apprenticeship, Guided Participation, and Skill Transfer

Transmission can occur through observation, guided participation, structured instruction, supervised rehearsal, peer conversation, written guidance, and retrospective discussion after an episode. Each pathway affords different access to tacit judgement, procedural boundaries, and unusual contingencies. Wenger's account of communities of practice treats learning, meaning, and identity as intertwined with sustained social participation [77]. Its original theoretical domain supplies a conceptual antecedent for examining situated learning. Application to volunteer aid is a separate hypothesis requiring attention to intermittent participation, recipient vulnerability, organizational mandates, and role-specific restrictions.

An apprenticeship relationship can convey how to respond to ordinary requests while also transmitting an inappropriate convention, an inaccessible idiom, or excessive reliance on an experienced individual. The existence of mentoring is therefore only a candidate mechanism. A research record would need to identify the task learned, opportunities for supervised performance, occasions for corrective feedback, and circumstances in which a learner could decline the undertaking. Competence claims should be indexed to task complexity and supported by evidence appropriate to that task. Where a restricted or safety-sensitive activity is involved, actual authorization and qualified oversight constrain what learning opportunities can legitimately be provided.

Learning may also alter the incumbent's practice. Questions from newcomers can expose ambiguities, reveal an unrecognized need for translation, or prompt revision of a procedure previously treated as self-evident. Such feedback may be generative, inconvenient, contested, or ignored. The historical

question concerns which participants can voice these observations, which receive a response, and which adjustments become accessible in subsequent episodes. The present model does not infer improvement solely from change or assume that a longer service history confers expertise across contexts.

9.4 Access Conditions, Consent, and Bounded Participation

Knowledge is differentially available. Access may depend on language, literacy, scheduling, disability accommodations, familiarity with local institutions, digital permissions, and the ability to participate without disproportionate cost. A training opportunity described as open can remain practically inaccessible to a volunteer who cannot attend its sessions or read its documents. Conversely, access restrictions may protect personal information, maintain professional boundaries, or prevent unsafe task delegation. Historical reconstruction should identify both the stated basis of a restriction and its consequences for feasible participation.

Consent enters at multiple positions. Instructors, learners, recipients, coordinators, and persons whose stories appear in training materials may have distinct interests in whether an episode becomes instructional content. Permission for someone to provide assistance does not automatically permit the later publication of identifiable details. A recipient's acceptance of help does not establish consent to observation, data capture, or reuse of their experience in a case study. A researcher should separate a participant's willingness to teach, the learner's willingness to undertake a task, and authorization to process information; each may change over time.

A cautious design may favor anonymized constructed scenarios, role-specific demonstrations, and authorized review of de-identified procedures where these serve the same instructional question. Such possibilities remain recommendations for further assessment, rather than legal conclusions. Jurisdictional data-protection, confidentiality, safeguarding, and research-ethics obligations require independent determination. In the present manuscript, sensitive restrictions are treated as substantive relational conditions, not inconvenience variables to be optimized away.

9.5 Categories, Documentation, and the Organization of Visibility

Practical knowledge enters many institutional records through categories: types of task, participant status, hours contributed, referral destination, training level, completion code, and eligible service population. Categories can facilitate coordination by enabling a schedule, finding relevant expertise, or clarifying a permitted scope of work. At the same time, a scheme selects which activities are recognizable, which distinctions can be entered, and what remains in narrative or undocumented form. Bowker and Star's analysis of classification systems and information infrastructures provides a precedent for examining how categories organize social relations, while foregrounding the often-unseen consequences of standards [15]. Their empirical cases do not provide findings about the volunteer settings constructed in this paper.

Classification should be treated as an activity with a history. A category may be proposed by a coordinator, embedded in software, negotiated during training, altered after an incident, or inherited from an external administrative standard. Distinct people may use the same category for different purposes. For example, *information assistance* can encompass a brief direction, language mediation, triage toward an authorized professional, or ongoing accompaniment, although these activities differ in skill, responsibility, and potential impact. Whether they belong in one record category is a design decision requiring a declared question and safeguards against misleading equivalence.

A new reporting field can modify which work is visible. If a system records only public-facing shifts, preparation, emotional labor, coordination with interpreters, and recovery after a difficult episode may be absent from the aggregate. If a system requires a single response code for a complex encounter, participants may strategically select a locally acceptable label. The resulting record can still be useful for a bounded administrative purpose; interpreting it as a full representation of relational activity requires additional validation. Classification changes thus belong in the historical timeline alongside the events they purport to describe.

9.6 Recognition, Credibility, and Institutional Standing

Recognition is a family of distinguishable relations. *Acknowledgement* attributes a contribution to someone; *credibility* concerns an audience's willingness to treat an account or performance as reliable for a specified purpose; *membership recognition* locates a person within a practice or organization; and *authorization* concerns permission to perform an activity or make a decision. These relations can overlap, but they have distinct warrants and consequences. A certificate may attest to attendance while leaving competence untested; an experienced interpreter may be trusted by peers without formal permission for a regulated undertaking.

Recognition can redistribute opportunity. A public profile may attract requests, facilitate inclusion in training, or make someone a convenient focal point for a service. It can also intensify exposure, increase expectations, obscure collective work, or crowd out participants whose contributions are harder to document. A historized account records who confers recognition, for which contribution, by which criteria, in which period, and to what effect. Different audiences may recognize competing things. A coordinator may praise timely administration while recipients value continuity and a supporting participant values the discretion to decline inappropriate requests.

Normative evaluation remains independent. Respectful acknowledgement can be warranted even where an undertaking produces limited measurable outputs; high public visibility can coexist with unsafe or exclusionary arrangements. Recognition of identity, experience, or expertise cannot itself create legal authority. The latter depends on the relevant institutional and legal arrangements. These distinctions prepare the later treatment of delegated authority in Section 9.15, without settling the ethical merits of particular recognition regimes.

9.7 Archival Selection, Silences, and Retrospective Narratives

An archive is a selective historical carrier. Records vary in who creates them, how long they remain accessible, which episodes merit entry, and which interests inform retention. Training attendance sheets may be complete while informal corrections remain undocumented. A coordinator's annual report may contain reliable counts of logged assignments but few accounts from participants who withdrew, declined, or sought help elsewhere. These differences are analytically significant whether they arise through routine administrative constraints, privacy protection, oversight, or deliberate selection.

Retrospective narration introduces additional temporal distinctions. A commemorative account published years after an activity can affect later identities and funding while being an imperfect source for its original details. A claim of uninterrupted service may be compatible with shifts in eligible populations, altered procedures, and unrecorded gaps. Historical reconstruction therefore separates event time, recording time, editing time, publication time, and subsequent circulation. The temporal ordering and observation-window limitations developed in Section 3 apply to archival narratives as well as action episodes.

Silence has more than one interpretation. Missing testimony can reflect the absence of an episode, a refusal to disclose, lost records, restricted access, inappropriate sampling, or the original recorder's disregard of particular work. The analyst should label such alternatives rather than convert absence from an accessible database into a finding that the work never occurred. Where inclusion of sensitive accounts would endanger participants, an ethically appropriate archive may preserve limits of disclosure. The limits themselves belong to source criticism but do not license speculative reconstruction of protected details.

9.8 An Evidence-Indexed Transmission and Recognition Register

A comparative study requires a common description of historically connected but nonidentical events: instruction, access, uptake, classification, recognition, and subsequent action. Let B be a declared relational boundary, I an observation interval, q the research question, and κ the evidential standpoint with its permissions and uncertainty conventions. Equation 16 defines a typed register. The ordered fields

may contain dated evidence, competing accounts, restrictions, and marked unknowns rather than scalar measurements.

$$\mathcal{R}_{B,I;q}^\kappa := (\mathcal{K}, \mathcal{H}, \mathcal{A}, \mathcal{L}, \mathcal{C}, \mathcal{R}, \mathcal{F}, \mathcal{O}, \mathcal{V}, \Pi)_{B,I;q}^\kappa. \quad (16)$$

Here $\mathcal{K}$ specifies the task-indexed knowledge or judgement whose transmission is asserted; $\mathcal{H}$ records situated carriers and historically ordered teaching, demonstration, or exchange; $\mathcal{A}$ records accessibility, consent, permitted use, and restrictions; $\mathcal{L}$ records evidence of learners' interpretations, performances, errors, refusal, and retention; $\mathcal{C}$ describes categories, representational media, reporting procedures, and version histories; $\mathcal{R}$ records acts of acknowledgement, credibility attribution, membership classification, or authorization with their granting agents; $\mathcal{F}$ identifies proposed pathways by which manifestations affect subsequent relations; $\mathcal{O}$ records bounded subsequent performances, changed opportunity structures, or documented inaction; $\mathcal{V}$ registers alternative explanations, costs, counterexamples, and affected persons; and Π records provenance, source timing, lawful access conditions, record selection, and unresolved disputes.

Equation 16 is a *description architecture*, not a dynamical state estimate. In particular, $\mathcal{R}$ contains conceptually different forms of recognition that should not be added into an overall score. A media announcement might be evidence of an attribution under $\mathcal{R}$, a manifestation under $\mathcal{C}$, and a potential source of later enquiries under $\mathcal{F}$. It acquires the latter role only when a plausible and adequately supported temporal linkage is examined. Similarly, a claim of learning under $\mathcal{L}$ cannot be inferred from enrollment in training under $\mathcal{H}$.

9.9 Bounded Admission of Manifestation-Feedback Claims

For a specified manifestation m , a candidate affected relation r , and two historically ordered observation windows (I_0, I_1) , an analyst may ask whether the manifestation contributed to a particular change in access, expectation, eligibility, coordination, or recognized standing. Let $\mathcal{E}^\kappa(m, r; I_0, I_1)$ denote the evidence accessible under the declared study protocol. Six guards take values supported (+), defeated (−), or unresolved (?): g_B specifies the boundary, relation, manifestation, and proposed difference; g_T supports chronology and exposure or transmission of the manifestation to a relevant audience; g_M supports a plausible and documented mediating mechanism; g_O establishes the proposed bounded consequence with an appropriate independent trace; g_A treats access, authorization, consent, and material exclusions; and g_Π evaluates provenance, selective recording, and specified rival explanations. Equation 17 records a conservative positive classification convention.

$$\text{MF}_{B,q}^\kappa(m, r; I_0, I_1) = + \iff \bigwedge_{g \in \{g_B, g_T, g_M, g_O, g_A, g_\Pi\}} [g(\mathcal{E}^\kappa(m, r; I_0, I_1)) = +]. \quad (17)$$

The rule supplies a methodological threshold for calling an individual feedback pathway *supported* in a declared dossier. It does not establish causal identification through a conjunction of documents. Attribution strength depends on design-specific assumptions, suitable contrasts, and independent evidence. When a guard remains unresolved, the claim is unresolved at the selected specificity; where a required guard is defeated by warranted evidence, the positive classification is defeated. Neither classification entails a judgement that the corresponding relation, manifestation, or historical process was metaphysically absent.

A feedback hypothesis with a broad outcome may require decomposition. A public announcement can plausibly affect the volume of enquiries without improving assistance quality, and a revised training label may alter eligibility for assignments without increasing competence. The admissibility convention is evaluated separately for each proposed consequence. It avoids treating the visible coincidence of a publicity event and an organizational change as proof of a complete causal chain. In some cases, qualitative process tracing, matched administrative episodes, or ethically permissible comparison across policy versions may supply stronger evidence. The exact design remains an open empirical obligation.

9.10 Training Materials and Reflexive Changes in Practice

Training materials are especially revealing because they serve simultaneously as possible carriers of remembered practice, explanations of expected conduct, and instruments of future coordination. A handbook may codify a stable procedure, simplify a complex local judgement, or introduce a requirement that did not previously govern daily activity. A course may describe a role as it is officially imagined while its participants continue to negotiate exceptions in practice. The historical object includes both the material's version history and its actual uptake.

Consider a revised orientation session in which a recipient-access question is added after complaints about unclear referrals. A positive account of feedback would require evidence that the complaints were received, that the training changed in a relevant way, and that later conduct or accessible pathways changed as hypothesized. A revised slide deck alone establishes a modification in the manifestation; attendance establishes exposure under specified assumptions; observed referral behavior provides another kind of evidence. These levels should be recorded separately. Changes in personnel, external regulations, institutional staffing, or seasonal demand may offer rival explanations for later outcomes.

Reflexivity also alters the conditions for observation. Once a practice is named as a target of training, people may modify their language, record keeping, or reports even before measurable task capacity changes. A documentation procedure can create new work, redistribute oversight, or make particular exceptions discussable. Such processes are candidates for manifestation feedback where the timing and mechanism can be traced. The section proposes historical sensitivity to these effects without claiming a universal causal pattern in volunteer programs.

Document-induced change and endogenous documentation. A dated revision of a training document followed by changes in recorded practice supports a temporal narrative but may also reflect codification of a change that participants had already made. The historian should seek records of the drafting decision, circulation and receipt, subsequent use, rejected drafts and contemporaneous informal practices. A document-induced feedback hypothesis predicts that some affected practices changed after exposure to its new categories, with a channel through which readers could act on them; a retrospective-codification rival predicts comparable changes before publication or in settings that never received the document. Changes in reporting incentives present a third explanation, in which the classification of activity changes while the activity does not. Where these mechanisms coexist, a bounded finding can allocate evidence to each pathway without assigning an unidentifiable proportion of the resulting change.

9.11 Metrics, Commensuration, and Symbolic Substitution

Aggregated counts of participation, hours, courses completed, cases logged, or persons assisted can be useful for limited questions. Their definitions and denominators matter. A count of logged contacts measures entries accepted under a recording procedure; a count of completed training sessions records specified attendance or completion criteria. Neither alone reports the accessibility, quality, distributive consequences, or experienced meaning of supportive relations. Categories can change between periods, and altered reporting incentives can affect the observed series independently of underlying practice.

Espeland and Stevens describe *commensuration* as the comparison of different entities through a common metric and analyze its cognitive and political implications [29]. Within the present GR reconstruction, the relevant caution concerns cross-category translations that hide heterogeneous tasks and valuations. Five hours of patient wayfinding, five hours of training preparation, and five hours of emotionally demanding support remain different undertakings even if a reporting system places them in one time total. A defensible administrative metric may serve scheduling or accounting while remaining inadequate for an ethical assessment of value.

Symbolic substitution becomes an empirical hypothesis when the public recognition of an activity appears to stand in for evidence of its practical effects. The claim should be tested, not assumed. An organization can develop a credible reporting system that supports coordination, yet other implementations

may encourage activity optimized for visible categories. Relevant comparisons would distinguish data-recording changes from service changes and ask which forms of work are rewarded, excluded, or transferred to participants without acknowledgement. Normative evaluation of these distributions must use independently justified criteria, including task safety, consent, accessibility, and fairness.

9.12 Feedback, Power, and Unequal Capacity to Define a Practice

Not every participant has the same capacity to select a label, publish a history, certify a skill, or demand a revision. An institution may govern official categories, a coordinating volunteer may control informal schedules, recipients may supply experiential knowledge, and a software vendor may constrain available reporting fields. The resulting asymmetries influence which representations circulate and which alternative descriptions receive a hearing. Power here is an object of historically situated relational analysis, not automatically a conclusion of coercion or illegitimacy.

The distribution of categorization authority can create recursive pathways. A recognized role may confer access to decision meetings; decision meetings can determine which categories describe further participation; repeated categorization can then reinforce the visibility of the recognized role. A parallel pathway can make other contributors less legible and more difficult to recruit or compensate for their time. Yet feedback can also broaden access if affected participants obtain avenues to revise categories or contest misleading reports. The direction and strength of these processes remain open questions that depend on identifiable institutional arrangements and documented consequences.

Recognition is particularly consequential under heterogeneous valuations. Participants may value reliability, recipients may value autonomy, institutions may value administrative predictability, and partners may value demonstrable reach. Their criteria can overlap without forming a single ranking. A historically sensitive study should record whose valuation guides a particular recognition procedure and how disagreement is handled. The legal standing of participants, entitlement to attribution, and permissibility of exclusion require independent analysis beyond the descriptive field of power.

9.13 Evidence Audit for Transmission, Recognition, and Feedback

Table 9 translates the objects of Equation 16 and the guards of Equation 17 into candidate research records. Entries represent prompts for authorized inquiry rather than demands to collect restricted data. Their value lies in separating documentary availability, practical uptake, and historically consequent transformation.

Documentation quality and causal confidence should remain separately described. Two sources can be internally consistent because one repeats the other; the second is therefore not independent corroboration. A privacy-preserving gap may remain unresolved even when a process is likely to have occurred. An administratively complete record may contain systematic omissions by design. These distinctions protect the interpretation of both positive and negative findings and prevent a neat archive from functioning as a substitute for appropriate evidence.

9.14 Constructed Comparisons of Transmission and Manifestation Feedback

Case A: Multilingual orientation and unevenly distributed learning. A hypothetical volunteer group maintains printed directions in a dominant language. A newcomer develops short explanations in another language and teaches two peers how to use them. Later reports count more orientation interactions, and a coordinator praises the newcomer's initiative. Several pathways remain plausible. The revised explanations may improve the accessibility of a narrow task; a seasonal increase in visitors may account for the count; and the newly introduced log may record encounters previously omitted. A bounded transmission claim requires evidence of what the peers learned and which requests they could handle. A recognition claim requires the precise act of acknowledgement. A manifestation-feedback claim that recognition changed access requires a traced audience and later consequence. The example establishes no factual history of a real service.

Table 9: Evidence objects and inference limits in knowledge transmission, recognition, and manifestation feedback.

Evidence object	Candidate trace or research question	Rival interpretation or boundary
Knowledge object	Task and judgement specified across versions	Different tasks may share a label
Transmission event	Dated instruction, demonstration, mentoring or exchange	Exposure is not proof of learning
Learner uptake	Task-bounded performance, feedback or retained skill	Success may depend on hidden assistance
Access and consent	Language, time, permissions, opt-out and privacy boundaries	Formal openness may conceal exclusion
Classification design	Versioned categories, definitions and coding instructions	Category shifts may mimic activity changes
Recognition act	Granting agent, audience, criterion and scope of acknowledgement	Praise differs from competence and mandate
Manifestation exposure	Evidence that an audience encountered an account or record	Publication alone does not establish exposure
Subsequent outcome	Dated action, opportunity, request flow or changed eligibility	Simultaneous staffing or policy change may explain outcome
Counterevidence	Withdrawals, complaints, unchanged behavior, alternative pathways	Silence and confidentiality can limit observation
Provenance and selection	Creator, access level, record gaps and permitted comparison	Retrospective reports may selectively retain successes

Case B: Credential labels and practice displacement. A constructed center introduces a *trained supporter* badge after a revised induction course. Experienced helpers who cannot attend the scheduled course lose eligibility for certain assignments, while recent participants obtain the badge. This arrangement could improve supervision for one class of tasks while disrupting availability for another. Relevant evidence includes the course content, task authorization rules, badge-eligibility dates, work performed under supervision, departures, and recipient access. The badge is a manifestation of a reported credential, not a direct measure of generalized competence. Comparing former and successor patterns must hold the task boundary explicit and consider reasonable institutional alternatives. The example neither endorses informal task substitution nor adjudicates the rightfulness of the badge rule.

Case C: Annual reporting and selective public memory. A hypothetical aid initiative adopts a dashboard emphasizing completed visible encounters. Its annual report highlights a rise in recorded assistance while omitting behind-the-scenes preparation and work with unresolved requests. Following publication, a sponsor supports additional visible activities. Possible feedback concerns publicity, resource allocation, reporting incentives, and the distribution of work. The analyst would need dated changes in definitions, independent support for altered funding decisions, and evidence of what work was transferred or left undone. The reported rise might reflect a genuine increase in some services, an accounting change, or both. Respect for privacy may also explain why certain material is absent. The case illustrates the need for differentiated evidence rather than an allegation about actual institutions.

Taken together, these constructed comparisons reveal that a trace can enter history in several roles. An instruction is a carrier, a badge can be a classification and an access condition, and an annual report can be both a selective record and a stimulus for subsequent decisions. Each role requires its own interpretation and temporal evidence. In particular, a documented representation change should not be silently recoded as a change in underlying capacity or ethical quality.

9.15 Comparative Hypotheses and the Institutionalization Interface

Three provisional hypotheses follow from the preceding distinctions. First, transmission arrangements with task-bounded feedback and accessible opportunities for supervised practice may be more robust to participant turnover than reliance on documentary distribution alone, conditional on resources, per-

missions, and learner circumstances. Second, recognition practices tied to a narrow administrative category may redistribute participation opportunities even where overall task capacity remains stable. Third, manifestations that influence future assignment, eligibility, or resource decisions may acquire historically consequential feedback effects, although the direction of those effects remains contingent. These statements identify comparative questions; they are neither empirical findings nor universal social laws.

Research designs could combine dated document versions, authorized accounts from differently situated participants, task-limited observation, and comparison across meaningful institutional changes. Case selection should include periods of failed transmission, contested recognition, and unchanged behavior after publicity, alongside positive instances. Source criticism should address selection into training, differences in tasks, administrative changes in coding, and the difficulty of attributing outcomes when policy changes occur together. Where access is restricted, an analytically narrower question may be preferable to collecting identifiable testimony without appropriate authority.

The next section, *Rule Formation, Delegated Authority, and Institutionalization*, asks when a historically effective convention becomes a rule, how authority is assigned or contested, and what changes in institutional accountability follow. The present analysis supplies antecedent objects: the transmitted instruction, the officially or informally recognized role, the category used to represent action, and the traced effects of those manifestations. Their existence does not establish binding authority or rightful governance. The historical and normative conditions of rule formation remain separate questions for further analysis.

10 Rule Formation, Delegated Authority, and Institutionalization

Historically recurrent volunteer practices can become sources of expectations, explicit directives, and arrangements for making decisions. The present section examines the conditions under which such arrangements are described as rules, how a participant or office may acquire a bounded mandate to issue or implement them, and how their reproduction can contribute to institutionalization. Its purpose is to reconstruct the historical relations connecting practical coordination, rule statements, assignment of authority, contestation, and continuity across particular persons. The analysis is conceptual and comparative-historical, supplemented by a typed evidential register and a conservative positive-classification convention. It distinguishes the occurrence of a rule, its uptake, the source of a claimed mandate, its legal status, and its normative defensibility. These questions can coincide in practice but require separate evidence and different kinds of argument.

10.1 Conventions, Expectations, Norms, and Rules in Situated Cooperation

A *convention* is here a recognizable regularity in coordination, identified relative to a task and a setting. Participants might habitually provide directions by standing near one entrance or send complex questions to an experienced colleague. An *expectation* is a context-bound anticipation concerning what someone will do or is entitled to request. A *normative expectation* further carries an evaluative claim about appropriate conduct, even if no office has issued a directive. An *institutional rule*, for the present descriptive purpose, is a sufficiently identifiable prescription whose applicable persons, conduct, circumstances, and issuing or sustaining arrangement can be investigated. The identity of a rule as a social object need not require written publication; its evidential identification nevertheless demands more than an observer's recognition of similar behavior.

Crawford and Ostrom's institutional grammar distinguishes shared strategies, norms, and rules as institutional statements within recurring situations [24]. Their work supplies a disciplinary precedent for preserving differences among recurrent behavior, prescriptions, and rule-structured situations. The present account neither equates its own categories with a full application of that grammar nor assumes that the grammar resolves the authority of an organization. An implicit expectation in a volunteer team, for example, may influence who speaks first without becoming a formal instruction governing the service.

Four differences are especially consequential for historical inquiry. A practice may persist after the reasons for it have been forgotten. A stated rule may remain in a handbook while participants regularly follow an alternative convention. A directive may be obeyed because of dependence, professional confidence, fear, or ease of coordination, with each pathway offering different evidence about authority. Finally, a rule may be formally valid within a particular organization while imposing disproportionate burdens or excluding relevant voices. Historical description should retain these differences rather than code the presence of a written rule as successful governance.

10.2 Three Levels of Reality in Institutional Descriptions

At the level of *ontological reality*, the framework suspends judgement concerning the ultimate status of an institution, collective will, norm, or office as an entity independent of relations. A volunteer committee's name, a legal incorporation, or a collectively accepted routine may warrant particular forms of treatment without establishing an ultimate metaphysical ontology. Institutional objects are introduced here as explanatory and historical constructions with declared evidential limits.

At the level of *relational reality*, institutions can be provisionally modeled through historically consequential configurations of tasks, positions, rule-making practices, access conditions, permissions, decisions, monitoring arrangements, and feasible responses. A coordinator's limited power to allocate publicly accessible information tasks may structure a service even when the coordinator changes. The relational object is the conditional arrangement through which particular choices become possible, expected, restricted, reviewed, or redirected. The continued efficacy of such an arrangement is an empirical and interpretive question, not an entailment of the label *institution*.

At the level of *manifestation reality*, the same arrangement may appear in schedules, minutes, memoranda, badges, employment categories, organizational charts, web announcements, or oral accounts. These materials reveal selected aspects and may themselves change conduct by announcing a permission or redefining a role. Their documentary completeness and practical force vary. A delegation memo can be a manifestation of a claimed mandate and an action by which that mandate is communicated. Establishing either function calls for attention to its origin, receipt, effective dates, scope, and subsequent use. The three levels remain distinct even where a single document participates in more than one analytically specified relation.

10.3 Historical Formation of Rule Candidates

A candidate rule can arise through explicit negotiation, repetition followed by articulation, unilateral direction, adoption from a parent institution, response to a service failure, or accommodation of an existing external constraint. These routes differ in whose initiative is visible and whose objection is practically possible. In a negotiated pathway, affected participants may identify an ambiguity, propose a procedure, assess alternatives, and agree on a bounded prescription. The resulting rule has a traceable deliberative history if the relevant accounts are available. By contrast, a longstanding practice may be written into a manual without any recorded agreement on its scope. Formalization in that case may preserve an existing arrangement, change it, or give one interpretation priority over rival understandings.

The analyst should identify a rule's *genesis claim* separately from its *operative claim*. Genesis concerns the episode or historical sequence through which a prescription was proposed, issued, adopted, or revised. Operative status concerns whether and how the prescription subsequently conditioned behavior or opportunity. The existence of a decision record supports a narrower historical proposition than effective uptake across changing participants. Similarly, the continuation of a custom does not establish that the custom originated through democratic consent. Records of nonattendance, dissent, and inaccessible consultation may matter as much as affirmative votes.

Rule formation is also question-relative. A direction that participants use when receiving a visitor may be detailed enough to guide that task, yet indeterminate for requests involving confidential information, clinical judgement, legal claims, or emergency intervention. These are distinct activities requiring independent sources of permission and expertise. A historically bounded rule description should therefore

state the population and circumstances to which the prescription was understood to apply. Apparent generality in a manual may reflect shorthand, transcription, or omission rather than an authorized expansion of competence.

10.4 Negotiation, Participation, and Asymmetric Agenda Setting

Negotiation requires attention to the structure of participation. A consultation may involve volunteers, employed staff, coordinators, recipients, advocates, neighboring services, and administrators through different channels. Participation in a meeting does not itself determine the participants' ability to set the agenda, revise a draft, obtain reasons, or contest its adoption. Distinct powers over agenda formation, proposal wording, final approval, and later interpretation can produce a negotiated appearance alongside concentrated decision authority.

For voluntary support, a recipient's practical interest may be central even when the recipient has neither the time nor the desire to join an administrative process. Conversely, a representative invited to a meeting should not automatically be presumed to speak for heterogeneous experiences. Historical inquiry can examine whether relevant concerns were invited, how refusals and competing valuations were recorded, and whether responses affected the issued prescription. A consultation that yields no revision may have been meaningful, symbolic, constrained by valid safety requirements, or inadequately accessible. The available evidence must discriminate among these possibilities.

An ethical appraisal asks additional questions about equality of standing, non-domination, consent, duty of care, and the protection of vulnerable people. These cannot be established from participation counts alone. The proposed GR account records relationships and exclusions as historical objects while keeping the standards for legitimate institutional procedure open to separately articulated normative argument.

10.5 Rule Statements, Practical Uptake, and Administrative Recognition

Rule statements travel through media and positions. A decision may be recorded in minutes, placed in an induction guide, explained by a supervisor, incorporated into a scheduling system, and eventually treated as an unquestioned part of everyday coordination. At each stage its wording, audience, apparent source, and practical consequences may change. The historical identity of a rule across revisions should not be inferred solely from a repeated heading or an unchanged document title. Researchers may need to compare versioned text, applicable tasks, issuing bodies, and observed access pathways.

Administrative recognition is one possible link between a practice and an organizational decision structure. Recognition may assign a name to a recurrent practice, make its authorization inspectable, designate a responsible office, or introduce a complaint channel. It can also filter legitimate-looking practice through available forms and categories. A participant whose work fits an administrative category may gain an assignment; another who undertakes necessary background work may remain unrecorded. These outcomes differ from the quality of the underlying assistance and require evidence about actual eligibility and burden distribution.

The analysis should preserve a meaningful possibility of *paper compliance*. A form may be signed without a procedure being understood; training may be documented without practical uptake; reports may reproduce the language of a policy while exceptions are handled through informal routes. These possibilities do not prove deception. They indicate that documentary rule status, operational capability, and evaluative assessment are distinct variables in a historical research design.

10.6 Sources and Limits of Delegated Mandates

A historical claim that an instruction was given, followed, or treated as authoritative is distinct from a legal claim that its issuer possessed the relevant power. The description must identify the institutional source, temporal scope, affected persons, review channel, and potentially applicable jurisdiction; legal

validity and justified delegation are assessed against the corresponding legal and normative standards. A frequently repeated procedure may therefore be historically operative yet exceed its issuer's competence.

Delegation designates a situated attribution or transfer of decision competence from a specified source to an identified recipient within a stated domain, duration, and set of constraints. A mandate can concern scheduling, communicating general information, approving certain purchases, coordinating access, maintaining records, or escalating exceptional cases. These functions carry different risks and may be subject to distinct rules. A historical claim of delegation should identify the delegating office or arrangement, the recipient position, the purported basis of authority, the authorized actions, the effective interval, and the procedures for review or withdrawal.

The ability to perform an action provides evidence of capability, while permission to perform it provides evidence of mandate only if a relevant source of permission can be established. Habitual deference, appreciation, seniority, technical knowledge, and formal competence can overlap but are not equivalent. A long-serving volunteer may reliably assist newcomers without receiving power to make binding decisions about organizational access. A newly appointed coordinator may have a documented scheduling mandate without having independently developed the practical judgement for every task. Each situation demands separate evidence of assignment, capacity, and real-world consequences.

A delegation may be direct or occur through a chain of offices. Historical reconstruction should preserve the chain's scope and versioning: an earlier mandate may expire; a successor may receive a narrower assignment; a policy change may reserve exceptional decisions to another office. Apparent continuity of a job title can therefore conceal significant changes in competence. Revocation and temporary suspension are historical events as relevant as initial assignment. An authorization record should also specify what the analyst could not verify, particularly where the purported authority depends on confidential contracts or governing documents.

10.7 Organizational Mandate, Legal Validity, and Normative Justification

Institutional prescriptions occupy multiple orders. An internal instruction might bind members under a recognized organizational procedure, while a public law imposes obligations on the organization, and an ethical principle supplies reasons to question how either is applied. These orders interact but have distinct criteria. Hart's account of primary and secondary rules and of the foundations of a legal system provides a jurisprudential reference point for distinguishing rules governing conduct from rules concerning their recognition, change, and adjudication [37]. The present study does not infer that every voluntary association possesses a legal system or that its administrative memoranda have the standing of law.

Legal authority can depend on jurisdiction, organizational form, professional regulation, contractual terms, employment status, privacy requirements, and the precise activity undertaken. A volunteer coordinator cannot be assumed to acquire clinical, legal, or financial powers from a general supportive mandate. Conversely, an organization may rightly constrain voluntary action in order to preserve confidentiality, safeguarding, or the authority of qualified professionals. The manuscript treats these as reasons to verify the relevant legal and institutional basis, rather than pronouncing on the content of law in an unspecified jurisdiction.

Normative legitimacy remains a further question. Suchman's organizational analysis distinguishes pragmatic, moral, and cognitive aspects of legitimacy as different bases on which audiences may regard an organization as appropriate or intelligible [67]. These categories illuminate how recognition can vary among audiences; they do not certify moral rightness. An arrangement can be widely accepted because it is familiar while remaining objectionable under an independently defended account of justice. Equally, a contested restriction may be justified by valid protection requirements. Descriptive uptake, legal validity, social legitimacy, and ethical justification must be assessed using methods appropriate to each claim.

10.8 Accountability, Review, and Practical Contestability

Accountability arrangements specify how a decision-maker may be asked to provide reasons, how a disputed action may be checked, and where responsibility rests when an undertaking crosses a bound-

ary. Historically consequential mechanisms include supervision, documented escalation, peer review, complaint routes, independent oversight, regular reconsideration, and clear procedures for revoking mandates. Their presence and use can differ. An advertised appeal process may be formally accessible while practically difficult for a person lacking language support, time, documentation, or confidence that a complaint will be received safely.

A useful comparison distinguishes *answerability*, the obligation or expectation to explain a decision; *reviewability*, the availability of a competent forum to assess it; *correctability*, a capacity to modify a decision or repair consequences; and *attribution*, the ability to identify which position assumed the relevant undertaking. The historical record should say which dimension is supported. Reports of consistent decision-making, for example, do not substitute for evidence that a dispute could receive a hearing. Conversely, a high volume of challenges could reveal poor rule design, improved accessibility of complaints, or a temporary conflict during an otherwise constructive reform.

Power over review procedures is itself a relational object. The person who may define an exception, choose admissible evidence, or classify a complaint can influence which histories become institutionally visible. A review pathway may broaden participants' feasible alternatives or reproduce the same asymmetry through a different office. Historical inquiry should trace specific decisions and their consequences without treating the mere existence of bureaucracy as domination or treating its absence as freedom.

10.9 Institutionalization, Reproduction, and Partial Stability

Institutionalization is used here as a question-dependent process in which a rule-governed or decision-governed arrangement becomes reproducible across episodes and, under some conditions, across occupants of relevant positions. Candidate mechanisms include explicit mandates, accessible instruction, recurrent allocation practices, retained records, stable resources, predictable review, and recognition by neighboring organizations. Institutionalization is compatible with adaptation: a revised procedure can preserve a governing responsibility while changing means, membership, or task boundaries.

Ostrom's institutional analysis of common-pool resource governance demonstrates the importance of investigating diverse self-organized rule arrangements and their outcomes in a specified empirical domain [50]. That work motivates comparison of institutional alternatives without transferring conclusions about natural-resource commons directly to volunteer aid. The present framework treats persistence and self-organization as propositions requiring independent evidence. A rule carried across three coordinators may have greater reproductive support than a short-lived instruction, but duration alone does not establish participant consent, beneficial service, or an adequate institutional design.

Stability has several dimensions. *Textual stability* concerns persistence of wording or designation; *procedural stability* concerns reproducibility of authorized decisions; *capacity stability* concerns continued feasibility of specified undertakings; and *relational stability* concerns the continuing distribution of access, reliance, expectations, and opportunities for contestation. These dimensions can diverge. A fixed rule may operate differently after staffing changes; a revised rule may restore capacity for persons previously excluded. Institutional change is therefore neither automatically evidence of failure nor necessarily evidence of improvement.

10.10 An Evidence-Indexed Rule and Authority Dossier

For a defined relational boundary B , historical interval I , question q , and evidential standpoint κ , the following dossier organizes claims about institutional rule formation and delegated authority. Equation 18 defines an indexed record of distinct historical objects; it is a structural data schema rather than a quantified social law.

$$\mathcal{J}_{B,I;q}^{\kappa} := (\mathcal{C}, \mathcal{N}, \mathcal{R}, \mathcal{I}, \mathcal{M}, \mathcal{A}, \mathcal{G}, \mathcal{V}, \mathcal{X}, \mathcal{H}, \Pi)_{B,I;q}^{\kappa}. \quad (18)$$

Here $\mathcal{C}$ records recurrent conventions and practical expectations; $\mathcal{N}$ records proposed or articulated normative expectations; $\mathcal{R}$ records bounded rule statements and alleged applications; $\mathcal{I}$ identifies issuers, decision forums, and their claimed competence; $\mathcal{M}$ registers delegated mandates, recipients, scopes, and

durations; $\mathcal{A}$ records communication, acceptance, implementation, avoidance, and qualified evidence of uptake; $\mathcal{G}$ records supervision, grievance, review, correction, and procedural accountability; $\mathcal{V}$ registers versions, supersession, renewals, and revocations; $\mathcal{X}$ records access changes, distributed burdens, exclusions, and task-specific consequences; $\mathcal{H}$ indexes claimed interfaces with external law, professional duties, and neighboring institutions; and Π maintains source provenance, observation windows, access conditions, missingness, and rival interpretations.

The fields are deliberately not aggregated. An order recorded in $\mathcal{R}$ cannot substitute for issuer competence in $\mathcal{I}$ or for its effects in $\mathcal{X}$. Evidence of a delegation memo in $\mathcal{M}$ does not determine its validity under $\mathcal{H}$. The dossier can contain inconsistent versions, competing accounts, and unresolved restrictions. Its usefulness lies in forcing researchers to identify the type of a proposition before comparing organizations or episodes. One manifestation, such as a policy notice, may provide different traces in several fields; source dependence must be retained rather than counted as multiple independent confirmations.

10.11 Conservative Admission of Operative Delegated-Rule Claims

A *supported operative delegated-rule claim* concerns the historically bounded proposition that an identifiable prescription was treated as operative through a claimed delegated mandate in a defined task setting. This is narrower than legal validity, ethical acceptability, or causal efficacy. Let $\mathcal{E}^\kappa(r, m; B, I, q)$ denote authorized evidence relevant to rule candidate r and mandate candidate m . Seven guards take the values supported (+), defeated (−), or unresolved (?): g_B fixes task, population, boundary, and interval; g_R identifies versioned prescription content; g_I traces a claimed issuing source and delegating route; g_M establishes recipient, operative scope, and temporally applicable mandate; g_A supplies evidence of communication and task-level application or a decision made under the prescription; g_V checks known revisions, withdrawal, competing instructions, and exceptions; and g_Π assesses provenance, independent traces where available, significant missingness, and rival accounts. Equation 19 defines only the positive state.

$$\text{SOpRule}_{B,I,q}^\kappa(r, m) = + \iff \bigwedge_{g \in \{g_B, g_R, g_I, g_M, g_A, g_V, g_\Pi\}} [g(\mathcal{E}^\kappa(r, m; B, I, q)) = +]. \quad (19)$$

A missing guard leaves the composite claim unresolved; a warranted defeat of a necessary guard defeats this particular positive classification. A narrower claim, such as *documented issuance without established uptake*, may remain supportable even when g_A is unresolved. The guard concerning the issuing source requires a traceable *claimed* competence; it deliberately does not decide jurisdictional law or moral legitimacy. Those determinations require an independent analysis of $\mathcal{H}$, including external sources appropriate to the relevant jurisdiction. Likewise, the evidence of application concerns a task-bounded episode or set of episodes, not an assertion that the mandate caused an observed change.

The general linkage and review interface in Appendix A concerns admissible reporting, while the seven guards in Equation 19 apply to this narrowly stated operative-rule claim. Their support does not imply the validity of the mandate under applicable law.

The rule should not turn silence into a negative finding. Records may be inaccessible for legitimate reasons, and oral conventions can be historically consequential despite incomplete documentation. The conservative admission convention consequently specifies the status of the researcher’s assertion rather than the metaphysical existence of a social rule. It is intended to prevent category substitution: frequency is not issuance, a job title is not a mandate, visible compliance is not consent, and operative status is not moral justification.

10.12 Rule Effects, Alternative Mechanisms, and Participant Exit

A rule may change action through several candidate mechanisms. A clarified escalation boundary could reduce ambiguity. A formal assignment could make an overlooked capability accessible to others. A

registration requirement could redistribute participation opportunities. A reporting rule could increase record completeness while diverting time from direct support. A rule could also have negligible practical effect where participants already follow the stated practice or where implementation resources remain unavailable. Such mechanisms require comparisons that separate the announced directive from actions and background conditions.

Relevant alternatives include participant turnover, shifts in service demand, a new supervisor, revised infrastructure, changes in professional or legal obligations, and differences in who is counted. A decline in volunteer participation after rule issuance, for example, might reflect exclusionary design, improved safeguarding, coincident scheduling changes, or departures unrelated to the rule. A dated decision and a later outcome do not, by themselves, identify causation. Comparative trajectories, process tracing, and opportunities to examine counterinstances become especially important where many elements change together.

Exit is a historically meaningful response. Volunteers may leave because the new rule makes participation difficult, because personal circumstances change, or because they disagree with the institution's aims. Recipients may redirect requests where an alternative exists; others may be unable to exit without losing access to support. An analysis should preserve these differentiated outside options. Consent inferred from continued participation is especially fragile where dependence, scarcity, or fear of losing help constrains the feasible alternatives. The empirical question is how the new arrangement changed action possibilities for specified groups, with normative assessment kept explicit and separate.

Rule adoption, enactment, and selection. The emergence of a written directive can result from an already successful practice being codified, a response to an incident, changes in supervision, or external legal requirements. Consequently, the causal question differs depending on whether the proposed effect is the promulgation of a rule, its enactment by authorized actors, or a change in recipient access. Investigators should reconstruct proposal and effective dates, exceptions and enforcement capacity, the practice immediately preceding adoption, and the decisions of those who had real opportunities to depart or contest. An interrupted trajectory in which a rule was announced but implementation resources were absent can help test the assumption that formal publication suffices for behavioral change. A similar outcome under a different rule regime may instead point to professional norms, resource provision or selection. Neither successful implementation nor continued compliance establishes the legal competence or normative justification of a directive; those claims have independent tests.

10.13 Evidence Audit for Rule Formation and Delegated Authority

Table 10 states research questions that may support or defeat the distinct fields in Equation 18 and the guards in Equation 19. Its candidate traces should be sought only within applicable confidentiality, consent, records-access, and research-ethics constraints. The table is an analytical planning instrument, not a checklist guaranteeing legal compliance or research completeness.

An official record may be authoritative about issuance yet limited as evidence of practical experience. A participant narrative may offer strong evidence about felt exclusion without establishing the legal power of an issuing body. Records created during disputes can clarify contested interpretations while also reflecting strategic selection. Methodological pluralism is appropriate because these evidential functions are partially irreducible. The researcher should specify when an inference is supported by direct observation, reconstructed from records, inferred from a sequence, or retained only as a hypothesis.

10.14 Constructed Histories of Rule Making and Institutional Position

Case A: A familiar orientation practice becomes a written rule. In a constructed community center, volunteers habitually direct ordinary visitors toward a public information desk. A coordinator places the practice in a handbook after several service disruptions. The written procedure specifies opening hours and a fallback contact but says little about visitors who cannot read the dominant language. Minutes show that the change was discussed with available volunteers, while no record establishes whether the center

Table 10: Candidate evidence and limits for historical rule, mandate, and institutionalization claims.

Object	Candidate trace or bounded question	Alternative explanation or limit
Recurrent convention	Dated task episodes, exceptions, participant descriptions	Regularity need not imply prescription
Norm proposal	Drafts, negotiations, reasons, objections, meeting access	Consultation may exclude affected persons
Rule identity	Issued language, audience, scope and dated revisions	Shared headings may hide changed duties
Issuing competence	Authorized office, procedure, governing source	Purported competence may be disputed
Delegation scope	Recipient, task powers, period, limits and withdrawal	Title or experience alone is insufficient
Communication and uptake	Distribution, explanation, assigned decisions and practice	Acknowledgement may coexist with misunderstanding
Review and contestation	Complaint route, reasons, review events, corrected outcomes	Formal availability may conceal practical barriers
External constraint	Applicable professional, contractual or legal source	Jurisdiction and factual application remain to be checked
Distributed consequence	Task access, burdens, exits, refusals, recipient alternatives	Demand or staffing changes may confound outcomes
Provenance and missingness	Source dates, independent traces, protected gaps and rival accounts	Institutional archives may privilege authorized voices

sought views from affected visitors. A supported issuance claim is plausible if dates and competence are verified. An operative-rule claim also requires task-level evidence of communication and application. The effects on linguistic access and the legitimacy of the consultation remain distinct and unsettled. A later change in requests could equally reflect a building renovation or altered visitor flows.

Case B: A bounded volunteer mandate and a safety-sensitive exception. A hypothetical institution appoints a volunteer liaison to allocate shifts and help new participants locate approved public information materials. A signed memorandum describes these powers, an effective period, and an escalation route to qualified staff for sensitive requests. The liaison subsequently coordinates shifts successfully but occasionally receives inquiries requiring professional judgement. A correct historical description separates the documented scheduling mandate, the liaison’s practical skill, and the competence retained by qualified staff. Neither seniority nor repeated referral requests expands the delegated scope. If the memorandum expires while the liaison continues scheduling, the analyst should investigate renewal, tacit practice, or a disputed procedure; the historical continuity of the role alone does not settle authorization.

Case C: Credential reform and selective institutional continuity. A constructed aid organization introduces a training badge as a condition for assigning certain activities. The change makes a supervisory pathway visible and creates an appeal procedure. At the same time, experienced participants who cannot attend scheduled training become ineligible for the activities, and some recipients encounter reduced language coverage. The badge remains in use across several coordinators, and annual reports describe a stable governance process. This history supports differentiated questions: whether the rule was validly issued, how its task scope changed, which complaints received decisions, and whether the new arrangements altered feasible service. Apparent institutional stability may coexist with unequal access. Neither an improvement nor a violation is established by the imagined record alone.

All three cases are analytic constructions. They describe no actual hospital, nonprofit organization, or individual. They show how the same episode can support a claim about rule issuance, leave the operative status unresolved, and require independent inquiry about the distribution and justification of its consequences.

10.15 Comparative Hypotheses and the Thresholds of Institutional Change

The analysis yields three provisional, context-dependent hypotheses. First, arrangements that preserve versioned scope, identifiable mandates, and accessible revision procedures may offer greater historical reproducibility across participant succession than arrangements relying exclusively on personal memory, conditional on task demands and available resources. Second, formal recognition of a rule may change who can enter a role and whose practice becomes visible, even when the prescribed task appears unchanged. Third, practical contestability may influence the direction of institutional adjustment by bringing otherwise omitted experiences into subsequent decisions, although complaints can also be ignored, constrained, or channeled into ineffective routines. These are research propositions, not empirically established results about voluntary aid.

The next inquiry concerns whether a change in rule arrangements qualifies as a *historical threshold* or *regime transition*. Dated adoption of a policy may be significant for a particular organization's records while leaving most interaction patterns intact. Conversely, a gradual redistribution of decision power may precede a recognizable change in formal rules. Section 10 thus supplies the bounded rule, mandate, implementation, and review histories needed before dynamical language is introduced. Threshold claims will require explicit state variables, observation boundaries, rival mechanisms, and evidence of qualitative change. The formation of a rule and the emergence of an institution remain historically interesting objects without automatically amounting to a critical transition or a normative advance.

11 Historical Thresholds, Regime Changes, and Critical Transitions

Historical descriptions of voluntary support often give special weight to the moment when a small group becomes a coordinated service, a convention acquires institutional authority, or a practice ceases to be reproducible. The analytical problem is to determine which such moments mark an explicitly defined threshold, which support a claim of change in a historically consequential relational regime, and which, under stronger conditions, warrant the language of a critical transition. This section establishes an evidence-sensitive vocabulary for these claims, develops candidate mechanisms connecting local actions with changes in system reproduction, and sets out comparative and formal procedures for controlling retrospective classification. The inquiry is conceptual and comparative-historical rather than an empirical demonstration of tipping in volunteer organizations. Dynamical concepts are used as conditional models, with their identifying assumptions stated independently of normative evaluations of the changes concerned.

11.1 Threshold Objects and Historical Observation Boundaries

A *threshold* is a boundary specified for a variable, relation, or action condition within a declared domain. An administrative training rule might allow a volunteer to join a particular task only after a requisite credential is recorded. A coordination threshold might concern the minimum available combination of task competencies required for a scheduled service. A researcher might classify a new organizational phase when an authorized role survives a complete sequence of participant turnover. These examples require distinct units, evidence, and forms of justification. The first is a rule-based eligibility boundary, the second a task-specific feasibility condition, and the third a retrospective historical classification. Their shared threshold vocabulary supplies no common mechanism.

A threshold record should identify the unit of observation, the task or relation, the measured or interpreted property, the specification of the boundary, the relevant time interval, and the body that determined the specification. An institutional threshold can be real in its consequences even when the researcher lacks evidence of an abrupt dynamical change. It can reorganize permissions, recognition, or workload through the participants' understanding and application of a rule. Conversely, some consequential redistributions proceed gradually without crossing an announced boundary. A careful inquiry therefore treats documented thresholds and inferred thresholds as different epistemic objects.

Boundary selection matters substantively. Counting only formally registered volunteers may conceal coordination performed by informal helpers, family members, translators, paid staff, and recipients

themselves. An enlarged boundary changes the measured participation rate and may also reveal burdens displaced to those excluded from the initial account. The appropriate observational unit follows the research question, while its limitations remain visible. A bounded description of a candidate historical threshold consequently requires an explicit statement about the people and relations omitted from the record.

11.2 Three Levels of Reality in Transition Claims

At the level of *ontological reality*, the GR programme suspends judgement about the ultimate being of a social system or a transition. A mathematical state space, phase portrait, or attractor can organize inquiry without proving that society possesses the corresponding physical ontology. Claims about a collective's enduring identity are likewise theoretical commitments whose usefulness and warranted scope must be examined rather than inferred from their mathematical presentation.

At the level of *relational reality*, historically constituted capacities, expectations, permissions, practical dependencies, and alternatives may constitute a working system whose reproduction changes over time. A transition hypothesis concerns transformations in that relational organization. The historical object is not restricted to visible membership counts: a service with the same apparent staffing may have shifted from discretionary, reciprocal coordination to dependence on one authorized intermediary; a service with changed staff may have preserved the relevant practical capacities. Determining whether these are distinct regimes depends on the relations that define the analytical question.

At the level of *manifestation reality*, the system becomes accessible through rosters, reports, interviews, minutes, badges, photographs, legal texts, and other situated presentations. Some manifestations have historical efficacy of their own. Announcing a participation target, describing an initiative as successful, or publishing a performance ranking may change recruitment incentives, funding, and organizational status. A recorded discontinuity can therefore arise from a changed classification procedure, a changed relational system, or an interaction between them. An account linking the levels specifies which interpretation is supported and how the act of representation may enter the historical process under study.

11.3 Event Boundaries, Regime Descriptions, and Criticality

The present analysis employs a graded vocabulary. An *event boundary* denotes a dated or partially ordered occurrence selected for historical description, such as the introduction of a rota. A *crossed operational threshold* is a documented change in the satisfaction of a specified eligibility, feasibility, or measurement condition. A *regime change* is a supported qualitative alteration in the configuration by which a relational system performs and reproduces a defined class of activities. A *critical transition* is reserved for a more demanding claim concerning the mechanisms and dynamics through which an alteration occurs. Such a claim may involve nonlinear response, interacting feedbacks, alternative stable arrangements, and the sensitivity of trajectories to specified perturbations.

Scheffer and colleagues' review develops candidate early-warning signals in several classes of complex dynamical systems near particular critical transitions [60]. The review does not establish that a volunteer or aid system belongs to one of these classes; that applicability is an independent modeling and empirical question. Its discussion is a disciplinary precedent for asking about stability, perturbation, and feedback. It does not establish a generic tipping mechanism in voluntary support. Milkoreit and colleagues document variability in definitions across scientific fields and propose a more restrictive tipping-point concept for social-ecological systems [47]. Their conceptual work is especially pertinent here because loose use of the same term can conceal differences between abrupt description, nonlinear causation, and a shift in the system's mechanisms of self-reproduction.

A regime change, as operationalized for a historical case, does not necessarily imply a bifurcation. A new public contract could replace the service provider abruptly through a decision external to the studied system. The resulting service arrangement may be qualitatively different, yet the explanatory mechanism could be direct substitution rather than endogenous amplification. Conversely, a mechanism involving positive feedback might exist without producing an observed abrupt transition during the available window.

These possibilities motivate a layered evidential language rather than a binary distinction between ordinary and critical history.

11.4 Relational State Descriptions and Functional Equivalence

A candidate regime requires an explicit state description appropriate to the task. For an information-support programme, relevant dimensions might include actual coverage of permitted tasks, the distribution of contact points, authorized referral routes, access conditions, knowledge retention, and the independence of decision-making positions. The state cannot be captured adequately by a single aggregate such as the number of registered volunteers where those other dimensions determine whether help remains available. Counts can be useful within a declared domain, but they remain partial manifestations of the underlying question.

Two episodes may be *functionally comparable* where they enable a specified set of actions under sufficiently similar constraints. Comparability does not require the same people, formal titles, or symbolic identity. A participant succession that preserves task coverage through distributed knowledge may show functional continuity despite changes in organizational appearance. In a contrasting example, a team with an unchanged name and headcount might lose linguistic coverage or become unable to serve people needing accessible communication. The putative regime boundary should follow the selected function and its inclusion conditions, not the convenience of available statistics.

Functional equivalence is thus indexed to a question, task set, observation window, and evidence base. There may be more than one defensible partition of the same history into regimes. The researcher should show which partition supports which claim and consider whether a materially different but defensible partition changes the conclusion. A claim robust only to a narrow naming convention may be informative about administration while remaining weak as evidence of transformed relational reproduction.

11.5 Coordination Thresholds and Collective Participation

Coordination sometimes requires a sufficient conjunction of participants, resources, access permissions, and compatible activities. A service requiring an interpreter and a designated qualified supervisor may become feasible when both are available in the same relevant interval. The operative boundary concerns joint feasibility, not an abstract headcount. Adding participants with skills unrelated to the task may leave feasibility unchanged. The withdrawal of a participant with a scarce capability may remove feasibility even while total membership remains large.

Participation may also depend on expectations about others. Granovetter's threshold models show how collective outcomes can depend on the distribution of individual participation thresholds under a specified binary-choice setting [34]. The distinction between distribution and average is a useful warning against inferring uniform willingness from aggregate recruitment. The original model's decision structure is not presumed to fit the heterogeneous activities of volunteer aid. Some participants engage conditionally; others face obligations or constrained alternatives; recipients may never be choosing whether to volunteer. A GR application must therefore define the population, decision type, and dependencies rather than identify every change in participation with a Granovetter cascade.

A rapid rise in participation may result from networked encouragement, a deadline imposed by an authority, an external emergency, a new eligibility category, or a registration backlog. Such competing explanations can have similar plots. A threshold model gains explanatory weight when the sequence, contacts, opportunity structure, and individual decisions provide mechanism-specific traces. Absent those traces, the rise may be called rapid growth or an operational boundary crossing without assigning it a particular endogenous mechanism.

11.6 Positive Feedback, Damping, and Historical Reproduction

Positive feedback is a candidate mechanism when an increase in a relational feature changes subsequent conditions in a manner that tends to reinforce that feature. A growing pool of experienced volunteers

might improve onboarding, which subsequently makes retention easier. A service with more reliable coverage may attract institutional recognition, which supplies resources to improve coverage further. These narratives identify possible circuits; they do not yet establish a net amplifying effect. Onboarding time, unequal workload, specialist bottlenecks, and administrative reporting demands can offset or reverse the proposed relation.

Damping and stabilizing feedback deserve equal attention. Limits on workload, mandatory referrals to qualified professionals, and accessible refusal routes may constrain a service's apparent expansion while protecting its reproducibility and participants. An institution can preserve continuity through correction procedures that attenuate risky growth. Conversely, a system may become fragile when a superficially successful programme depends heavily on an unrecorded maintainer. The shape of the feedback depends on what is replenished, consumed, retained, substituted, or excluded over repeated cycles.

Pierson's discussion of increasing returns in political development provides one established route through which institutional choices can become historically reinforcing [54]. That route is more specific than the observation that a practice has existed for years. Within a volunteer system, the historian would need to show how earlier choices changed the relative costs or availability of subsequent alternatives and whether the relevant incentives operated across the observed episodes. Repetition alone does not identify increasing returns; growth alone does not imply a tipping process.

Dynamic discriminants and alternative transition histories. A qualitative change following a threshold does not itself show that positive feedback created multiple attractors or that a system approached a bifurcation. A critical-transition interpretation should state a candidate state variable, the temporal resolution at which it is measured, the expected feedback pathway, and the pattern that would be observed under a less dramatic rival such as an external funding shock, a reporting-system change, or ordinary organizational adaptation. Claims about critical slowing require repeated comparable disturbances and credible recovery-time observations; a longer queue caused by higher arrival rates is insufficient. When records are too short or nonstationary for such discrimination, the warranted claim is a bounded regime change or an unresolved criticality conjecture. Negative cases in which a nominal threshold was crossed without structural reorganization can be especially valuable. Appendix B treats the diagnostic difference as a research-design question rather than a universal law for social institutions.

11.7 Critical Slowing Down and Diagnostic Preconditions

In appropriately modeled dynamical systems, a loss of resilience near some critical transitions can be associated with slower recovery after disturbances and changes in serial dependence or variance. Scheffer and colleagues discuss such candidate warning indicators, while Dakos and colleagues evaluate methods and limitations using simulated ecological time series [60, 25]. These methods offer a language for investigating perturbation responses where state variables, observation frequency, underlying processes, and sampling conditions are sufficiently specified. Their existence in the literature does not establish comparable indicators in organizational rosters or volunteer-support histories.

A volunteer programme's monthly reports may contain few observations, changes in definitions, seasonal variation, and selective recording. An increase in month-to-month persistence can reflect a stable reporting protocol, an administrative schedule, or changing case mix rather than an approaching critical boundary. Increased variance may result from a recruitment campaign, external disruption, or inconsistent data entry. A test using such indicators would require a theoretically and empirically justified state variable, adequate temporal resolution, treatment of nonstationarity and missingness, sensitivity analysis, and plausible rival models. It would also require explaining why a perturbation and a recovery trajectory are meaningful for the specified relational capacity.

For most preliminary historical descriptions considered here, *early-warning signal* should remain a research hypothesis rather than an assigned property. If only retrospective reports exist, their evidential function may be stronger for reconstructing a change in administrative categories than for estimating recovery rates. The validity of a method in one dynamical domain does not transfer automatically to a

historical social domain whose actors interpret and change the categories used to observe them.

11.8 Temporal Windows, Multiple Clocks, and Apparent Abruptness

Abruptness is relative to observation resolution and process duration. A policy can take effect on one named day; the negotiated change of practice may extend over months; a community's trust may develop or deteriorate across years. A later annual report can compress these different histories into a single before-and-after comparison. Such compression may be suitable for a question about legal applicability while obscuring a gradual change in knowledge transmission or the replacement of professional relationships.

Historical episodes may contain several clocks: event occurrence, communication, practical uptake, budget renewal, participant training, staff turnover, record production, and later retrospective attribution. A reported threshold in one clock need not coincide with a change in another. An archive that begins only after a programme becomes formal can make prior informal coordination invisible and falsely suggest that cooperation originated with registration. Equally, a late report may backdate the apparent start of a programme by associating current outcomes with a founding narrative.

Window sensitivity is a substantive test. A proposed transition should be examined using longer and shorter intervals, defensible alternative periodizations, and information about events outside the selected window. If the claim holds only because the observer stops counting just after a peak, or begins after early failures, its apparent decisiveness is fragile. This section retains Section 10's distinction between rule issuance and operative uptake, while deferring formal analysis of coupled fast and slow processes to the next section.

11.9 A Typed Historical Threshold and Regime Dossier

The proposed GR dossier in Equation 20 is a bookkeeping schema for a bounded research question, not a physical state vector or a sufficient statistic. For candidate episode u and observation window W , let $\mathcal{D}_{u,W}$ include the task and affected-population scope Q ; temporal support T ; relational state descriptors X ; proposed boundary B ; observed event or change E ; baseline and alternative partitions A ; candidate mechanisms M ; perturbation and persistence evidence P ; distributions of access, burden, and feasible response J ; manifestation and data-production history V ; and an evidence-and-missingness register Π . Its typed structure is stated as follows.

$$\mathcal{D}_{u,W} := (Q_{u,W}, T_{u,W}, X_{u,W}, B_{u,W}, E_{u,W}, A_{u,W}, M_{u,W}, P_{u,W}, J_{u,W}, V_{u,W}, \Pi_{u,W}). \quad (20)$$

Each component has a distinct evidential role. Q identifies whose relation and which task are at issue; T preserves dating uncertainty and observation gaps. X distinguishes functional capacity from a visible count. B records whether a boundary was prescribed contemporaneously or constructed retrospectively. E identifies events and observed changes without presupposing their cause. A stores defensible rival classifications and historical trajectories. M holds candidate amplifying, dampening, external, and mixed mechanisms. P records any supported perturbation and persistence claims without requiring them for ordinary boundary descriptions. J addresses whose opportunities changed. V concerns how categories, reports, or public statements affected what could be seen and possibly what was done. Π tracks source authority, disagreement, selective preservation, access limitations, and known missingness.

The dossier is intentionally heterogeneous. Some fields may contain intervals, quotations, categorical judgements, version identifiers, or distributions, with their own measurement obligations. Combining them in a tuple does not authorize addition, scalar ranking, or aggregation across fundamentally different values. In particular, an unknown mechanism is retained as unknown rather than scored as absent. Version-sensitive comparisons require explicit mappings between changing task definitions and populations before a numerical difference can be interpreted as historical change.

11.10 Evidence-Qualified Classification of Critical Transitions

The present proposal separates three conclusions: a supported operational threshold crossing, a supported relational regime change, and a supported critical-transition attribution. The critical claim receives the highest evidential demand because it specifies a candidate dynamical mechanism in addition to a historical difference. For a bounded dossier $\mathcal{D}$, define guards $g_j(\mathcal{D}) \in \{1, 0, ?\}$ for six individually investigated requirements. Their values express affirmatively satisfied, specifically contradicted, and unresolved evidential guards, respectively. A zero requires admissible positive evidence of failure of a necessary condition for the bounded claim; lack of accessible observations receives the unresolved value and cannot itself be counted as a counterexample. Equation 21 defines the conservative status convention.

$$\text{CritStatus}(\mathcal{D}) = \begin{cases} \text{supported candidate,} & \text{if } g_j(\mathcal{D}) = 1 \text{ for every } j \in \{1, \dots, 6\}, \\ \text{contradicted,} & \text{if } g_j(\mathcal{D}) = 0 \text{ for at least one } j, \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (21)$$

The guards respectively concern: (1) stable identification of the analytic population and task across relevant versions; (2) documented qualitative difference between sufficiently observed relational regimes; (3) a defensible ordering and scale of the putative perturbation or control change; (4) mechanism-specific evidence connecting that change with nonlinear or self-amplifying consequences rather than mere simultaneity; (5) investigation of external interventions, measurement changes, and plausible rival processes; and (6) sensitivity checks across observation windows, alternative classifications, and known data gaps. A positive result in Equation 21 denotes a *supported candidate* under the declared research design. It does not prove a mathematical bifurcation, provide a universal tipping definition, or confer legal or normative approval. The six guards are a proposed research protocol and should themselves be open to validation and revision.

Failure to satisfy a guard through lack of evidence yields the unresolved category. The contradicted category is reserved for a documented incompatibility with the specified claim, including a change in records that fully accounts for the proposed discontinuity within the stated design. An operational threshold or a regime change can still be supported where the more demanding critical classification remains unresolved. This graded result prevents insufficient data from being misdescribed as evidence that the social process was continuous.

11.11 Historical Countermodels and Alternative Mechanisms

At least four countermodels deserve consideration in a study of an apparent turning point. First, *administrative recoding* changes who is counted while the relevant cooperation remains substantially similar. Second, *external substitution* changes the service rapidly through a new contractor, funding condition, or professional requirement without an identified endogenous cascade. Third, *slow accumulation* can produce a seemingly abrupt change once an observer applies a binary classification to a continuously changing capacity. Fourth, *selection of surviving cases* can exaggerate the apparent stability of a new regime by omitting programmes that dissolved before they could be archived.

Other alternatives include task demand, an emergency, technology adoption, coordination with neighboring services, and changes in the feasible options of recipients. In a study of post-policy volunteer departures, a contemporaneous increase in employment demands or a change of transport accessibility might account for an observed change in participation. Where explanations remain observationally equivalent, a rigorous historical report should state that equivalence. Process traces, comparisons with unaffected tasks, boundary-sensitive counts, and negative cases can narrow the explanatory set, but they need not resolve it completely.

The investigation of alternatives also concerns attribution. A favorable outcome after a volunteer initiative may owe much to professional workers, recipients' own labor, state provision, informal networks, or activities displaced elsewhere. Conversely, a programme that becomes smaller may have improved its referral boundaries or reduced uncompensated burdens. Candidate transitions are thus studied within

Table 11: Evidence objects, competing accounts, and scope limitations in historical threshold analysis.

Object	Candidate trace or bounded question	Principal rival account or limitation
Analytical boundary	Task, affected persons, role and service inclusion rules	Population change can mimic a threshold
Threshold provenance	Dated eligibility rule, prespecified cut-off, analytic version	Retrospective category may be post hoc
Temporal resolution	Events, uptake dates, observation intervals, censored gaps	Aggregation can make gradual change abrupt
Relational regime	Coverage, authorization, dependencies, functional reproduction	Stable labels may conceal changed capacity
Coordination mechanism	Task joins, referrals, contact and sequence evidence	Simultaneous recruitment is not a cascade
Feedback mechanism	Replenishment, training, incentives, correction and burdens	Correlation may reflect external intervention
Perturbation response	Comparable disruption and subsequent functional recovery	Perturbations differ in severity and scope
External conditions	Demand, funding, law, staffing and neighboring services	Independent shocks can drive substitution
Distribution and refusal	Differential access, exit options, unpaid maintenance	Aggregate improvement can hide transferred costs
Archive and robustness	Versioned sources, negative cases, rival partitions	Missing histories can bias regime selection

heterogeneous systems of contribution and constraint. This relational orientation resists assigning either progress or decline to a single actor without supporting evidence.

11.12 Distributional Consequences and Normative Independence

A historical threshold can alter access to assistance, the burden of care, the ability to refuse, and the authority to interpret an event. Its significance differs for participants who gain a reliable role, people whose informal competence loses recognition, and recipients whose service becomes less accessible. Measures of overall coverage can conceal concentrated benefits alongside exclusion. The historical dossier therefore retains differentiated positions and outside options rather than describing a regime solely through an organizational aggregate.

Normative assessment asks further questions. A critical shift toward concentrated coordination might be effective for rapid logistical tasks while creating problematic dependence on a gatekeeper. A shift toward more distributed decision making might enhance voice yet make sensitive referrals harder to manage if professional boundaries are unclear. These are possible tensions, not settled rankings. Justification requires separate attention to applicable duties, care, institutional mandate, procedural fairness, and the perspectives of affected persons. A system's endurance is not a substitute for such justification, and a mathematically represented attractor is not a normative ideal.

The right to decline participation is also historically consequential. Apparent stability sustained by people who lack realistic alternatives differs from stability based on renewable willingness and workable exit routes. Where participants' consent, refusal, or affected interests are undocumented, the analyst should preserve the evidential gap. A claimed transition to legitimacy cannot be inferred from an observed transition to a new decision arrangement, even if the arrangement persists across several annual reports.

11.13 Evidence Audit for Candidate Threshold Histories

Table 11 operationalizes the dossier in Equation 20 and the evidence guards associated with Equation 21. The table identifies candidate evidence and the kinds of misclassification each inquiry is designed to detect. It neither asserts that the records exist nor authorizes collection of protected information without appropriate permissions and ethics review.

A study may gain confidence about an administrative threshold from a dated rule and consistent applications while lacking enough evidence to infer a regime change. A second study may document altered reproducibility across staff succession but still lack traces identifying the specific feedback mechanism. These are legitimate results with different scopes. The researcher should record such asymmetry of evidential support rather than treat the most dramatic available description as the default label for the history.

11.14 Constructed Comparisons of Threshold and Transition Claims

Case A: A documented credential boundary with stable underlying practice. In a constructed community information service, a training badge becomes obligatory for specific volunteer assignments on an announced date. Registration records then show an abrupt decline in eligible volunteers. Archived task logs indicate that the public-facing service continues through previously trained staff and neighboring providers, although some informal assistance becomes less visible in reports. The badge introduces a verifiable administrative threshold and may affect participation opportunities. The historical evidence does not by itself show a critical transition in service reproduction. Separate inquiry would be needed into excluded participants, the provenance of the requirement, coverage changes, and whether reporting conventions explain the measured discontinuity.

Case B: A possible coordination cascade under changing demand. In a hypothetical neighborhood support group, participants initially provide occasional accompaniment only when they can identify a reliable referral partner. A small number of well-documented successful joins is followed by rapid growth in offers of assistance, improved referral coverage, and a maintained induction routine. Participant accounts suggest that observed success encouraged further participation, consistent with a candidate reinforcing mechanism. Yet a contemporaneous public campaign and rising demand also increased recruitment. The history supports a candidate regime change if task continuity and self-reproduction can be shown. A critical-transition classification remains unresolved until network exposure, exogenous inputs, and alternative window definitions distinguish a coordination cascade from common response to the campaign.

Case C: Slow dependency growth and apparent sudden breakdown. A constructed aid network gradually concentrates translation, scheduling, and conflict resolution around one experienced volunteer. Annual activity totals remain stable because the coordinator compensates for missing substitutes. When that participant becomes unavailable, service continuity deteriorates within days. The abrupt breakdown has a long preparatory history involving knowledge concentration, weakened succession, and unrecorded maintenance work. Evidence of a bottleneck may warrant a claim of accumulated fragility and a regime change following withdrawal. It does not automatically demonstrate bistability, critical slowing down, or a mathematically defined tipping point. The withdrawal may simply expose an existing single-point dependency. Repair through training and redistribution would also need its own evidence rather than being presumed from a later recovery.

These cases are analytic constructions; they describe no real hospital, nonprofit organization, professional team, or individual. The same visual pattern in a report can correspond to formal recoding, relational coordination, or accumulated dependence. Their comparative value lies in specifying different evidential obligations and identifying where a tempting stronger inference remains unjustified.

11.15 Comparative Propositions and the Fast–Slow Historical Interface

Three provisional propositions follow from the distinctions developed here. First, threshold claims become more transportable across historical cases when the task, affected population, cut-off provenance, and observation resolution are explicitly fixed; transportability remains conditional on comparable institutional and practical settings. Second, a supported regime change may be reconstructed through altered relational

reproduction even if membership and public labels remain stable, provided that functional distinctions are traceable through sufficiently independent evidence. Third, an endogenous critical-transition claim carries a distinctive burden of proof concerning feedback, alternative mechanisms, and sensitivity to plausible descriptions of the same history. These propositions are methodological proposals; they are neither empirical regularities of volunteering nor deductions from a universal social ontology.

The analysis leaves an important temporal question unresolved. A nominally sudden institutional decision can interact with slowly changing training capacities, trust, resources, demand, power distributions, and habits of maintenance. The pace of these changes may determine whether an observed boundary is a transient administrative episode or a durable change in possible action. Section 11 has specified how to describe a candidate transition without deciding that its dynamics are critical. The subsequent investigation of fast and slow historical couplings will ask how processes with different characteristic durations condition, amplify, delay, or constrain one another and what records are needed to distinguish such interactions from coincident change.

12 Fast–Slow Couplings in Volunteer and Institutional Trajectories

Histories of volunteer action contain processes whose durations, response delays, and opportunities for revision differ substantially. A request may require an answer within minutes, a volunteer’s competence may develop over months, and institutional recognition or resource renewal may be negotiated across annual cycles. The resulting differences in temporal organization can constrain which actions are possible, whose burdens become visible, and whether a cooperative arrangement can reproduce its capacities. This section develops a preliminary generative relational (GR) vocabulary for reconstructing such fast–slow couplings in bounded volunteer and institutional histories. It first separates temporal scales and observational clocks, then analyzes response delays, learning, trust, maintenance, and institutional decision cycles, and finally offers an evidence-indexed formal dossier, a limited classification convention, and constructed comparisons. Its method is comparative-historical and interpretive with a modest formal representation. Physical multi-timescale models and systems-feedback concepts serve as conditional resources for description, not as evidence that volunteer organizations obey an established separation-of-timescales law.

12.1 Temporal Scales as Task-Relative Historical Objects

A temporal scale is meaningful here only with respect to a specified process and question. The time needed to answer an urgent request, the period over which participants gain task competence, the cycle of an organization’s authorization decisions, and the interval over which resources are renewed can be compared, but these durations refer to different objects. A weekly meeting might be fast relative to annual budget decisions and slow relative to a single handover. Calling a process “fast” or “slow” without fixing its comparator risks reifying a convenient research partition as an intrinsic quality of the collective.

The relevant comparisons therefore declare a task domain, an interval, the process initiating a possible change, an observable response criterion, and the observational resolution. Clock time and social time need not coincide: a formally brief review can be prolonged by waiting for a responsible person, while a long-established practice can change rapidly when access permissions are withdrawn. A recurrent calendar event should also be distinguished from a response duration. Monthly committee meetings are a cadence, whereas the elapsed period from an incident to a consequential decision is a lag that may span several meetings.

Historical comparison requires uncertainty ranges. Interviews may establish that a transfer occurred before an annual turnover but fail to identify the day; policy documents may identify an effective date while obscuring when the new procedure became operative. A well-formed claim can preserve interval-censored timing and partial order instead of manufacturing exact dates. The temporal records introduced earlier in the manuscript permit this weaker description. Their central purpose in the present section is to

keep a researcher's scale choice revisable while preserving the experiences of people whose urgent needs do not conform to the institution's recording cycle.

12.2 Ontological Suspension, Relational Processes, and Temporal Manifestations

At the level of *ontological reality*, GR suspends judgment about whether a volunteer system possesses physical state variables, natural time constants, attractors, or objectively privileged decompositions into fast and slow processes. The mathematical language used below constructs a representation of historically situated relations. Its analytical value has to be defended through clarity, evidence, and comparison rather than inferred from the formal vocabulary itself.

At the level of *relational reality*, a response depends on historically constituted positions, competences, dependencies, invitations, permissions, and alternatives. The relevant temporal properties are distributed across relationships. A coordinator's ability to respond promptly can depend on years of tacit learning and on a slowly maintained network of substitutes; a legally authorized procedure can remain practically inaccessible when people needing it have shorter decision windows than those permitted by the institution. Conversely, patient and incremental learning may build the capacity for an appropriate rapid response. A coupling exists analytically when a change in one process conditions the available trajectories of another process through an identifiable mediating relation.

At the level of *manifestation reality*, time appears through timestamps, schedules, waiting lists, training records, interviews, narrative periodizations, and standardized reports. A published turnaround indicator may change how activity is prioritized, shifting attention toward readily measured responses. Reports can thus become consequential events rather than neutral mirrors of duration. The distinction between the time a relation changes and the time that change becomes legible in a record remains especially important. A backlog recognized only at quarterly review may have developed gradually, while the sudden rise in reported cases may be partially attributable to revised recording practices. Cross-level analysis preserves both the efficacy of manifestations and the underdetermination of their underlying histories.

12.3 Clocks, Waiting Times, Response Delays, and Temporal Exposure

The inquiry uses several distinct temporal measures. An *event timestamp* places a reported occurrence within the available chronology. A *recurrence interval* measures how frequently a designated process is scheduled or observed. A *response latency* measures the interval between a specified request or perturbation and a specified action. A *capability-formation duration* concerns the period needed for an accessible competence to become sufficiently reproducible for a defined task. A *consequence delay* concerns effects that may become observable only after intervening events. These intervals should not be automatically substituted for one another.

Waiting has a relational distribution. The interval of administrative deliberation may appear as routine institutional processing while representing acute uncertainty, lost opportunities, or uncompensated additional work for the person awaiting a response. An action completed within an institutional target can still arrive outside the recipient's practical decision window. Conversely, compressing a deliberative process to meet an apparent urgency can bypass safeguards or force a participant into unauthorized activity. Such competing temporal demands require an analysis of who has discretion to accelerate or defer action and who bears the associated risk.

A useful observational record therefore specifies the initiating event, the agent or process able to respond, the practical deadline, the experienced waiting period, and the relation that makes the delay consequential. Where relevant, the record also distinguishes what was known at the time from what becomes evident retrospectively. The reconstruction does not presume that shorter latency always represents improvement. Quality, authorization, informed consent, equitable accessibility, and the sustainability of a response need independent assessment.

12.4 Immediate Support and Slower Institutional Decision Cycles

Voluntary support can be situated at an interface between immediate, localized needs and decision processes organized around administrative accountability. A participant may need accessible information before a scheduled appointment; a volunteer may require a supervisor's authorization; a supervisory body may consider changes through periodic meetings. The mismatch is not reducible to inefficient scheduling. It can arise from legitimate differences in the objects and obligations of the respective processes. The urgent task concerns a particular person's opportunity; the institutional review may concern privacy, safety, resources, and consistent treatment across cases.

Several practical arrangements can mediate this mismatch without collapsing distinct responsibilities. A preauthorized referral route may permit timely redirection within established limits. A clearly scoped escalation rule can identify cases requiring rapid professional attention. A temporary pause may be appropriate where authority is uncertain and potential harm is material. An accessible record of unmet needs can inform a later policy review while maintaining appropriate confidentiality. Each arrangement has to be evaluated relative to the competencies and permissions actually available, including the possibility that a suitable response is outside a volunteer's mandate.

The timing of a policy announcement is also different from the timing of its practical uptake. A new document may appear immediately while training, translation, usable infrastructure, and confidence develop gradually. Huy's account of organizational temporal capability emphasizes the sequencing, pacing, timing, and combination of changes affecting different organizational elements [39]. This is a conceptual precedent for examining coordinated temporal demands. It is not evidence that a particular volunteer service possesses such capability or that the fastest rollout is the best one. The GR reconstruction adds the need to assess whether different participants actually receive access to the new procedure within their relevant practical windows.

12.5 Slow Learning, Readiness, and the Timing of Delegation

Reproducible ability can develop slowly while particular performances occur quickly. Task instruction, supervised participation, error correction, interpersonal familiarity, and repeated handovers may alter what participants can safely do without extensive deliberation. The pace of learning depends on opportunities to practice, task complexity, feedback quality, institutional requirements, and the learner's own circumstances. A registration date, a completed module, and competence in a situated interaction denote different events. Their temporal distance is an object of inquiry rather than a measurement error to be erased.

Delegation introduces a further asymmetry. An experienced volunteer might understand an urgent need long before they are permitted to act upon it; a newly authorized participant might possess an administrative credential while lacking the situated judgment relevant to an unfamiliar case. In each circumstance, the historically available combination of ability, mandate, supervision, and accessible referral determines the task-specific action space. The possibility of refusing an inappropriate assignment or requesting support is part of that space. Treating training as a simple accumulation variable could conceal these boundaries and the rights of participants to withhold their cooperation.

The historical record should distinguish learning opportunities from measured achievement, authorized scope from informal expectations, and individual competence from distributed team capability. The knowledge-transmission distinctions developed in Section 9 remain relevant: instructional material may be retained, transmitted, and recognized while practical uptake is incomplete. Rapid intervention is sometimes made possible by a long and comparatively invisible history of appropriate preparation. A convincing account identifies the preparation and its contribution rather than retrospectively attributing every fast response to a generic organizational stock of skill.

12.6 Trust Formation, Withdrawal, and Asymmetric Adjustment Times

Trust-related expectations may be cultivated through repeated undertakings and nevertheless change sharply after a breach, a failed referral, a boundary violation, or newly accessible information. Such

changes should be described with attention to the undertaking at issue, the experienced exposure, available alternatives, and the institutional protections in force. There is little basis for presuming that the time required to establish confidence equals the time required to revise it. Even where the visible change is abrupt, the relevant concerns may have accumulated unrecorded over a longer interval.

Participants can also face different costs of delay. An institution may wait for corroboration, a volunteer may continue shouldering extra work, and a recipient may lose a time-sensitive opportunity while those processes unfold. The resulting temporal inequalities shape both evidence production and relational trajectories. A complaint submitted late may reflect barriers to reporting or fear of retaliation rather than delayed realization of harm. Conversely, a rapid withdrawal of participation may be a legitimate exercise of agency and should not be coded mechanically as system deterioration.

The appropriate comparison follows particular commitments and their histories. It asks when the expectation was formed, what could be known when an undertaking was accepted, when contrary evidence became accessible, and whether participants could revise their positions without disproportionate penalty. Institutional assurance and discretionary interpersonal trust remain distinct in this reconstruction. The earlier trust analysis supplies relevant dimensions, whereas the present section examines the order and durations over which these dimensions can affect one another. Temporal mismatch thereby becomes an account of situated vulnerability and revision, not a generalized claim that trust obeys a slow-building and fast-collapse law.

12.7 Maintenance Backlogs, Deferred Repair, and Reproductive Fragility

Daily coordination may appear stable while the work needed to reproduce that coordination accumulates unmet. Unreviewed protocols, incomplete training handovers, outdated translations, missing substitutes, and repeated reliance on one participant can create a deferred-maintenance burden. The burden can be slow in the sense that its consequences become visible over several cycles; it may also be fast in the sense that each omitted repair creates an immediate additional risk for someone already carrying the work. Such cases caution against identifying a slow process solely by its statistical smoothness.

The reproduction of a shared practice requires carriers: time, competent participants, usable records, material means, accessible communication, and an appropriate decision route. Maintenance can be performed through low-visibility activities whose records are sparse and whose success is registered as the absence of disruptions. Consequently, a stable activity count may coexist with declining resilience to participant turnover or a new demand. The subsequent rapid breakdown is intelligible through the preceding maintenance history, but this alone does not establish the critical-dynamics conditions examined in Section 11.

An audit of accumulated fragility should track the succession of repair opportunities, the people able and permitted to undertake them, unsuccessful requests for resources, and substitutes that would have been practically feasible. A simple sum of deferred tasks cannot be treated as an invariant measure of fragility when tasks are heterogeneous and risks are distributed unequally. Some postponements may be deliberate and justified; others may result from unjust resource restriction or unrecognized labor. The present account makes these alternatives visible while leaving assessments of negligence, legal compliance, and ethical duty to domain-specific analysis.

12.8 Temporal Feedback and the Limits of Dynamical Interpretation

Temporal coupling can arise through reinforcing or counteracting relations. Faster responses may encourage additional requests, increasing workload and eventually lengthening waiting times. Repeated successful handovers may improve practical readiness, reducing the time required for later coordination. Intensified reporting may mobilize resources and simultaneously increase the recorded incidence of difficulty. These mechanisms are hypotheses to be investigated through identifiable intermediaries: requests, task allocation, attention, learning, resource decisions, and changes in access. Mere co-movement of activity totals and delay indicators does not establish a feedback loop.

Feedback reasoning has a heterogeneous history in social-scientific and systems inquiry. Richardson’s historical account reconstructs traditions of circular causality and feedback thought rather than providing a universal model of any particular institution [57]. In the GR programme, the analytically relevant question is which documented relation permits an effect on one occasion to change the conditions of subsequent action, at what lag, and through which participants or institutional channels. A reinforcing circuit should be distinguished from a common response to an external intervention, such as a policy change or a rise in demand. A balancing circuit should be distinguished from a capacity ceiling that has simply been imposed by a rule.

Dynamical language carries additional assumptions if quantitative identification is sought. A differential-equation model requires variables and observation procedures that support sufficiently interpretable changes over time. An estimated lag depends on sampling resolution and on assumptions about unmeasured events. A diagram of possible feedbacks can therefore be valuable as a disciplined hypothesis inventory while remaining far short of estimating rate constants, proving a timescale separation, or identifying an attractor. The present framework uses this restricted interpretation. Its purpose is to organize competing mechanisms for historical inquiry rather than to attach scientific prestige to an underidentified narrative.

12.9 A Typed Multiscale Coupling Dossier

For a bounded research domain $\mathcal{D}$ and evidential collection $\mathcal{E}$, the proposed *multiscale coupling dossier* makes the analytical objects explicit. Its components are typed slots that must be completed, qualified, or marked as unavailable in a concrete study. Equation 22 summarizes the dossier’s structure.

$$\text{FSC}_{\mathcal{D},\mathcal{E}} = (\mathcal{P}, \mathcal{T}, \mathcal{W}, \mathcal{O}, \Delta, \mathcal{L}, \mathcal{M}, \mathcal{A}, \mathcal{X}, \mathcal{B}, \mathcal{U}, \mathcal{S}). \quad (22)$$

Here $\mathcal{P}$ identifies the historical processes and the task-relative comparators; $\mathcal{T}$ identifies event clocks and partially ordered periods; $\mathcal{W}$ specifies observation windows and resolution; $\mathcal{O}$ records initiating occurrences and the responses claimed to follow; Δ describes observed or inferred durations; $\mathcal{L}$ specifies candidate delays and their uncertainty; $\mathcal{M}$ names mediating relations; $\mathcal{A}$ records differentiated positions, mandates and alternatives; $\mathcal{X}$ records external interventions and rival explanations; $\mathcal{B}$ specifies boundaries and the population left outside them; $\mathcal{U}$ records unresolved information and counterevidence; and $\mathcal{S}$ tracks source provenance and changes in the means of manifestation.

The dossier describes an evidentially situated research object. It is not a physically calibrated dynamical state vector and implies no common unit or additive operation across the components. In particular, entries in $\mathcal{L}$ may be sets of possible intervals, and $\mathcal{O}$ may include events known only through partial temporal order. A claimed fast–slow relation is a candidate relation between specified processes mediated by a documented mechanism; it is not inferred from a bare ratio of their apparent durations. The formalism is intentionally permissive about incomplete data while demanding explicit scope for any stronger attribution. Its contribution lies in typed separation of causal claims, observational artifacts, and distributions of temporal exposure.

12.10 Evidence-Qualified Admission of Historical Coupling Claims

A dossier permits a preliminary, three-valued classification when the historical question and required evidence are declared. Let the guard set G_{FS} contain seven conditions: g_1 , task and process identity; g_2 , comparable event clocks and temporal boundaries; g_3 , defensible ordering of candidate condition and response; g_4 , a traceable mediating relation; g_5 , a change in feasible action or reproduction that is distinguishable from changed reporting alone; g_6 , examination of plausible exogenous and selection mechanisms; and g_7 , source-quality and scope sufficiency for the particular attribution. The evidence

classification in Equation 23 is a bounded research convention.

$$\text{Class}_{\text{FS}}(\text{FSC}) = \begin{cases} \text{supported candidate,} & \text{if all } g_i \in G_{\text{FS}} \text{ are supported,} \\ \text{contradicted,} & \text{if decisive counterevidence defeats the specified claim,} \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (23)$$

The conditions are claim-relative, so support for a scheduling delay does not itself warrant support for an endogenous reinforcing feedback. A *supported candidate* indicates that the proposed coupling survives the dossier's declared evidential checks at the chosen level of description; it does not establish causal identification or generalizability. A *contradicted* classification requires evidence bearing directly on the specified mechanism or temporal ordering, rather than merely the absence of confirmation. The *unresolved* state encompasses missing records, coarse temporal resolution, competing mechanisms with indistinguishable observable implications, and uncertain manifestation changes.

The convention also restricts opportunistic redescription. A researcher cannot change the interval or redefine a process after inspecting an apparent break without documenting the change and reassessing the guards. Reclassification is legitimate when new evidence arrives or the question is refined, but the earlier assessment should remain traceable. Ethical approval and institutional permission are separate evaluations. The classification cannot authorize a volunteer to perform a task, impose an obligation on a recipient, or justify a delayed response to an urgent need.

12.11 Matched Episodes, Countermodels, and Observation Bias

Comparative-historical inquiry can improve the dossier by assembling matched episodes with comparable tasks, observed demands, documentation practices, and institutional decision rules. One episode may involve a rapid service request under stable training arrangements; another may involve a similar request after an authorized referral channel was changed. Differences in the resulting response may suggest candidate mechanisms, but matching requires scrutiny of the relevant people, demand composition, seasonal pressures, and recording conditions. A contrast based only on calendar dates is unlikely to isolate the effect of temporal coupling.

Three countermodels deserve deliberate testing. Under a *common-shock model*, both short-term workload and long-term resource decisions respond to an unobserved demand change, giving an impression of mutual causation. Under a *measurement-change model*, revised case definitions shift a reported backlog or completion time while practical relationships remain similar. Under a *selection model*, a researcher observes the trajectories of surviving volunteer teams but misses groups that dissolved, declined assistance, or were excluded from recognition. These alternatives can account for observed ordering without demonstrating the mediating feedback proposed in a focal narrative.

Evidence from records may be complemented by consent-based oral histories, task-level process tracing, and examination of unsuccessful handovers. Sources should be evaluated for retrospective rationalization, unequal opportunity to contribute to the archive, and risks of revealing identifiable circumstances. Where reliable fine-grained time series exist, sensitivity checks may examine alternative aggregations and lag definitions. Where they do not, a careful partial-order history can be more defensible than a numerically precise trajectory. The method is selected to answer the local historical question and never substitutes analytical elegance for adequate evidence.

Temporal selection and reverse coupling. Lagged institutional responses may reflect slow authorization, delayed learning, fluctuations in demand, or deliberate triage. They may also be caused by the very interventions subsequently interpreted as their consequence: a successful rapid response can create new reporting categories, increase referrals, and lengthen the next decision cycle. A matched-episode study must therefore identify the time at which each exposure and institutional response became possible, document queue composition and decision rules, and distinguish decision latency from the period during which an affected person actually lacked access. Comparing merely the dates of policy notices and service

totals risks treating a reporting delay as a behavioral delay. A candidate fast–slow mechanism gains support where a specified dependency and its timing are observed; the sign and magnitude of its causal effect remain a separate inquiry.

12.12 Temporal Power, Consent, and Normative Evaluation

The authority to set waiting periods, deadlines, reporting cycles, and revision opportunities is itself a historically constituted relation. Some participants can postpone decisions without immediate material consequences, whereas others cannot defer care-related needs, work commitments, or decisions about their participation. Formal equality of waiting rules may thus conceal unequal temporal exposure. The analytical unit includes not only the announced deadline but also discretion over exceptions, accessible escalation routes, the capacity to exit, and the possibility of contesting a harmful delay.

A GR historical description can trace how a decision cycle redistributes practical options. An organization might defer a budget decision while volunteers repeatedly perform uncompensated coordination; a recipient might experience repeated transfers between offices despite each office meeting its internal processing standard. Such accounts require independent evidence and should never be inferred merely from an organizational type. Consent and mandate also matter: rapid action taken under pressure may violate boundaries, while a slower process may preserve dignity, safety, and legitimate review. Inverse judgments are possible when delay undermines a time-sensitive right or opportunity.

A normative assessment has several dimensions that a single efficiency or resilience score cannot consolidate without explicit justification. Questions of legal authority, distributional fairness, non-exploitation, procedural review, and appropriate intervention standards are distinct from a historical claim that a practice persists. Walker and colleagues distinguish resilience, adaptability, and transformability in a social-ecological setting [75]. Their analysis is a useful warning against equating persistence with desirable outcomes, though its ecological constructs cannot directly adjudicate volunteer ethics. The present GR interpretation remains a domain-specific proposal: durable arrangements may preserve unjust burdens, and a discontinuity may constitute a justified correction.

12.13 Evidence Audit for Fast–Slow Historical Reconstruction

Table 12 organizes evidence appropriate to the principal claims developed in this section. Each row identifies a minimally relevant source and a common overinterpretation. The table is intended for preliminary research design, not as a universal compliance checklist.

The audit makes two evidential requirements especially prominent. First, a slow process should be reconstructed through its operative carriers and transformation, rather than identified simply because its reported frequency is low. Second, claims about lagged effects should confront competing explanations and the temporal resolution actually available. In a case involving private support interactions, source collection should respect confidentiality, informed participation, and limits on institutional access. Potentially useful data do not automatically become ethically collectable data.

12.14 Constructed Comparisons and Historical Research Propositions

Case A: Rapid referral and slow capability formation. A constructed community support group introduces an authorized rapid-referral pathway. Requests that previously waited for an individual coordinator can now be redirected promptly by trained participants. The apparent improvement follows months of supervision, accessible guidance, and clarification of permissible decisions. A before-and-after comparison may support a change in request handling, but the causal contribution of training must be considered alongside any contemporaneous reduction in demand or modification of recording rules. The quick observable response is conditioned by slower preparation, yet the relative effect of each component remains unresolved without additional records.

Table 12: Evidence objects, interpretive uses, and cautions for bounded fast–slow coupling claims

Historical object	Candidate source or comparison	Principal interpretive caution
Task and process boundaries	Role-specific procedures, task descriptions	A shared label can cover different practical tasks.
Event ordering and latency	Dated requests, reply logs, partial histories	Recording time may differ from operative time.
Decision cadence	Minutes, review schedules, effective dates	Meeting frequency is not decision latency.
Training and readiness	Supervision records, observed handovers	Completion does not certify situated competence.
Distributed trust and exposure	Consent-based narratives, incident chronology	Reporting delays have multiple explanations.
Maintenance and renewal	Revision histories, substitution records	Invisible successful maintenance may leave few traces.
Mediating feedback	Mechanism-level sequence of actions	Correlation can reflect an external common cause.
Institutional discretion	Mandates, referral routes, review rules	Formal permission may not produce practical access.
Observation changes	Form versions, denominator changes	Reclassification can resemble rapid transformation.
Distributional temporal burden	Differentiated waiting and exit opportunities	Aggregate averages conceal unequal costs.

Case B: Slow review and displaced immediate burdens. In a hypothetical volunteer information service, a governing committee reviews language-access protocols quarterly. Requests for an additional language rise between reviews, and a small number of bilingual participants begin providing informal help. Reports initially record unchanged official coverage, while undocumented work and waiting costs accumulate. Later approval of a revised protocol may appear as an abrupt improvement in service access. The history contains several coupled clocks: urgent recipient decisions, repeated informal mediation, the committee cycle, and later training. The change can be described without presuming that informal assistance was authorized or that the revised protocol fully remedied earlier inequity.

Case C: Stable outputs and delayed loss of substitution. A constructed aid collective reports a stable number of completed interactions over several years. An experienced participant gradually becomes the sole custodian of local contacts and error-repair routines as other members rotate out. When this participant declines further duties, response capacity deteriorates suddenly. Records of prior substitution attempts and unrealized training needs might support an account of gradually concentrated dependence exposed by a fast withdrawal. They do not on their own demonstrate a mathematically critical transition. The participant’s withdrawal may also be entirely appropriate; system continuity cannot be used to justify compelled continued service.

These cases are hypothetical analytical constructions and report no real organization, client, volunteer, or event. Together they yield three conditional research propositions. First, temporal coupling is more convincingly attributed when distinct processes, their mediating relations, and their observation windows are identified independently. Second, apparently abrupt outcomes may have slow histories of preparation or accumulated exposure, while repeated stable outputs may conceal weakening reproductive capacity. Third, normative assessment must be conducted on a separate plane, with attention to authority, consent, equitable access, and displaced costs. The forthcoming analysis of historical dependencies and resource renewal can investigate how these temporal couplings interact with access to material, informational, organizational, and relational means of continued action, without assuming that all such means form a commensurable stock.

13 Dependencies, Resource Renewal, and Historical Sustainability

The historical reproduction of volunteer and supportive practices requires attention to the means through which action becomes possible again after an initial accomplishment. Repeated activity may depend on paid staff, voluntary time, trusted relationships, infrastructure, institutional permission, accessible information, and the capacity of affected participants to continue engaging on acceptable terms. These conditions change at different rates and can be controlled by different actors. This section reconstructs the dependencies and renewal processes that condition the continuing availability of a bounded relational practice. It first distinguishes historical survival from capability renewal and normative sustainability, then examines resource access, external dependency, replenishment, participant autonomy, and displaced costs. It subsequently develops an evidence-indexed historical dossier, a conservative classification convention, an audit table, and constructed comparisons. The method is historical and interpretive, informed by political economy and organizational studies, with a restricted formal vocabulary. The section translates selected mechanisms from Paper VIII into the history of relational system formation while retaining the distinct questions posed by historical sequencing, institutional succession, and possible dissolution.

13.1 Historical Persistence, Reproduction, and Sustainability as Distinct Objects

A registered group can exist after it ceases providing a particular activity. A service can deliver a steady number of recorded interactions while losing experienced participants, drawing down a reserve, or depending on increasingly burdensome improvisation. Conversely, a named organization can close while its participants, knowledge, or relationships continue in a successor arrangement. The historical inquiry therefore differentiates *organizational persistence*, *practice reproduction*, *renewal of practical capacity*, and *sustainability under a specified evaluation*. These distinctions help clarify what an observed continuation actually demonstrates.

Organizational persistence concerns the continued recognition of an entity, role structure, or accountable unit across a stated interval. Practice reproduction concerns a sufficiently related sequence of actions, including the possibility of changing their form. Capacity renewal concerns whether the conditions for future action are made available again through learning, repair, legitimate replacement, agreements, or alternative resources. Sustainability is a wider, question-relative appraisal: one must specify a trajectory, a horizon, the relevant people and nonhuman interests, allowable changes, and the costs whose distribution matters. Persistence is an observation about a configuration; favorable sustainability cannot be read directly from it.

The historical unit also matters. A participant may remain available while a referral pathway ceases to function. An infrastructure may be renewed while an older task becomes inappropriate. An organization's funding may increase while support becomes inaccessible to people excluded by new eligibility criteria. A meaningful inquiry identifies both the *reproduced object* and the *reproductive means*. It also records losses and revisions that may be justified rather than treating all discontinuities as failures. The criterion of sameness across episodes remains partially interpretive and must be disclosed.

13.2 Ontological Suspension and the Three Levels of Resource History

At the level of *ontological reality*, the generative relational (GR) framework suspends claims that a collective is ultimately constituted by a finite set of resource stocks or that its relations obey physical conservation equations. Time, trust, skill, symbolic recognition, and legal permission are representable for particular inquiries, but their ultimate status and reducibility remain open. A balance-sheet metaphor cannot establish an ontology of collective life, and a formal register below provides no evidence that heterogeneous capacities share a common quantitative substance.

At the level of *relational reality*, resources are historically efficacious through situated paths of access, combination, and recognized or contested authorization. A vehicle is practically relevant to an accessible support service when permitted users can reach it, the required route is usable, a competent operator is available, and a task can be performed appropriately. Reliable human availability is similarly conditioned

by freedom to accept or decline, schedules, skills, and the social relations through which assistance is requested. A resource can accordingly be present yet unavailable for the question at hand. Conversely, participants may reorganize relations in ways that render a previously irrelevant or inaccessible means usable.

At the level of *manifestation reality*, resource histories appear through budgets, duty rosters, donation notices, volunteer-hour counts, accreditation, inventories, maintenance logs, public recognition, and retrospective testimony. These records differ in coverage, purpose, and authority. A grant announcement does not establish a disbursement; hours assigned on a roster do not establish consenting and qualified labor; an institutional pledge may create expectations without transferring usable control. Manifestations may also change relationships. Publishing a shortfall can attract resources, encourage withdrawal, or trigger new restrictions. The same document can thus be evidence about prior events and a historically consequential intervention in later ones. The historian should retain separate records of the announcement, the resource transfer, and the change in practical capability.

13.3 Resource Types, Conversion Conditions, and Situated Access

The present account provisionally distinguishes material means, monetary commitments, physical and digital infrastructures, situated knowledge, labor time, coordination relationships, formal permission, social recognition, and forms of care or attentional availability. Such a taxonomy is analytical rather than exhaustive. Several categories overlap, and the boundary between a resource and a constitutive feature of a relation depends on the research question. For instance, trust may make referral feasible without becoming a transferable possession of the institution. The categories are useful when they prevent an apparent surplus in one domain from concealing a binding deficiency in another.

Each candidate resource should be recorded with an identifiable holder or steward, a provenance, a task-specific access path, authorization conditions, a period of availability, and feasible substitutes. Some means can be stored, some are exhausted through use, and some are maintained or transformed by appropriate use. Knowledge may spread through authorized teaching, while confidentiality constraints limit what can be transferred; attention cannot be banked in the same manner as a financial balance. A cash transfer may finance an accessible translation service, but its conversion into a competent and trusted encounter also depends on recruitment, language proficiency, adequate review, and recipient willingness. Treating these conversion conditions as explicit links keeps monetary and social quantities from being added as though they were equivalent units.

Access is often contingent rather than binary. A vehicle may be available during particular hours, an expert may advise but lack authority to intervene, or an organization may own software while an external contractor controls the credentials needed to maintain it. A historian can record *supported access*, *supported exclusion*, and *unresolved access* for a particular actor, task, and interval. This three-valued discipline prevents an undocumented possibility from becoming a presumed operational alternative. The crucial question is whose action is enabled through which relation, and which actor can revise that relation under the stated rules.

13.4 External Dependencies, Negotiation, and Control over Alternatives

A practice may depend on donors, public institutions, host facilities, vendors, volunteers, receiving organizations, or people whose participation makes the intervention appropriate. Dependencies are historically structured through conditions of supply, recognition, coordination, and withdrawal. Pfeffer and Salancik's resource-dependence account treats external constraints and interorganizational relationships as important to understanding organizational decisions [53]. Their analysis supplies a disciplinary antecedent for examining constraints, while the present GR question concerns the changing feasibility of specific supportive relationships and does not presume that organizational survival is their proper objective.

Dependence is relational and asymmetric only under defined alternatives. A single donor may contribute most recorded income while the activity remains replaceable through established other channels; a comparatively small holder of an indispensable permit may possess a stronger veto over a particular

action. The historically relevant question identifies the task, the controlled access point, substitution opportunities, notice periods, and the distribution of interruption costs. A formal funding agreement may contain a renewal option, yet timely exercise of that option can depend on discretionary approval or evidence that the recipient cannot produce without costly reporting. Claims that one actor controls another require closer evidence than a count of contractual or financial ties.

Public and nonprofit relationships add a particular historical remainder. Salamon's analysis of voluntary failure and third-party government addresses the character of government–nonprofit interdependence in a specific United States welfare-state context [59]. It would be unwarranted to turn that historically situated account into a universal definition of volunteer aid. The GR translation instead asks which obligations are publicly assigned in a given jurisdiction, which tasks are undertaken voluntarily, and whether a change in financing redistributes practical responsibilities without accessible recourse. A public body can remain legally responsible for an activity performed by a contracted provider; an informal group can be indispensable in practice without acquiring legal authority to discharge the state's duties. Source-based institutional reconstruction is necessary before deciding which configuration applies.

13.5 Replenishment, Repair, and the Timing of Usable Capacity

Renewal is a sequence of historically situated acts through which the means for future performance become accessible again. An inventory can be replenished, a skill transmitted, an access permission renewed, an agreement renegotiated, or an overloaded participant replaced with an appropriately trained and consenting colleague. These processes operate on different timescales. The record should distinguish an announced commitment, the initiation of replenishment, its completion, the time of availability, and an observed subsequent use. The gap between each event can be consequential even if retrospective reports present renewal as a single successful transaction.

Maintenance is a special form of renewal because it may preserve apparent continuity while consuming otherwise invisible resources. Resolving database errors, refreshing safety training, translating new instructions, and keeping a private contact network current can prevent a disruption without creating a readily counted service outcome. When maintenance is deferred, short-run performance may improve while the conditions for later reproduction deteriorate. The delayed-burden mechanism is a testable historical hypothesis; it should be distinguished from an inference that every stable service with low recorded maintenance is secretly deteriorating. Records of actual repairs, failure modes, workloads, and replacements are needed.

The relevant unit of comparison is often a *renewal cycle*, defined for a task and period rather than a universal fixed interval. A support desk can complete one hundred encounters in a month while requiring translation updates each week, rotation of participants each quarter, and review of authorization annually. A single average renewal rate would erase the ordering and compatibility of these requirements. What matters is whether the corresponding task conditions can jointly be made available when needed, including whether protected rest, refusal, and appropriate supervision are respected.

13.6 Participation, Continuing Commitment, and the Right to Withdraw

Sustained volunteer participation presents a distinctive resource-renewal problem because a person is a participant with interests and agency, rather than a consumable unit of labor. Penner's interactionist discussion of sustained volunteerism examines both dispositional and organizational influences on continued participation [52]. The literature establishes a relevant empirical and theoretical field, but it does not imply that a particular volunteer owes continued service or that an organization's retention metric expresses individual flourishing. A historically defensible record separates invitations, expectations, agreements, actual contributions, opportunities for revision, and conditions of departure.

Renewal of available work may arise through new participants, changed task design, better supervision, reduced unnecessary burdens, or a different relationship with professional services. Continuity can also result from accumulating pressure placed on an established participant who fears disappointing recipients or colleagues. A nominally voluntary arrangement may contain strong social or institutional constraints.

Reports that count retention as a success should therefore be compared with accounts of choice, rest, recognition, training, accessible grievance procedures, and the availability of refusal without retaliation. The same retained headcount can be associated with materially different histories.

Consent and competence are task-specific and temporal. Initial willingness does not authorize later expansion into sensitive professional decisions, handling of protected information, or unsupervised interventions. A person may retain competence while withdrawing permission to participate; an organization may have authorized roles but lack sufficiently trained occupants. Any continuity analysis that treats these dimensions as exchangeable risks turning system reproduction into a justification for coercive expectation. A rights- and dignity-sensitive account admits a participant's exit as a possible ethically appropriate event even when it interrupts an established pathway.

13.7 Dependency Concentration, Substitution, and Fragile Continuity

Relational systems may reproduce a practice through a narrow dependency that remains concealed during ordinary operation. Examples include exclusive knowledge of a password recovery process, a single bilingual coordinator, one subsidized room, or a trusted intermediary whom participants cannot readily replace. The historian should identify whether apparent alternatives are sufficiently qualified, authorized, reachable, and willing for the specific task. A list of named substitutes is weaker evidence than documented successful handovers under comparable conditions.

Concentration can be created by efficiency-oriented changes. If a single specialist handles complex exceptions faster than a distributed team, an institution may gradually stop training substitutes; future performance then depends more strongly on that person's availability. Such a sequence could exhibit a reciprocal connection between short-term productivity and long-run fragility. Its presence is not demonstrated simply by observing a specialist and a later disruption. Records would need to establish decisions about training, the time at which feasible alternatives narrowed, and rival causes such as changing task complexity or authorization standards.

Dependency can also be deliberately diversified, yet diversification itself has costs. Maintaining several authorized access paths may demand training, review, and coordination, and redundant capacity may appear inefficient during periods of low demand. Whether this arrangement improves an outcome depends on the relevant service standard, risk tolerance, rights obligations, and distribution of its burdens. A historical comparison should study feasible alternative arrangements rather than infer that more redundancy is universally preferable. In cases involving sensitive information or vulnerable persons, substitution may require an appropriately bounded professional role and cannot be achieved merely by increasing the number of volunteers.

13.8 Return Circuits, Resource Capture, and Historical Feedback

Earlier GR political-economic work distinguishes the formation, recognition, circulation, appropriation, return, and renewal of value in supportive systems. Its records and conceptual propositions provide candidate mechanisms, not ready-made historical proof. For the present inquiry, a *return circuit* is a proposed sequence through which the consequences of action help sustain, weaken, or redirect the conditions of later action. Examples include trusted experience encouraging appropriately trained recruitment, successful coordination informing public investment, or favorable reporting leading a funder to renew support. Each return claim requires observation of intervening events and a plausible account of the mechanism connecting them.

Circulation may pass through numerous actors and nested relationships. A donation might support training; trained participants might provide a service; that service could improve access to a public institution; the institution might change its referral policy; the changed policy could redirect later demand. The circuit can be extended and partially closed, but a long narrative sequence is not automatically a self-regulating dynamical loop. External shocks, policy changes, selective reporting, and prior commitments can generate similar temporal patterns. The historical investigator needs to identify the returning capacity,

its beneficiaries, who controls the conversion interfaces, and whether any apparent return is offset by depletion elsewhere.

Resource capture is a distinct candidate mechanism. When an organization receives credit or revenue from activities sustained by unrecognized unpaid coordination, publicly celebrated renewal may coincide with private exhaustion or displacement of costs to recipients. Conversely, an organization may legitimately allocate resources to coordination, safety, and administrative oversight that are not immediately visible in output counts. A responsible analysis cannot classify administrative retention as extraction merely because a surplus exists, nor assume that all expenditure associated with volunteers is justified. Mechanism-level evidence and an independent normative comparison remain necessary.

13.9 A Typed Historical Dependency and Renewal Dossier

The proposed register in Equation 24 records the minimum distinctions needed for a task-bounded renewal claim. Let q denote a specified supportive task, B its declared actor and institutional boundary, I a historical interval, and κ the source and coding protocol. Define a candidate dossier with types and interpretive provenance retained for each component.

$$\mathfrak{U}_{B,I;q}^{\kappa} = (\mathcal{A}, \mathcal{T}, \mathcal{X}, \mathcal{D}, \mathcal{U}, \mathcal{N}, \mathcal{M}, \mathcal{H}, \mathcal{C}, \mathcal{O}, \mathcal{E}, \mathcal{Q})_{B,I;q}^{\kappa}. \quad (24)$$

Here $\mathcal{A}$ records actors and recognized positions; $\mathcal{T}$ specifies the task and its relevant standard; $\mathcal{X}$ denotes typed means with their provenance and conditions of use; $\mathcal{D}$ records directed dependency claims and their candidate mediators; $\mathcal{U}$ records task-specific authorized and practical access; $\mathcal{N}$ identifies attempted and realized replenishment events; $\mathcal{M}$ records maintenance, training, and repair; $\mathcal{H}$ contains partial event order and resource-availability horizons; $\mathcal{C}$ denotes tested or untested substitutes and conversion pathways; $\mathcal{O}$ describes observations, reporting categories, and source omissions; $\mathcal{E}$ records differentiated exposure, transferred burdens, consent, and exit; and $\mathcal{Q}$ records the claim, rival explanations, and its evidential status. The twelve components are typed fields in a historical description; they are not a numerical state vector.

Each entry should identify its supporting source and the relevant period. For example, a facility-access claim in $\mathcal{U}$ may be supported by a contract but contradicted by evidence that entry was refused at the operative hour. An attempted recruitment event in $\mathcal{N}$ may be verified even if no new capability arose. The recording convention preserves these distinct outcomes and prevents a named budget line, agreement, or volunteer post from silently becoming a feasible action. Some types may remain unresolved because of confidentiality, missing archives, or sources that cannot ethically be collected; such unresolved positions should not be filled by convenient imputation.

The dossier is deliberately smaller in analytical ambition than an integrated political-economic model. Paper VIII's economic, labor, appropriation, and accountability mechanisms may inform the selection of fields, but translation into $\mathfrak{U}_{B,I;q}^{\kappa}$ requires an explicit matching of actors, roles, time intervals, and task-specific consequences. Information lost at that interface should be noted. The existence of a partial mapping from Paper VIII does not establish that historical system continuity can be fully expressed as a monetary circulation or that an earlier political-economic judgment is automatically applicable to the present case.

13.10 Evidence-Qualified Attribution of Bounded Renewal

A bounded claim of historical renewal is weaker than a claim of indefinite sustainability or causal identification. The proposed evidence convention assesses whether a specified capacity was made practically available again across the intervals relevant to task q . For a candidate history h , let $g_j(h)$ be an evidence judgment in $\{1, 0, ?\}$, where 1 denotes affirmative support under the declared protocol, 0 denotes affirmative evidence of a violation of a condition explicitly necessary for the stated renewal claim, and ? denotes unresolved evidence. An absent record or an unauthorized-to-access record is coded ? rather

than 0 unless independent evidence establishes the violation. The classification is given in Equation 25.

$$\text{Renew}_q(h) = \begin{cases} \text{supported candidate,} & \text{if } g_j(h) = 1 \text{ for } j = 1, \dots, 7, \\ \text{contradicted,} & \text{if some } g_j(h) = 0, \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (25)$$

Seven guards structure the judgment. The first identifies an operationally meaningful task and required capacity over two declared opportunities for action. The second establishes an actual initial capacity with a specified access path rather than an announced intention. The third provides a dated renewal or repair sequence that plausibly re-established the relevant means. The fourth verifies practical and authorized availability at a later opportunity, including a relevant consent or permission condition. The fifth checks compatibility among material, informational, human, and institutional requirements rather than treating resource types as automatically fungible. The sixth preserves the identity and observation limits of the task and its records across episodes, or documents their revision. The seventh checks for known evidence of displacement that would invalidate the narrowly stated renewal claim, such as an inaccessible service described as renewed solely because its financial allocation increased. These guards are research-design proposals, and each requires local operationalization.

The *contradicted* outcome applies only to the specified bounded claim under a documented guard violation; it does not establish that the organization is unsustainable in every respect. An *unresolved* outcome covers incomplete records, a disputed requirement, an incomparable task, or unknown access. An affirmative candidate indicates that a declared capacity appears to have been renewed under the available protocol. It does not prove a causal mechanism, eliminate all unobserved harms, certify equitable treatment, or show that an indefinitely repeatable cycle exists. A stronger causal claim would require an additional design that identifies the renewal event's contribution against plausible alternatives, while a normative claim would require standards concerning appropriate burdens, rights, and distribution.

13.11 Interrupted Renewals, Counterfactuals, and Historical Alternatives

Dependency research gains explanatory force by examining what happens when a purported renewal mechanism is absent, delayed, or altered. Relevant observations include unsuccessful recruitment, expired agreements, disrupted maintenance, failed transfers, unexercised alternatives, and task suspension. A successful observed handover supports a narrower substitution claim than an organization-wide continuity narrative; an untested replacement plan remains a possible alternative under specified conditions. The investigator should therefore record unsuccessful paths and identify what evidence would disconfirm the preferred account.

Three countermodels are particularly salient. A *common-cause model* arises when external improvements, such as a decrease in demand or a new public facility, simultaneously improve apparent service outcomes and funding stability; a presumed internal renewal circuit might be spurious. A *classification-change model* arises when an organization changes who qualifies for assistance, yielding a stable reported completion rate even though the originally defined service is less accessible. A *survivorship model* arises when only continuing organizations contribute archives while teams that exhausted their resources or transferred activities remain unobserved. Each countermodel can reproduce a surface pattern of renewal without supporting the candidate mechanism.

Counterfactual conclusions need evidence beyond the temporal juxtaposition of a renewal event and continuing performance. Comparative episodes can be useful when task requirements, institutional rules, and observation coverage are sufficiently alike. Even then, available alternatives can differ in unmeasured ways. Where comparison is impossible, process tracing may support a conditional account of the steps involved without establishing how the system would have developed otherwise. Identifying a credible option to act is also different from establishing that an option would have succeeded. Historical restraint protects the analysis from converting possibility, administrative intention, or lack of contradiction into demonstrated survival.

Selection into renewal and hidden replenishment. Programs that retain donors, staff or volunteers may already possess stronger networks and more reliable operations; their greater survival after a resource infusion does not isolate the infusion's effect. A discriminating inquiry records the pre-existing capacity, the terms and timing of renewals, alternative funding or staffing routes, and the withdrawal or redistribution of other resources. It asks whether newly obtained resources were usable for the defined task and whether that use displaced maintenance or burdens onto other people. An apparent replenishment recorded at the organizational level may be a transfer from an exhausted neighboring unit, while stable performance may result from lowering task volume or silently excluding difficult cases. These competing processes require different conclusions even where the total reported resources and service counts are identical. Retention is an outcome of a selected population, not automatically a test of the renewal mechanism.

13.12 Manifestation Feedback, Reporting Incentives, and Missing Burdens

Resource-renewal histories are strongly shaped by the records used to govern them. A funder may require annual proof of visits, training completions, or expenditure. Such records can improve accountability, but they can also shape which activities are prioritized and how participants allocate attention. The historian should distinguish a change in the recording apparatus from a change in the underlying access relation. A revised form can raise or lower reported renewal rates without altering the practices that it purports to measure. Conversely, public recognition can attract new participants or grants and therefore become part of the mechanism that changes the practice.

Measurement is especially difficult for deferred maintenance and unrecognized care work. A formal budget often captures payments but incompletely represents volunteer time, travel, coordination, household burdens, and unpaid interpretation. A person receiving support may bear costs from repeated documentation, long waits, or inaccessible scheduling; these costs can increase even while the organization's reported resources rise. A historical evidence protocol can link documented episodes, source versions, and consent-based narratives to the reported indicators, while preserving uncertainty where private experiences cannot be ethically disclosed. An absence of such data should remain a recorded limitation rather than a presumption of zero burden.

Institutional reporting can also alter who is recognized as a contributor. If only grant-funded activities are visible in annual reports, self-organized or informal support may be excluded from the official history. The resulting narrative can affect future eligibility and authority, creating a possible feedback between manifestation and access. Claims of this feedback require attention to when reports circulated, how gatekeepers interpreted them, and whether actual opportunities changed. A mere resemblance between a narrative of success and a later donation does not establish the interpretive pathway. These distinctions align the resource question with the earlier treatment of transmission and manifestation while preserving a task-specific historical object.

13.13 Historical Sustainability, Rights, and the Distribution of Reproductive Costs

A durable service may be valuable to its participants and still rely on an inequitable distribution of effort or risk. An institution can maintain activity by transferring uncertainty to individual volunteers, by postponing obligations to another service, or by making recipients responsible for navigating multiple incompatible procedures. The historian can describe these transfers through documented decisions and consequences. Determining their justice, however, requires an independent normative framework, applicable legal analysis, and the perspectives of differently situated participants. Reproduction is a condition of continuity, not a self-justifying goal.

The right to withdraw, appropriate safeguarding, accessibility, and non-exploitation can constrain which renewal pathways are acceptable. Reducing a participant's workload may lower short-run volume while creating a more defensible allocation of obligations. Ending an intrusive or ineffective practice may serve those affected better than maintaining its historical form. A system could therefore score poorly on an output-based continuity indicator while improving in other ethically relevant respects. Such cases are

Table 13: Evidence objects and inferential cautions for historical dependency and resource-renewal analysis

Historical object	Potential record or comparison	Principal interpretive caution
Task and capability boundary	Task protocols, eligibility histories, practice accounts	Stable labels may conceal changed services.
Resource provenance and holder	Agreements, inventories, access logs	Ownership does not establish operable access.
Authorization and consent	Mandate histories, consent-based accounts	Initial assent need not extend to later tasks.
Resource availability timing	Dated transfers, access and repair records	Pledges and allocations precede usability.
Training and replacement	Supervision records, completed handovers	A trained substitute may lack permission or availability.
Maintenance and repair	Revision logs, incident follow-up, workload histories	Invisible maintenance may be under-recorded.
External dependence	Renewal terms, alternative providers, gatekeeper accounts	Concentrated funding does not identify a functional veto.
Reported and realized renewal	Indicators with denominator and protocol versions	Reclassification can mimic stable reproduction.
Displaced burden and refusal	Protected interviews, exit and complaint pathways	Reporting silence cannot establish absent burdens.
Alternative histories	Failed renewal attempts, comparable episodes, closures	Surviving archives may exclude dissolved arrangements.

reasons to state the evaluation criterion before measuring sustainability, rather than reasons to abandon inquiry into historical reproduction.

Responsibility is further distributed across legal and institutional positions. A public service may hold duties that voluntary assistance cannot discharge; a private host may control access to facilities but lack clinical or legal authority; a volunteer may appropriately help with navigation without assuming professional responsibility for medical decisions. The relevant rules vary across jurisdictions, organizations, and time. This section proposes no jurisdiction-independent allocation of duties. It asks researchers to record the recognized authority, task boundary, possible remedies, and practical alternatives accompanying a claim of sustainable assistance. Long-term dependence should prompt examination of the institutional conditions that created it, not a presumption that the dependent person or volunteer must preserve the relationship.

The resource dossier is an extension of a bounded historical inquiry, not a field-by-field continuation of the trust or value dossier. Its distinctive replenishment and displaced-burden requirements are maintained in the cross-domain interface matrix of Appendix A.

13.14 Evidence Audit for Dependencies and Renewal Claims

Table 13 presents research objects useful for distinguishing documented renewal from apparent continuity. The audit is deliberately finite and question-relative. Some entries may be unavailable because of confidentiality or institutional restrictions, in which case the limitation changes the inferential status rather than creating permission to collect them.

The evidence audit also disciplines formal claims. A complete typed dossier can organize conflicting observations, but the mere completion of its fields does not produce independent verification. Conversely, a carefully reconstructed partial history may be more informative than a numerical simulation with unsupported rates. The historian should preserve date uncertainty, source versions, missingness, and competing accounts, especially where the affected parties bear unequal costs of disclosure. Access to a private record requires legitimate authority and appropriate safeguards; analytical usefulness cannot by itself authorize its acquisition.

13.15 Constructed Cases and Conditional Historical Propositions

Case A: Stable financial support and loss of practical substitution. A hypothetical volunteer information service receives the same annual funding for several years. Reports display stable expenditures and encounter totals. During the period, translation requests become more varied, and an experienced coordinator gradually becomes the only person who understands the exception-routing procedure. A staffing review proposes training substitutes but is deferred repeatedly. The coordinator later declines further service, and requests accumulate despite the continued funding. An account of depletion through concentrated dependence is plausible if training decisions, task requirements, and access histories are supported. Rival explanations include a sudden increase in demand or a policy revision making formerly appropriate responses impermissible. The coordinator's decision to withdraw remains legitimate regardless of the organization's resulting difficulty.

Case B: Institutional renewal and displaced recipient costs. A constructed aid partnership signs a new multi-year grant and introduces more stringent documentation rules. Its budget position improves, and official completion counts remain stable. Participants seeking assistance must now travel to an additional office, and volunteer intermediaries spend more time correcting forms. The apparent replenishment of monetary support coexists with a possible narrowing of practical accessibility. Determining whether the new rules increased harm requires the relevant jurisdiction, consent-respecting accounts of travel and waiting, task-matched comparisons, and a defensible standard of service. The grant record establishes neither system-wide sustainability nor the normative illegitimacy of the reporting rules.

Case C: Closure with reproductive continuity through successors. In a hypothetical neighborhood assistance network, a small organization decides to close after a founding cohort retires. Before closure, its participants transfer nonconfidential procedural knowledge, obtain consent for appropriate introductions, and negotiate a task-bounded handover with two established providers. The original organization disappears from the registry, but certain referral capacities continue with revised safeguards and different responsible persons. The evidence might support bounded practice reproduction without organizational persistence. It would not automatically establish identical service quality, complete transfer of relationships, or uninterrupted access for each recipient. The historical discontinuity may be accompanied by a substantively valuable revision of roles and responsibilities.

All three cases are constructed analytical illustrations and describe no real service, participant, funding body, or institution. Three propositions follow provisionally. First, historical renewal claims become more defensible when the object of reproduction, resource provenance, practical access, and the temporal sequence of replenishment are identified separately. Second, visible organizational continuity can conceal a declining capacity to reproduce a practice, while organizational termination may coexist with successor capacity. Third, the ethical appraisal of sustainability requires attention to the distribution of reproductive labor, authorized responsibilities, and the freedom of participants and recipients, alongside any measured continuity. Subsequent analysis of path dependence and institutional alternatives can investigate how renewal practices narrow or expand future choices, while resisting the inference that long survival alone demonstrates historical inevitability or normative merit.

14 Path Dependence, Self-Reinforcement, and Institutional Alternatives

The history of a volunteer practice affects the conditions under which its participants can continue, revise, or discontinue cooperation. Earlier training, recognition, authorizations, commitments, and exclusions can make one later arrangement easier to reproduce while rendering another comparatively difficult. Historical influence, however, has several forms. Mere succession of events, the persistence of an organization, costly change, and a self-reinforcing path are analytically distinct. This section examines the narrower conditions under which a history of supportive action can be described as path dependent. Its objective is to reconstruct mechanisms of self-reinforcement, identify historically feasible alternatives, and assess

opportunities for redirection without converting observed persistence into inevitability. The discussion proceeds through the three generative relational (GR) reality levels; specifies temporal and institutional mechanisms; examines selection, power, and alternative histories; and proposes a typed evidential dossier, a guarded classification rule, an audit table, and constructed comparisons. The approach is interpretive and comparative, with limited formal notation intended to discipline attribution rather than to substitute for historical inquiry.

14.1 Historical Persistence and the Specificity of Path Dependence

An established volunteer coordination procedure may remain in use because it works adequately, because its participants value familiar arrangements, because no one has been authorized to revise it, or because prior choices made competing arrangements increasingly difficult to adopt. These explanations can yield similar records of unchanged procedures. They differ in causal content. A chronological statement identifies continued practice across episodes. A path-dependence claim identifies an earlier sequence and a mechanism through which that sequence has changed the relative accessibility or attractiveness of later paths. The historical task is to distinguish a description of succession from an account of the dependence generated through succession.

Pierson's account of increasing returns in politics provides a specific antecedent: the benefits and costs associated with a course of action may change as that course is repeated, rendering particular sequences consequential [54]. In organizational scholarship, Sydow, Schreyögg, and Koch analyze processes of self-reinforcement that may culminate in organizational lock-in [69]. These are distinct theoretical contributions; neither establishes that volunteer arrangements generally experience increasing returns or become locked in. In the present account, their mechanisms are candidate explanatory resources for histories that have sufficiently discriminating evidence.

A historical path may be consequential without being self-reinforcing. A single founding decision can produce a legal obligation; a destroyed archive can remove a capability; a sudden change in public policy can eliminate an activity. Each event may constrain later possibilities. To classify the process as self-reinforcing requires evidence that continued use or investment feeds back into the relative viability of the selected route. Even then, the word *lock-in* should be reserved for stronger evidence of narrowing accessible alternatives and persistent difficulty of switching under specified conditions. Such a hierarchy protects inquiry from treating the length of an institutional history as evidence of its causal form.

14.2 Three GR Reality Levels in Historical Option Formation

At the level of *ontological reality*, the GR programme suspends conclusions about the ultimate existence of institutional paths as natural objects, discrete attractors, or fixed choice sets. Describing a sequence as a path is an analytical construction that selects events, relations, and periods from a richer and potentially unfinished history. A metaphor of a basin or a potential landscape may be informative in a properly parameterized dynamical model; its explanatory force cannot be borrowed merely by giving institutional procedures geometric names. Historical alternatives also do not exist as a timeless catalogue independent of participants' knowledge, permissions, and circumstances.

At the level of *relational reality*, repeated actions may modify skill distributions, trust, coordination costs, delegated mandates, shared practices, opportunities for participation, and control over conversion interfaces. A route becomes more or less feasible through these historically produced relations. A volunteer referral channel may acquire a competent coordinating group, stable communication routines, and institutional acceptance. Those achievements can increase its ability to reproduce itself. They can also generate dependence on particular gatekeepers or make the costs of revising its exclusions difficult to recognize. Historical persistence and relational change may coexist, because the name of the activity can remain unchanged while the structure and possibilities of action evolve.

At the level of *manifestation reality*, paths appear through records of service volumes, public narratives, training manuals, budgets, meeting minutes, role titles, performance indicators, and retrospective recollections. Such manifestations make earlier choices visible selectively and may influence later choices.

A report portraying a current procedure as the organization's longstanding tradition can encourage investment in it, provide continuity to newcomers, or marginalize alternative accounts. A revised eligibility category can make an excluded demand disappear from official series. Consequently, the historian must examine documentary classifications as both evidence of historical selection and possible interventions in subsequent selection. The three levels remain related without being collapsed into a single measurable mechanism.

14.3 Event Sequences, Choice Episodes, and Historical Time Windows

A path inquiry requires an explicit unit of decision and at least a partial ordering of events. A committee decision to adopt a referral form, a coordinator's practical improvisation, a later authorization, and a subsequent change in reporting are separate episodes. They may have different participants and legal significance. Administrative periods often obscure the sequence: an annual report may group actions that occurred before and after a contested rule change. A useful reconstruction therefore records the event time, the date at which evidence was produced, the time at which participants learned of the change, and the decision opportunity to which each event was relevant.

The observation window changes the interpretation. If the record begins after a procedure became dominant, prior alternatives may appear irrelevant merely because the archive starts late. If a long period is compressed into one nominal stage, repeated small investments and failed revisions can be missed. The analyst should describe left-truncation of earlier history, right-censoring of subsequent outcomes, and the possible unobservability of decisions conducted outside formal meetings. When a proposed mechanism depends on repeated rounds of learning or investment, the relevant rounds should be identifiable; a before-and-after comparison cannot by itself demonstrate a feedback process.

Choice episodes also depend on who could decide. A volunteer may choose whether to attend but lack authority to redesign an institutional protocol. A host institution may authorize a changed procedure but rely on a public agency to modify an eligibility rule. These asymmetries affect the available alternatives in each episode. Treating a retrospective analyst's menu of imaginable arrangements as the actors' actual choice set would conflate historical possibility, formal authority, and practical feasibility. The proposed description instead specifies feasible action for a particular actor or coalition under a dated boundary.

14.4 Coordination, Learning, and Complementarity in Self-Reinforcement

Several distinct mechanisms can contribute to self-reinforcement. Through *learning*, repeated performance may lower training requirements or increase the precision with which experienced participants coordinate, favoring practices already known. Through *coordination complementarity*, one actor's investment in a shared protocol may make compatible investments by others more useful. Through *expectation stabilization*, participants may act on the assumption that a particular procedure will continue and thereby make it more likely to continue. Through *cumulative authorization*, earlier recognition may make the currently recognized format easier to approve or fund than unfamiliar alternatives. Each mechanism requires an observable history of adjustment and a plausible link between prior uptake and later conditions.

Self-reinforcement is relational and need not represent aggregate welfare improvement. A widely shared standardized form may reduce confusion for some volunteers while making translation or exception handling difficult for particular recipients. A procedure can become efficient within the tasks it continues to count while becoming less suited to unmet or newly articulated needs. The same process can therefore strengthen local coordination and reduce opportunities for excluded participants. Evidence of reduced effort per recorded task supports at most the relevant task-specific improvement, not a verdict that the system has become generally better.

The existence of complementarity also depends on the content of the relation. Two services using a shared information channel may benefit from common categories, yet their procedures can conflict when they operate under different confidentiality standards. Additional users of a standard are not necessarily additional consenting beneficiaries. To infer increasing returns, a researcher should distinguish mere diffusion, economies of repetition, negotiated compatibility, effects of subsidies, and restrictions imposed

on competitors. These mechanisms produce different counterfactual implications and are subject to different normative evaluations.

14.5 Institutional Recognition, Mandate, and Selection Effects

Formal recognition often organizes historical selection. A facility may authorize one volunteer group to occupy a desk, make referrals, use a secure communication channel, or appear on an institutional roster. These permissions can be reasonable safeguards, and their effects may be substantial. Authorization can reduce uncertainty about responsibilities and provide opportunities for supervised practice. When recognized participation becomes a prerequisite for future recognition, a feedback relation may emerge between status, opportunities to demonstrate competence, and later administrative selection.

The relevant history nevertheless includes the reasons for each authorization. A safeguarding review might choose a familiar group because its participants have completed specific training, rather than because continuity as such carries an advantage. An institution might favor incumbents because it cannot evaluate alternatives promptly. Either scenario can make access asymmetric, but the latter account requires evidence of gatekeeping conditions, selection criteria, and the relevant decision horizons. Authority should be analyzed at the granularity of tasks and jurisdictions. An invitation to participate in a public program does not authorize clinical judgment, access to confidential data, or the assumption of statutory responsibility by volunteers.

Selection effects can also distort the historical record. Organizations that continue operating leave more reports, while activities that were interrupted may have little preserved documentation. An archive dominated by the surviving organization can make its current form appear inevitable. Institutional histories may remember the approved path and omit proposals that were withdrawn for reasons unrelated to their value. The historian should search for discarded drafts, recorded objections, lapsed cooperation agreements, and parallel informal assistance, while respecting confidentiality and consent. Missing records should remain missing; their absence cannot be converted into evidence that no alternative was attempted.

14.6 Differentiated Investment, Switching Costs, and Feasible Exit

Switching costs can arise from training, interface adaptation, documentation, equipment, coordination, new permissions, trust repair, or the interruption of services during a transition. Their significance is task- and actor-relative. A small procedural change may be cheap for a central office yet costly for recipients who must relearn how to seek help. A larger organizational change may preserve access through well-planned handovers and therefore impose fewer meaningful costs than a nominally modest revision. A cost ledger should specify whose time, risk, burden, and rights are implicated; an organization's administrative expenditure is an incomplete measure.

Sunk investments are part of historical explanation when they affect current expectations, organizational incentives, or the feasibility of replacement. Their past expenditure alone cannot justify continuing a practice. Participants may have learned a procedure that is no longer appropriate, and legitimate revision may require abandoning expertise that cannot be redeployed. Conversely, a proposed innovation may impose substantial safeguarding risks or break relationships that matter to recipients. Evaluating alternatives requires task-specific standards, compatible evidence, and attention to consent rather than a general preference for either continuity or novelty.

Exit is a distinct historical object. A volunteer's right to decline further participation remains meaningful even when an organization has become dependent on the volunteer's accumulated knowledge. A recipient may cease attending because of exclusion or deteriorating accessibility, not because support is no longer needed. A public partner may lack authority to exit a statutory duty even where its operational partners can be replaced. An observed failure to exit cannot establish that an alternative was unavailable, just as a formally permitted exit cannot establish a practical ability to exercise it without serious consequences. These differences prevent a convenient account of organizational lock-in from erasing heterogeneous agency and responsibility.

14.7 Institutional Alternatives as Historically Situated Possibilities

A defensible account of alternatives specifies an actor or authorized coalition, a decision opportunity, a task, and a historical information horizon. It further identifies relevant material means, trained participants, time, consent, legal permissions, and institutional conditions. An alternative may be *imagined* by the historian, *articulated* by historical participants, *formally available*, *practically actionable*, *attempted*, or *realized*. These categories describe different evidential commitments. A proposal can be historically salient despite lacking a realistic route to implementation; a workable informal practice can exist without a surviving written proposal.

Feasibility has temporal depth. An organization might be able to adopt a new scheduling system over two years but lack a safe route to adopt it within a week. A volunteer group can acquire training only after access to a suitable supervisor, who may not be available at the decision date. An alternative may become more feasible as participants learn, even if no one acts on it immediately. This means that the historically feasible set is a function of the chosen decision episode and its horizon, with incomplete information about its contents. The historian should disclose whether feasibility is supported, contradicted, or unresolved for each candidate.

Capoccia and Kelemen develop the methodological importance of contingency, narrative, and counterfactual reasoning for analyzing critical junctures [17]. Their argument provides a disciplinary reason to scrutinize alternative paths, but a critical juncture is a more specific claim than ordinary institutional choice. The present inquiry therefore examines alternatives even where evidence is too limited to name a critical juncture. A well-founded choice history can show that participants faced several meaningful but unequally accessible routes without proving that their choice set formed an unusually open or decisive historical interval.

14.8 Reversibility, Conversion, and Gradual Institutional Reconfiguration

A historically established path may be revised through gradual changes to practices, mandates, resources, or membership. Existing routines can be repurposed for new tasks; supplementary rules can be added; personnel turnover can alter how nominally stable procedures are interpreted. Thelen's account of historical institutionalism emphasizes institutions' temporal embedding and the connected analysis of their emergence and change [71]. Within the present GR construction, gradual adaptation matters because relational histories may change substantially even when the institution retains its recognized name and much of its formal structure.

Reversibility should be stated relative to a specified object. An organization may reverse a reporting rule while being unable to restore previously lost trust. It may regain a training capability but not retrieve an undocumented history of excluded requests. Some costs of action are recoverable, others partially recoverable, and some become irrecoverable under the chosen period and evidence. A system's ability to modify one pathway does not establish that it can return to an earlier complete state. Similarly, evidence that a procedure remains dominant does not demonstrate that a different path could never emerge through new coalitions or resources.

The distinction between *conversion* and *replacement* is important for interpreting institutional alternatives. Conversion retains some recognizable arrangement while revising its function, participants, or authorized task. Replacement develops an arrangement with a different responsibility structure. A transfer to a successor may combine both. These categories are relative to declared identity criteria. A historical account should record what was carried forward, what was abandoned, whose authorization changed, and which affected interests were consulted. A continuity narrative can otherwise conceal significant redistribution of discretion or burden.

14.9 Power, Recognition, and Unequal Control over Choice Sets

Path formation can concentrate influence over which alternatives are evaluated and enacted. A coordinator may control access to institutional knowledge; a funder may require conformity to one reporting

system; a host facility may control the space needed for service delivery. These asymmetries can emerge unintentionally as a by-product of coordination, or intentionally through strategic restrictions. A historical explanation should identify control over an actionable interface rather than infer domination from a person's title or the numerical size of an organization.

Power also shapes what counts as an alternative. Some proposals are admitted to official review while others are dismissed as informal, technically unqualified, or outside institutional scope. The authority to define performance categories can favor procedures whose results are readily counted. Beneficiaries and unrecognized supporting actors may experience the consequences without having comparable opportunities to present the alternatives they find relevant. A claim of narrowing choice sets must therefore specify the actors for whom choices narrowed; for another actor, the same historical change might expand possibilities. These differentiated perspectives are central to a relational account of historical selection.

Counterweights may include documented avenues for questioning a procedure, independent expertise, rotated responsibilities, cooperative interfaces with other services, and legitimate mechanisms for consent and exit. Their presence is not proof of equal influence. What matters historically is whether such channels were usable at relevant moments and whether their exercise affected decisions. The normative appraisal of unequal influence is a distinct question requiring standards concerning fairness, accountability, appropriate duties, and the rights of those affected. The section does not infer injustice from institutional stability alone or legitimacy from the success of a coordination mechanism.

14.10 A Typed Historical Path and Alternative Dossier

Equation 26 proposes a record for examining a bounded self-reinforcement claim. Let q identify a supportive task or a specified institutional practice, B the actors and institutional boundaries under examination, I the relevant sequence of decision opportunities, and κ the source-selection and coding protocol. The dossier records heterogeneous relations with their provenance rather than arranging them as commensurable quantities.

$$\mathfrak{P}_{B,I;q}^{\kappa} = (\mathcal{A}, \mathcal{E}, \mathcal{S}, \mathcal{M}, \mathcal{R}, \mathcal{C}, \mathcal{O}, \mathcal{K}, \mathcal{X}, \mathcal{V}, \mathcal{D}, \mathcal{Q})_{B,I;q}^{\kappa}. \quad (26)$$

The components have task-relative meanings. $\mathcal{A}$ identifies participants, affected parties, and their changing roles; $\mathcal{E}$ records dated events, choices, and the limits of observation windows; $\mathcal{S}$ specifies the selected practice and its identity criteria; $\mathcal{M}$ identifies proposed self-reinforcing mechanisms with their mediating events; $\mathcal{R}$ records changes in resources, skill, authority, and renewal processes; $\mathcal{C}$ records compatibility and coordination relations; $\mathcal{O}$ records articulated, feasible, attempted, and realized options at each opportunity; $\mathcal{K}$ specifies switching requirements and their differentiated bearers; $\mathcal{X}$ records authorizations, rights, consent and possible exits; $\mathcal{V}$ indexes manifestations and changes in reporting categories; $\mathcal{D}$ records potential disconfirming cases, rival explanations, and relevant missingness; and $\mathcal{Q}$ identifies the claim under review, its evidential status, and its normative boundary.

A dossier entry can support a meaningful contrast even without an exhaustive option set. For instance, minutes may establish that two authorized staffing plans were considered at a named meeting, while leaving the feasibility of an unrecorded third plan unresolved. The analyst can record the two proposals and the scope of archival completeness without asserting that the entire possibility space is known. Dated sources that describe plans should be distinguished from sources that document their actual performance. Changes in the meaning of a recorded outcome may also require revising the identity criteria for $\mathcal{S}$ rather than silently treating unlike episodes as repetitions of one task.

The dossier is a provisional *typed representational grammar*. It does not define a physical phase space, assign transition probabilities, or establish whether the mechanism is necessary or sufficient for path persistence. Formal completeness cannot repair weak historical identification. Its value is to expose where an explanation depends on a transition from observed repetition to inferred feedback, or from a proposed alternative to an executable one. This also identifies interfaces with prior analyses of resources and institutional authority without assuming that economic reinforcement and legal recognition operate through a single generic process.

14.11 Evidence-Qualified Classification of Self-Reinforcement

The proposed convention classifies a narrow historical claim: whether there is evidence that repetition or investment in selected practice q altered the relative feasibility of its continuation through an identified feedback mechanism. For a candidate history h , let each guard judgment $g_j(h)$ belong to $\{1, 0, ?\}$, corresponding to affirmative support, affirmative evidence that an explicitly necessary condition of the bounded feedback claim fails, or unresolved evidence under protocol κ . A missing intermediate trace without an independently established violation is unresolved rather than evidence for the absence of self-reinforcement. Equation 27 defines a conservative three-valued classification.

$$SR_q(h) = \begin{cases} \text{supported candidate,} & \text{if } g_j(h) = 1 \text{ for } j = 1, \dots, 7, \\ \text{contradicted,} & \text{if some } g_j(h) = 0, \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (27)$$

Seven guards govern this bounded attribution. First, the selected practice, the comparison task, the actors, and a historical interval are specified without an unreported change of identity. Second, a minimally ordered record identifies an earlier uptake or investment and later decision opportunities under an explicit observation protocol. Third, a candidate feedback mechanism is identified with a plausible sequence of mediating decisions, learning, compatibility changes, or resource-access effects. Fourth, evidence supports a change in the relative ease, opportunity, or cost of continuing the selected route that is attributable at least in part to that earlier uptake under the stated inferential design. Fifth, at least one relevant alternative is dated and characterized by its historically available authorization, means, and time horizon, with unknown feasibility reported as unknown. Sixth, recognized reporting and selection biases are examined, including reclassification and survivorship, with materially decisive contradictions addressed. Seventh, the conclusion is bounded to the actual decision-makers and the specified functional claim, with differentiated exit, affected-party burdens, and normative evaluation explicitly left separate.

The classification is a research-design proposal, not a validated measurement scale. A documented failure of a guard contradicts the specific constructed claim, not every imaginable account of historical influence. Unresolved evidence should not be transformed into an affirmative finding merely because a selected practice survived for a long interval. Even a supported candidate does not by itself establish causal identification, exclusive dependence on increasing returns, an irreversible lock-in, or ethical legitimacy. Stronger causal claims would require credible contrasts among mechanisms and cases; a lock-in claim would additionally require evidence of meaningful foreclosure of alternatives across relevant time horizons. Each higher-level assertion retains its own evidential obligations.

14.12 Historical Countermodels and Rival Explanations

Several rival mechanisms can reproduce apparent path dependence. Under an *exogenous constraint model*, an externally imposed rule repeatedly selects the same arrangement without internal reinforcement. Under a *stable-advantage model*, participants repeatedly choose one route because its task-specific characteristics remain superior, even though its continued use does not make it increasingly advantageous. Under a *common-cause model*, institutional support simultaneously expands a practice and improves its recorded outcomes, making apparent feedback from uptake to resources spurious. Under a *reporting-selection model*, continuing organizations retain records while closed or excluded alternatives vanish from the archive. Each model can produce persistence and apparent narrowing of options without the mechanism asserted in Equation 27.

A further rival is *coercive restriction*: an authority may close alternative routes through explicit exclusion or the unilateral withdrawal of permissions. Such restriction can make a path durable, and it can combine with self-reinforcement, but a historian should not rename every exercise of authority an increasing-return process. *Adaptive selection* provides a contrasting model in which the currently dominant practice changes repeatedly in response to needs while preserving its public name. In this case, the appearance of a single durable path may result from retrospective aggregation of quite different practices. Evidence of revisions and differentiated outcomes can help distinguish adaptation from closure.

Counterfactual inquiry becomes stronger when it records failed alternatives, similar contemporaneous organizations, or a documented period of changing permissions. It remains limited by noncomparability and incomplete knowledge. An alternative could have been feasible without being beneficial, or feasible only if a later event occurred that no historical actor could anticipate. The aim is to reconstruct plausible causally relevant alternatives using available evidence, not to assign certainty to an unrealized future. Particular care is needed where beneficiaries were unable to make their preferences legible in official records; their absent testimony should neither be invented nor treated as endorsement of the selected path.

Distinguishing self-reinforcement from repeated selection. The explanatory target of a path-dependence claim is a historical mechanism through which earlier adoption changes the relative feasibility of later alternatives. Evidence that an organization selected the same practice repeatedly is compatible with a constant advantage, external mandate, selective survival of adopters, and escalating commitment. A stronger process claim would trace specific learning investments, complementarity with installed systems, institutional recognition or switching constraints that were generated by earlier use and subsequently changed decision opportunities. Documented feasible exits that were rejected for reasons unchanged since initial adoption would weaken the specific increasing-returns hypothesis. Temporary removal of a proposed feedback channel, where ethically and historically observable, offers an additional discriminant. The counterfactual feasible set must be reconstructed for the actual actors and interval; hindsight possibilities invented after the event cannot validate lock-in. The claim remains a mechanism hypothesis unless the competing pathways have been investigated.

14.13 Manifestation Feedback and Retrospective Institutional Narratives

Institutional narratives can themselves become part of a self-reinforcing sequence. A manual may be treated as authoritative because it has been used in training, while its continued use is subsequently invoked as evidence of proven suitability. A celebrated history can encourage new participants to follow familiar procedures, which then become more prominently represented in organizational records. Such a loop is a candidate explanatory mechanism only if the intervening circulation, reception, and decision effects are documented. Historical correspondence between an institutional narrative and later action is insufficient to establish that the narrative produced the action.

Evaluation regimes can also amplify selected activities through predictable recognition. A report may reward countable encounters while omitting preparatory conversation, interpretation, quiet accompaniment, maintenance, or safeguarding work. Repeated investment in officially rewarded activities can then alter the distribution of capacity and the visibility of needs. The analysis should identify both the measured numerator and the excluded opportunities, as well as any later changes in definitions. It should also distinguish a legitimate desire for accountable reporting from the specific harms of an ill-suited metric. The same category system may improve accessibility for some participants and obscure exclusion for others.

Historical identity narratives may differ across parties. A founding member can understand the current arrangement as preserving a mission while a recipient experiences the disappearance of the only effective service. A successor organization may reject the former name yet maintain the practical support network. A conflict of narratives does not prove one side inaccurate. It calls for matching each account to its referent, provenance, decision context, and relation to the capacities being described. Manifestation feedback is thus an empirical object with multiple actors, rather than a convenient explanation for why an institution's own account became dominant.

14.14 Ethical Appraisal of Durable and Revisable Relations

Institutional durability can preserve competence, reliable access, continuity of care, and trusted procedures. It may also preserve exclusion, unpaid burden, an impractical gatekeeping rule, or an unequal distribution of discretion. The existence of a feedback mechanism settles neither the value of the selected arrangement nor the legitimacy of its reproduction. Normative evaluation requires explicit standards concerning

Table 14: Historical evidence objects and inferential limits for path dependence and institutional alternatives

Object	Possible historical evidence	Principal inferential caution
Selected practice identity	Dated protocols, task definitions, revision records	A stable name may conceal changed activity.
Decision chronology	Minutes, correspondence, partial event histories	Archive dates may differ from decision dates.
Initial uptake or investment	Training, agreements, role allocation records	Investment alone does not establish feedback.
Reinforcing mechanism	Sequences of learning, compatibility or recognition	Co-occurrence cannot identify causal mediation.
Relative option feasibility	Task-matched costs, authorizations, time horizons	Imagined options may not have been actionable.
Authority and gatekeeping	Mandates, approvals, exclusion and review pathways	Formal permissions differ from practical access.
Repeated adoption	Choices over successive opportunities	Repetition can reflect stable advantage.
Alternative attempts and exits	Rejected proposals, transfers, protected withdrawal accounts	Failed attempts need not reveal all alternatives.
Reporting and survival bias	Indicator versions, archive provenance, closed units	Missing archives can privilege incumbents.
Affected-party consequences	Consent-respecting accounts, access and burden histories	Continuity and normative merit are distinct.

affected interests, role-appropriate authority, consent, distributive obligations, procedural inclusion, and access to correction or remedy. These standards cannot be derived directly from the mathematical form of Equation 27.

Historical alternatives also have unequal ethical significance. A replacement can increase access while requiring temporary adaptation costs. A procedural revision can reduce exposure to serious risk while lowering the number of tasks performed. Ending a practice can be justified when it is ineffective or imposes unacceptable duties; institutional exit should not be equated with betrayal. On the other hand, abrupt withdrawal can create foreseeable risks that an appropriately responsible organization ought to manage through transition planning. Assigning those responsibilities requires the particular institutional and legal context. Voluntary participation does not by itself authorize an organization to depend indefinitely on uncompensated personal sacrifice.

A relational normative analysis asks who can influence the practices on which they depend, who must absorb transition costs, and whose interests count in the evaluation of continuity. It also examines how reasonable refusal, dissent, and alternative proposals are heard or filtered. Appropriate procedures may preserve existing arrangements following deliberation, or change them substantially. Historical openness is therefore a capacity for accountable revision under appropriate responsibilities, rather than an obligation to maximize novelty. The same principle prevents the language of “breaking lock-in” from justifying changes without adequate safeguarding, consent, or attention to the people who bear their consequences.

14.15 Evidence Audit for Path-Dependence and Alternative Claims

Table 14 identifies historical evidence objects and cautions that can distinguish proposed feedback from persistence, external imposition, and selective historical remembrance. The suggested records are illustrative rather than a directive to gather private information. Any empirical study involving confidential institutional documents or participant experiences requires appropriate permission, minimization, and safeguards.

These evidence objects do not constitute a checklist that mechanically proves path dependence. An archive may provide strong process observations while lacking quantitative estimates of switching costs. Conversely, numerical indicators of a dominant standard may be insufficient when no evidence shows a feedback pathway. Researchers should retain contradictions, rejected interpretations, and uncertainty about who was eligible to choose. Negative evidence, such as an attempted substitution that functioned

without major loss, may be particularly informative against a strong lock-in claim. A study should also declare how it treats changes in boundaries when organizations merge, close, or transfer practices to successor entities.

14.16 Constructed Histories and Conditional Propositions

Case A: Growing coordination advantage with contested accessibility. A hypothetical volunteer information desk introduces a shared referral guide that allows its participants to resolve common requests more quickly. Each successive training cohort learns that guide, and other local services begin adapting their own instructions to it. An administrator then treats familiarity with the guide as evidence of readiness to receive institutional authorization. This sequence could support a bounded self-reinforcement candidate if dated materials establish that prior uptake improved coordination and shaped later decisions. At the same time, the guide lacks a workable route for one group of multilingual recipients, whose requests are recorded as “outside scope.” The historian should examine whether a feasible alternative referral method was available at each decision and whether administrative recognition concealed a narrowing of actual access. Coordination advantage and service justice remain separable conclusions.

Case B: Long persistence generated by an external rule. A constructed community-support partnership uses the same intake process for many years. Volunteers regularly complain that the process is cumbersome. Records show that a licensing or safeguarding requirement from a separate authority specifies the forms and that proposals to simplify them were denied, despite trained participants being ready to test a different authorized procedure. The observed persistence may be better explained by external constraint than by cumulative learning or increasing returns. A process history can document the restriction and its consequences, but it should avoid describing the arrangement as self-reinforcing without further evidence. Whether the requirement was appropriate requires separate examination of its legal basis and safeguarding rationale.

Case C: Reconfiguration through a feasible successor path. In a constructed local assistance network, a long-running program depends on a single coordinator’s undocumented knowledge and a host organization’s exclusive facility access. When the coordinator announces a lawful withdrawal, the host considers two options: recruit a direct replacement or transfer a bounded referral function to a successor service with its own authorization. A time-limited handover and newly approved access protocol allow some services to continue, although other relationships and informal knowledge are lost. Prior dependence imposed real transition costs, yet the eventual redirection shows that the earlier route was not absolutely irreversible. The inquiry must document what capabilities continued, which recipients lost access, and what participants consented to transfer. The outcome illustrates partial transformation of a path rather than a return to its historical starting state.

All three cases are constructed analytical comparisons. They provide no evidence about an actual hospital, nonprofit organization, individual, or public authority. Three propositions remain provisional. First, credible claims of historical path dependence require identifiable feedback and actor-relative changes in subsequent possibilities, beyond observed persistence. Second, historically feasible alternatives depend on time, resources, authorization, knowledge, and willingness, so counterfactual accounts should preserve their provenance and uncertainty. Third, path durability, ability to revise a practice, and the ethical quality of supportive relationships are different dimensions of historical evaluation. These distinctions prepare the analysis of heterogeneous value, contested recognition, and intertemporal circulation without assuming that a chosen institutional trajectory was either inevitable or desirable.

15 Heterogeneous Values in Historical Generation and Circulation

Voluntary supportive action can leave historically consequential effects that participants evaluate in distinct ways and at different times. A recipient may gain access to information, a supporter may acquire

practical competence, a service may develop a reusable coordination practice, and a public institution may record an improvement in an administrative indicator. The same action can also create dependency, expose confidential information, consume uncompensated labor, or exclude a less visible recipient. These consequences raise a historical question about value generation and circulation that cannot be settled by counting services or presuming a common unit of benefit. This section specifies the objects of heterogeneous valuation, reconstructs conditions of genesis, circulation, return, capture and loss, and distinguishes claims about experienced benefit from claims about collective and normative improvement. Its approach is an interpretive and comparative generative relational (GR) reconstruction across the three reality levels, accompanied by a typed value-history dossier, a deliberately restrictive evidential convention, an audit of possible records, and constructed comparisons. Neither a universal value metric nor a completed normative theory is assumed.

15.1 Objects and Standpoints of Historical Valuation

A value claim has an object, a standpoint, a context, a temporal scope, and a standard of appraisal. A useful distinction separates an activity such as making a referral from the changes it enables and from the judgment that these changes matter. An action record may show that a referral occurred; an access history may show that the person subsequently reached an appropriate service; an account of that person's priorities may indicate whether the access was wanted and useful. An institution's activity count and a recipient's account of meaningful benefit therefore concern different evidential objects. Both may contribute to inquiry, provided their referents and evidential limits remain legible.

Valuation standpoints are relationally and historically situated. Recipients, supporters, nonparticipants, family members, professional teams, funders, public authorities, and future participants may attend to different consequences. Even within a nominal group, interests and judgments vary. The issue is not merely that the same magnitude attracts different preferences. Participants may evaluate qualitatively different objects: relief from a burden, freedom to decline a service, mutual recognition, distributive fairness, professional safety, continuity of relationships, or opportunities for learning. Anderson's pluralist treatment of value offers an established philosophical precedent for distinguishing ways of valuing rather than presuming that a single measure is adequate across goods [5]. The present GR account treats this as a critical interlocutor, not as a theorem that settles which forms of value should receive priority in a particular supportive relationship.

An appropriate historical unit is consequently a *situated valuation claim*: a proposition with a specified subject or responsible interpreter, valued object, practice context, time or interval, evaluative dimension, and traceable source. Disagreement need not indicate observational error. Two adequately grounded claims can remain incompatible because they concern different standards or because an actual allocation imposes gains and losses unevenly. Investigating the disagreement is part of historical explanation; averaging it away would remove the phenomenon under study.

15.2 Three GR Reality Levels and the Scope of Value Claims

At the level of *ontological reality*, the present GR programme suspends claims about whether social value exists as an ultimate substance, field, property of persons, or independently measurable quantity. Metaphors of value as energy, fluid, or stock may organize questions but do not establish a common physical magnitude. The philosophical status of goods, persons, rights, and collective flourishing remains open to distinct arguments. This suspension also cautions against treating one institution's value vocabulary as the ontology of everyone affected by it.

At the level of *relational reality*, historically constituted relations can generate capacities, alter access, redistribute burdens, make some courses of action feasible, and change the conditions under which further value might emerge. An assisted encounter may improve a recipient's subsequent ability to obtain help; a repeated collaboration may support shared know-how; an authorization rule can enable reliable action for one party while constraining another. Such developments may matter causally even where a full moral appraisal is unsettled. Value generation in this layer names a provisional attribution concerning

consequences and possibilities under an identified standard, rather than a declaration of their intrinsic worth.

At the level of *manifestation reality*, value appears through testimonies, categories, ratings, accounting systems, narratives, public thanks, complaints, and published performance measures. These expressions are partial and may feed back into opportunities, funding, recruitment, and perceived legitimacy. A newly adopted satisfaction metric can change what an organization notices and rewards; a private account of harm can contest an apparently successful public report. Documentary absence can reflect noncollection, exclusion, confidentiality rules, or a participant's refusal to speak. The investigator should distinguish missing manifestations from absent relational effects and should ask whether publication itself changes participants' vulnerability.

Relations among levels are inquiry-dependent. A recorded improvement may be evidence of a particular relational change if the indicator is valid for that question. It does not thereby prove an ultimately objective value increment. Likewise, a normative criticism of a practice cannot be refuted simply by pointing to favorable service statistics. The three-level discipline maintains separate routes of justification for causal, interpretive, and ethical claims.

15.3 Historical Conditions of Value Genesis and Generative Capacity

A supportive action can produce an immediate useful result, develop a capacity for later action, or modify conditions that enable others to produce benefits. These three temporal locations need separate description. Delivering a requested information sheet may be useful during one encounter. Helping a person understand a process can change their future ability to navigate it. Building a reliable multilingual referral arrangement may permit a succession of people to gain that understanding without depending on the original supporter. The latter two cases involve possible generative capacity, although later benefits remain contingent on opportunities, resources, authorizations, and the choices of those concerned.

A preliminary genesis account identifies the relevant capability, the environmental and institutional conditions under which it can be exercised, and the persons with practical access to those conditions. Competence without access may remain latent. A new resource with no appropriate or lawful route of use may remain idle. A coordination procedure may function under a trusted relationship yet fail after participant turnover. Sen's analysis of substantive freedoms and social arrangements provides a precedent for treating access and capability as important evaluative questions beyond aggregate wealth [62]. The present historical formulation does not claim to reproduce his capability framework in full or to derive individual welfare directly from a GR representation.

Temporal sequencing matters. A training activity performed in the present can impose immediate time costs and provide later capabilities; its effect depends on retention, recognition, practical demand, and opportunities to act. The apparent absence of short-term outputs may coexist with valuable preparation, while high short-term output may depend on exhausting the future capacity of volunteers. Generation should therefore be indexed by the claimed value domain and the time horizon. It is equally necessary to ask whether apparent gains arose through the volunteer activity or would have arisen through an existing professional service, public intervention, or unrelated historical development.

15.4 Heterogeneous Participants and Differentiated Value Domains

The relevant domains of valuation need to be identified for the research question rather than treated as a fixed universal inventory. Candidate domains for a voluntary-support history include recipients' autonomy and accessibility; relief from a specified practical burden; reliability and safety; supportive relationships; opportunities for learning; legitimate discretion; shared institutional capability; material resources; environmental consequences; and opportunities for dissent and repair. A single episode can simultaneously affect several domains in opposite directions. One person's acquisition of social recognition may coincide with another person's loss of confidentiality or access.

Attention to heterogeneous subjects changes the inquiry. A recipient may value a quiet, low-contact form of support while the coordinating body values visible engagement. A supporter may value the

freedom to decline a task while an institution values predictable staffing. Families and professional participants may hold different, defensible accounts of risk. The perspective of someone unable or unwilling to provide a testimonial remains relevant, although the researcher should avoid attributing a detailed preference without appropriate evidence. Where participants are animals, artificial systems, or subjects whose moral or legal standing is contested, the identity of the evaluator and the ground for representation must be made explicit; relational involvement alone resolves neither personhood nor legal responsibility.

The researcher can compare claims within an appropriate, specified standard, including whether one referral route produced more timely access under a stable definition. Cross-domain ranking raises additional questions. Faster service and greater autonomy may coexist, conflict, or be incomparable under the available evidence. A multidimensional account retains their distinct objects and invites explicit justification when a decision procedure nevertheless requires trade-offs. The absence of a universal scale is compatible with disciplined comparison, bounded ordering, and reasoned practical decisions.

15.5 Value Circulation as Typed Historical Relations

Historical circulation concerns the trajectories through which a generated benefit, capability, resource, recognition, or burden affects additional relations. It may occur through sharing knowledge, providing material support, transmitting a practice, enabling access to a service, or altering the credibility and authority of a participant. It can also proceed through institutional recognition that enables subsequent participation. A circulation claim identifies what is transmitted or reproduced, which intermediary relations are involved, the conditions of access, and the change plausibly associated with uptake. The metaphor of circulation need not entail conservation of a substance or a closed economic exchange.

There are analytically different patterns. A *relay* extends support to another participant without a traceable effect on the original source of the practice. A *return* changes the resources, capabilities, or relations supporting an earlier generator. A *regenerative sequence* may restore or expand the conditions for subsequent valuable activity. A *capture* allows a participant or institution to appropriate credit, access, compensation, or control in a way that alters others' opportunities. A *dissipation* describes the loss of a previously usable capability or access route. The classification is claim-relative. The same exchange can return competence to one participant while imposing a burden on another.

Eglash's explicit account of bottom-up, unalienated value circulation in generative justice is a major conceptual antecedent rather than a framework originated here [26]. Its 2016 introduction explicitly distinguishes labor, ecological, and expressive value; related generative-justice descriptions also employ the broader term social value. These category vocabularies are not presumed identical, but both direct attention to value circulation beyond financial transfers. The present GR proposal adds an evidence-indexed, historically localized analysis of heterogeneous interfaces, unequal control, delayed returns, and interrupted or contested pathways. Such a translation does not establish equivalence between the original account of generative justice and the present preliminary historical formalism. A claimed regenerative cycle remains provisional until its links and the relevant counterfactuals are examined.

15.6 Conversion Interfaces, Authorizations, and Unequal Control

Circulation often requires an interface that permits a capacity or resource to become usable in another setting. Shared information may require accessible language and a compatible format; practical help may depend on a consent procedure; institutional entry may require authorized referral; learning may require a participant with time and permission to teach. These interfaces are historically established and can be fragile. Their existence explains why producing something useful is distinct from making it accessible and from sustaining opportunities to use it.

Control over an interface may confer power over whose contribution is recognized and whose benefit is realized. A coordinating institution can decide which tasks count as service, which participants are trained, which languages are supported, and which records enter a public report. The effects may be justifiable under appropriate constraints, or may distribute exclusion and burdens unfairly. A historical

account should map who may propose, authorize, revise, refuse, monitor, or contest conversions. Formal permission, actual access, and lawful or ethical justification are separate matters.

Economic transfers also carry relational meanings. Zelizer's analysis of money and intimate relationships challenges the assumption that economic activity is external to differentiated social ties [80]. The present proposal applies a narrower methodological lesson: a transfer requires an account of the relationship and its understood conditions. It should not be assumed that volunteer participation is made purer by the absence of monetary payment, or made exploitative merely because a material transfer occurs. Consent, role expectations, recognition, available alternatives, and the distribution of burdens remain necessary objects of inquiry.

15.7 Return Circuits, Maintenance, and Conditional Regeneration

A return relation may supply future time, competence, trust, material support, or institutional access to people whose prior activities made a practice possible. For example, a coordinator may receive usable feedback from a recipient, revise a handbook, and make it easier for a successor to provide appropriate help. The return need not be a payment to the initial contributor, and it need not occur in the same valuation domain as the original contribution. In the constructed example, the immediate object is a recipient's access, while the return is improved collective competence. A credible historical account traces these distinct stages rather than presenting them as equivalent quantities.

Maintenance is frequently the missing link in an apparent value cycle. A service can generate repeated benefits while progressively consuming its workers' time, weakening goodwill, deferring repairs, and drawing on scarce external resources. Consistent with the resource-renewal analysis in Section 13, a claim of regenerative capacity calls for evidence of replenishment or a sustainable substitute as well as repeated output. A rise in service count alone cannot establish that the conditions of generation have been renewed. Transfer to successors can preserve some capacities while losing others, and a deliberate reduction in an unsustainable activity may be a reasonable form of stewardship.

A cycle can also be partial or open. It may rely on donations, publicly funded services, shared infrastructure, or skills developed elsewhere. Those inputs should be recorded as dependencies rather than absorbed into an account of spontaneous internal generation. Similarly, a recorded return may be a delayed response to an unrelated policy change. The analyst should examine timing, source independence, competing mechanisms, and actor-relative interpretations before presenting a closed or self-sustaining historical circuit. The word *regenerative* expresses a conditional hypothesis regarding the reproducibility of a capacity, not an indefinitely positive growth law.

Value-pathway contributions and outcome displacement. A return circuit can accompany increased capabilities while other channels account for the gain. For example, changes in public funding, eligibility, unpaid care, or the availability of alternatives may coincide with a locally circulating contribution. A process claim concerning a particular return should identify who supplied what, the permissions and recognition through which that resource moved, and which future capacities were demonstrably replenished. Historical observation of increased receipts is not equivalent to increased accessible value: the return may be concentrated in a gatekeeper, offset by unpaid labor, or unusable for a recipient's task. Comparing partial circuits and interrupted returns can test a specified pathway, but distinct ethical and distributive judgments remain irreducible. Accordingly, the causal object is a typed change in a particular capability or relation, never the unrestricted claim that aggregate value was increased.

15.8 Intertemporal Lag, Valuation Revision, and Historical Windows

The historical meaning of a supportive activity can change as its consequences become visible. Assistance initially welcomed may later produce dependency or exposure; a modest training session may prove essential years afterward; a discontinued project can leave useful practices in a successor organization. Ex post valuation may therefore differ from ex ante expectations without either account being fabricated.

The research task is to identify who made each judgment, what information was available at that time, and whether later learning changed the standard or the observed object of evaluation.

Valuation records require distinct temporal indices for action, uptake, expressed judgment, institutional recognition, and later effects. A later public account may reclassify an earlier episode under categories unavailable when it occurred. Such retrospective coding can aid comparison, but it may also conceal historical changes in the evaluation criteria. An apparently improving trend may result from a narrower denominator or from a decision to count only successful referrals. Historical interpretation should retain successive indicator definitions and, where feasible, reanalyze episodes under each definition without claiming that either constitutes an ultimate measure of value.

Temporal windows are normative as well as descriptive choices. A short evaluation interval may privilege visible intervention over teaching, trust-building, maintenance, or the opportunity to decline unsuitable support. A long interval may privilege organizational survival even when affected people suffered avoidable delays. Reporting both near-term effects and plausible longer-run consequences helps expose these differences, but the chosen discounting, priority, and responsibility conventions still require justification. Unobserved future benefits should remain possibilities rather than credited achievements.

15.9 Recognition, Commensuration, and Contested Justification

An institution often needs to select indicators and make operational decisions. A count of completed shifts or referrals can be informative about a defined operational question. Problems arise when a restricted indicator is treated as a comprehensive value judgment. The process of making heterogeneous attributes comparable is itself a consequential social activity. Espeland and Stevens analyze commensuration as a social process with organizational and cognitive effects [29]. A GR historical account asks how an indicator became authoritative, what was excluded from its scope, and how the resulting rankings altered opportunities for subsequent action.

The public expression of praise can improve a volunteer's chances of being trusted, selected, or retained. It can also marginalize essential but less visible maintenance or displace recognition from recipients, family members, and professional services that contributed to an outcome. Contests over recognition may employ different principles of justification. Boltanski and Thévenot's account of plural economies of worth offers an established sociological framework for examining such disagreements [13]. The present use is limited to the insight that actors may bring different justificatory repertoires to disputes; those repertoires should not be simply identified with GR's valuation domains.

Recognition and value generation have different histories. An unrecognized contribution can remain useful, and publicly recognized work can fail the standard it purports to satisfy. Recognition may facilitate circulation by opening an authorized pathway or attracting resources, but that historical effect requires separate evidence. The same visibility can have protective and coercive implications. A competent research design would include, where consent and safeguards permit, complaints, unsuccessful requests, quiet refusals, and records of work that organizational reporting leaves unattributed.

15.10 Capture, Displaced Burdens, and Distribution of Opportunity

An apparently beneficial value pathway may be sustained through burdens borne by people absent from the published account. A volunteer's unpaid coordination effort, a recipient's time spent proving eligibility, a professional's unrecorded supervisory work, or a nonparticipant's loss of access may be hidden by a narrow output measure. Each should be considered according to its actual nature rather than converted without justification into an equivalent monetary loss. The analytic question is how a distribution of consequences relates to the production, maintenance, and circulation of the recognized benefits.

Capture can concern material funds, authorship, prestige, decision authority, data control, privileged service access, or the right to define a successful outcome. Identifying capture requires care: an institution's retention of a resource can be legally and ethically appropriate if authorized and necessary for a legitimate service. The stronger critical claim arises when a pathway systematically redirects an otherwise supportable benefit or decision opportunity, and when its beneficiaries, governance, or costs are uneven in ways

relevant to an independently specified standard. Claims about injustice require additional normative and legal reasoning.

Tracing negative and foregone effects avoids an overly celebratory account of historical generation. A growing training program may improve competence for participants able to attend while excluding people with inflexible schedules. A multilingual reform may expand access to one community while withdrawing an established accessible format needed by another. A service's reputation may grow partly because unsuccessful referrals disappear from its statistics. Historical alternatives, documentary boundary changes, and consent-sensitive negative evidence are indispensable to assessing those trajectories. The analyst should also preserve the possibility that some claimed losses reflect a defensible safety restriction rather than an improper appropriation.

15.11 Typed Historical Dossier for Heterogeneous Value Pathways

A preliminary record is useful when historical cases involve several participants, value domains, and mediating relations. Let $I = [t_0, t_1]$ be a declared interval, let P_I identify situated participants or responsibly defined positions, and let D_I be an explicit set of valuation domains proposed for the research question. The typed historical dossier in Equation 28 organizes a claim without converting its heterogeneous components into a scalar measure.

$$\mathcal{D}_I^{\text{val}} = (P_I, D_I, A_I, G_I, C_I, U_I, R_I, B_I, J_I, E_I, \Pi_I). \quad (28)$$

Here A_I denotes task- and event-indexed action histories; G_I identifies proposed genesis events and their dependence on prior conditions; C_I records authorized or contested conversion and transfer interfaces; U_I distinguishes evidence of uptake from claimed availability; R_I identifies candidate return, relay, maintenance, or regenerative relations; B_I records burdens, withdrawals, foregone opportunities, or losses. J_I contains actor- and domain-indexed judgments, including incompatible appraisals; E_I identifies admissible traces and negative evidence; and Π_I retains document provenance, temporal coverage, missingness, permissions, and rival interpretations. These are typed fields of a research record, not components of a numerical state vector. A documentary representation is legitimate for the purpose of this model only insofar as the relation between the field and the evidence has been stated.

The historical researcher should avoid assuming that entries in distinct domains can be aggregated. Even within one domain, the evidential basis and the person authorized to interpret a claim may differ. An institution's estimate of improved confidence need not have the same referent as a recipient's self-report of felt control. A comparison requires a reasoned mapping of the constructs, adequate measurement, and appropriate permissions. The dossier permits discontinuities, incompatible accounts, partial knowledge, and contested authorship rather than requiring a complete common ordering.

15.12 Guarded Classification of Circulation and Regenerative Claims

To avoid reading a trajectory into any sequence of beneficial-sounding events, let p denote a candidate pathway specified by initiating action, claimed domain, participants, mediating interfaces, temporal window, and asserted return or downstream consequence. Define the following bounded guards for that exact claim: g_1 checks provenance of the starting event and claimed valuation standpoint; g_2 distinguishes proposed generation from mere activity; g_3 examines evidence and authorization for conversion or transfer; g_4 tests uptake and the downstream change; g_5 examines a proposed feedback or renewal mechanism when regeneration is claimed; g_6 evaluates burdens, exclusions and rival explanations; and g_7 assesses scope, missingness, and the temporal comparability of records. Each guard may be supported, contradicted, or unresolved according to explicit case-specific evidence standards.

Equation 29 defines only an evidential classification of the *specified* pathway, never a moral ranking

Table 15: Evidence objects and inferential cautions for heterogeneous historical value claims

Object	Potential traces	Inferential caution
Action and intended object	Task descriptions, contemporaneous requests	Completed tasks do not establish valued outcomes.
Valuation standpoint	Consent-respecting accounts, stated priorities	Institutional interpretation may misstate a person's view.
Capability generation	Training, subsequent task feasibility	Latent capacity may lack authorized opportunity.
Conversion interface	Protocol revisions, access and language records	Formal access differs from effective uptake.
Historical transfer	Sequenced referrals, handover descriptions	Proximity in time need not establish transmission.
Return and renewal	Maintenance histories, successor competence	Repeated output may consume finite unpaid inputs.
Burden and exclusion	Complaints, refusals, missing-service histories	Silence may reflect noncollection or inability to speak.
Recognition and publicity	Indicator definitions, awards, publicity decisions	Visible recognition can be selective or performative.
Alternative explanations	External funding, policy and service changes	Common causes can mimic value circulation.
Temporal and source provenance	Dated versions, authorship, coverage and gaps	Retrospective classifications may erase changed standards.

of participants or a quantitative total of values.

$$\text{Class}_I(p) = \begin{cases} \text{supported candidate,} & \text{if every required } g_i(p) \text{ has adequate support,} \\ \text{contradicted,} & \text{if at least one necessary } g_i(p) \text{ has decisive counterevidence,} \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (29)$$

Appendix A specifies the limited evidential interface shared with other sections. The symbol $\mathcal{V}_I^{\text{val}}$ and its fields belong to the heterogeneous-value dossier only; they must not be identified with the trust dossier or interpreted as a scalar value measure.

The required guards depend on the breadth of the claim. Evidence of one successful transfer does not require a proved return loop; a *regenerative* claim requires the additional feedback and renewal guard. An adequately evidenced negative burden may qualify a narrowly supported benefit without automatically contradicting the benefit's occurrence. For broader claims of aggregate improvement or justice, the guards are insufficient and the classification remains unresolved until independent evaluative procedures have been justified. The expression is a conservative decision convention for organizing evidence, not a causal estimator, a legal compliance test, or proof of ethical legitimacy.

Countermodels should be designed alongside the classification. A reported increase in value might arise from a changed counting rule, selection of easier-to-serve recipients, an external resource infusion, an unrelated institutional reform, or displacement of difficult work. A claimed return loop might be an accounting transfer with no restored capacity, or a real renewal that depends on a donor whose continuation is uncertain. Disconfirming observations should be documented as carefully as supporting ones. Because case definitions and observation windows can change, a prior classification remains revisable when new material alters the question to which its evidence pertains.

15.13 Evidence Audit of Historical Value Claims

Table 15 summarizes the distinct evidential objects needed for cautious history of heterogeneous value. The table is an audit of possible analytical sources, not a recommendation to obtain identifiable or sensitive information without appropriate safeguards. In an empirical setting, consent, confidentiality, data minimization, rights to withdrawal, and institutional or legal restrictions may limit what should be collected or published.

The audit's main discipline is to keep asserted value, observed effect, and consequential institutional judgment separate. A completed pathway can have a well-supported narrow outcome while its longer-run effects remain unknown. Apparent contradiction between records may concern different actors or domains, a change in measurement, or an actual contested consequence. A historical study should therefore report both its claims and the scope of any unresolved comparative or normative questions. It should resist filling gaps with assumed gratitude, indefinite future benefits, or generalized expectations of volunteer sacrifice.

15.14 Constructed Comparisons and Conditional Propositions

Case A: Useful relay with an incomplete return circuit. A constructed support network introduces a translation-assisted information route. A volunteer helps a person reach an appropriate public service, and a dated follow-up confirms that the information was used. The supported claim concerns an episode of access and a locally documented relay. The network then announces that the successful episode proves a self-sustaining cycle of social value. The records, however, show that translation depends on a temporary specialist working without replacement capacity and that no training or maintenance plan has been implemented. The pathway may have produced real benefit, yet the broader regenerative claim lacks a demonstrated return to the conditions of production. The investigator should distinguish the recipient's assessment, the institutional publicity, and the unrenewed dependency without reducing them to one positive or negative score.

Case B: Visible gains with displaced burdens and conflicting evaluations. A hypothetical volunteer reception unit introduces an appointment system that reduces the mean processing time for visitors whose requests fit its standard categories. Some people report welcome relief. Others with complex needs wait longer because the software fails to recognize their situation, and a small group of volunteers absorbs unrecorded follow-up work. An activity dashboard records improvement while the professional safeguarding team expresses concern about missed escalations. The inquiry can support a task-bounded efficiency observation and still leave distributional, safety, and autonomy judgments unsettled. A defensible historical account would retain the category versions, complaint pathways, and different participant standpoints. Whether the revised system is permissible and appropriate requires additional procedures and standards.

Case C: Transfer of capacity following institutional closure. A constructed local assistance program closes after its host organization withdraws facilities and financing. Earlier volunteers are free to leave and several do. A different, properly authorized body elects to preserve a subset of the program's openly shareable training materials and develops an independent referral arrangement. Its staff adapt the materials and document some effective uses, while several former informal relationships cease and the new program excludes a service the former group provided. Historical value may persist in transmissible competence despite the original organization's dissolution; other forms of relational value are lost. A comparison should resist treating the successor as identical to the former organization or assuming that a material's survival proves equivalent service access. Credit and transfer conditions remain relevant to the appropriate valuation of the outcome.

These comparisons are constructed for analytical purposes and report no observations about an identifiable institution or participant. Four provisional propositions follow. First, historical value claims become more discriminating when genesis, access, uptake, circulation, and renewal are treated as separate, evidence-indexed processes. Second, a circulation pathway can link heterogeneous kinds of value without rendering them interchangeable or establishing an aggregate improvement. Third, differential control over interfaces, recognition, and records can condition whose value claims influence institutional trajectories. Fourth, claims of justice and sustainability demand evaluative and empirical warrants in addition to a formally admissible history of particular benefits. The next stage of the programme can examine these

pathways across changing relational networks, boundaries, and collective coordination without assuming stable membership or fixed channels of circulation.

16 Relational Networks, Boundary Changes, and Collective Coordination

A history of voluntary support may involve more participants, organizations, practical relations, and changing routes of access than the account of any one service can disclose. Assistance may depend on ties between recipients, volunteers, professional teams, community organizations, translators, funders, and public agencies. Relations of referral, recognition, resource provision, trust, supervision, consent, and information access may overlap without becoming equivalent. Their connections can be initiated, strengthened, interrupted, redirected, or withdrawn. This section specifies a historical account of *relational networks* capable of registering such changes while preserving the distinct objects and evidential standards of each relation. It reconstructs boundaries and membership, bridging and isolation, modes of collective coordination, and their interaction with the circulation of heterogeneous value. The method is an interpretive and comparative generative relational (GR) analysis, supported by a typed network-history dossier and a guarded evidential convention. Graph language is employed as a partial description of situated relations, not as proof that a social system is fundamentally a graph or that structural proximity confers authority, access, or welfare.

16.1 Network Objects and Historically Situated Relations

A relational network, as used here, is a temporally indexed representation of certain actors, positions, interactions, and interdependencies relevant to a specified question. The analyst first identifies the process of interest, for example access to language mediation, the coordination of a hospital visit, or the propagation of training materials between authorized organizations. The process determines what constitutes a meaningful tie. An exchange of contact details, an acknowledged request, a repeated assistance practice, an authorized referral, and a formally delegated responsibility are different observations. Their inclusion in one undifferentiated network would obscure rather than explain the historical process.

The vertices of a representation need not correspond only to individual persons. Depending on the question, a vertex might denote a participant, a role at a dated interval, an organizational unit, a consent-governed service channel, or a documented event. This analytical choice should be declared before computing connectivity. A participant's participation in several roles may create an apparent connection when person-level and role-level descriptions are conflated. Similarly, treating an organization as one actor can conceal disagreements between its units and the independent decisions of professional personnel. An adequate historical account may therefore maintain several related representations rather than seeking one exhaustive network.

A relationship is also indexed by its direction, content, and conditions. A recipient can request information from a supporter without authorizing the supporter to disclose it to a third party. An organization may fund a channel without managing its daily decisions. A volunteer's competence may be known to another participant even when that competence is unavailable during the relevant period. The distinction between a potential relationship and a usable, consent-respecting connection is especially important when interpreting network expansion as collective capability.

16.2 The Temporal Formation and Dissolution of Ties

Network history requires an account of tie formation and disappearance that does not infer either from an isolated administrative record. A first encounter may create recognition and a possibility of later action while leaving trust, practical knowledge, and authority unestablished. Subsequent coordination can stabilize a contact, and a task-specific arrangement can terminate after successful completion. Termination may be agreed, accidental, contested, or caused by a change in institutional policy. Different consequences follow from each process.

The temporal evidence should distinguish the time of an action, the period over which a relationship was effective, the date on which a record was entered, and the later date when it was interpreted. A referral entered retrospectively may appear to connect two units before they had any working pathway. An apparently durable tie may be a succession of different role occupants with different permissions. A formal memorandum can remain in an archive long after the practical channel has ceased to function. Such cases invite an interval-based rather than a timeless account of network structure.

Repeated encounters sometimes reproduce a relational pathway, but repetition alone cannot establish increased trust or improving capacity. It may reflect the lack of alternative channels, an imposed procedural dependency, or the burden of correcting repeated failures. Conversely, a one-time link can be historically important if it introduces a usable future route or an independently reproducible practice. Historical strength should be reconstructed from what the tie actually supports, not from frequency alone.

16.3 Membership, Jurisdiction, and Changing Network Boundaries

Network membership is determined through partially independent boundaries. An organization may maintain an official volunteer roster, a participant may recognize a circle of practical collaborators, and a service may impose rules regarding access to sensitive information. These descriptions produce different sets of admissible connections. A person listed as a volunteer is not thereby authorized to enter every clinical area or take responsibility for any recipient. Someone outside a formal roster may nevertheless contribute to the history of a publicly available service through independent community work. The relevant boundary is therefore attached to the specified relation and historical question.

Changes in boundaries may result from recruitment, graduation, withdrawal, reorganization, accessibility provisions, safeguarding decisions, or revisions to how membership is recorded. An increase in officially counted participants may reflect revised registration criteria rather than new working ties. Equally, a smaller officially recognized network may coexist with an expanded set of legitimate public-facing information routes. The historical inquiry should compare boundary definitions across observation periods before inferring growth, contraction, or exclusion.

Membership also bears normative and legal constraints. A person's inclusion in an analyst's network does not establish consent to participate in services, to be profiled, or to have their relationships exposed. Institutional jurisdictions and professional duties may impose restrictions that no network-level efficiency calculation can waive. Declining participation and withdrawing access are exercises of agency that can alter the representation without necessarily constituting a coordination failure. For a prospective empirical study, boundary construction should therefore be documented separately from data permissions and any normative assessment of inclusion.

16.4 The Three GR Reality Levels in Network Reconstruction

At the level of *ontological reality*, the ultimate status of social ties, organizations, and actors remains suspended within the present GR programme. Graphs, fields, and relational spacetime constructions are candidate languages for study; their mathematical properties do not settle what a human relationship ultimately is. This restraint extends to claims that a social tie possesses a natural numerical weight or that a network boundary exists independently of all investigative and practical purposes.

At the level of *relational reality*, historically constituted relations may have reasonably stable and causally consequential organization. A trained translator, a recognized referral pathway, a recurring supervision arrangement, and a reliable community contact can condition subsequent feasible actions. Their persistence is a substantive question concerning participants, capabilities, shared understandings, resources, and institutional positions. Network structure can summarize selected aspects of these relations if the analyst specifies the generative process through which the represented connections matter.

At the level of *manifestation reality*, rosters, diagrams, databases, funding applications, dashboards, verbal histories, and public maps render a partial network visible. These representations select units and link types, often excluding unrecorded maintenance or informal assistance. They can also modify the relational level: publication may attract collaborators, an organizational chart may direct requests

through a designated person, and a new classification may remove a previously usable route. A historical argument about network formation must keep the represented connectivity, the relations it purports to describe, and effects produced by the act of representation analytically distinct.

16.5 Bridging Relations and Conditions of Actual Access

A bridging relation connects parties whose relevant information, practical environments, or decision pathways would otherwise be weakly connected in the representation under study. Granovetter's analysis of weak ties provides an important precedent for examining how local interpersonal relations can connect otherwise separated segments and affect opportunities for information diffusion [35]. His treatment does not establish that a formally weak tie is necessarily available, safe, accurate, or beneficial in a support setting. The GR question concerns the conditions under which a specific bridge can mediate a permitted and competent action.

Consider a community support worker who knows whom to contact in an accessible public service. The contact might supply orientation, but the actual referral may require translation, an appropriate eligibility check, timely response, and consent to disclose the relevant details. A reported tie between two workers is therefore a *candidate* connection. Usable access emerges only when the pathway's task-specific conditions are fulfilled. A direct tie may be irrelevant if the receiving service lacks capacity, while a longer route may be the most legitimate and practical option under governing procedures.

Bridges may also become fragile. If the only person capable of transferring information is unavailable, the pathway can fail despite substantial global network connectivity. Recognition concentrated on one intermediary may produce dependency and bargaining asymmetry, while a redundant authorized channel may distribute obligations more fairly. Such outcomes require evidence of actual practices and alternatives; position in a diagram does not by itself establish that the intermediary has exercised power or that redundancy is feasible.

16.6 Isolation, Missing Ties, and Unobserved Participants

Isolation can have several distinct meanings. A participant may have no recorded ties because their interactions were never documented, because they declined disclosure, because the relevant service is inaccessible, or because a practical social separation exists. These explanations generate different historical and ethical interpretations. A zero degree in an administrative database is a property of that database under its boundary rule, not a sufficient finding about a person's life or social relationships.

Network studies that focus on successful service pathways risk excluding people who never reached a recorded point of contact. A group facing language barriers, disability-related inaccessibility, distance, or institutional distrust may appear absent precisely because the current network does not connect with it. A rise in the number of successful referrals within a well-observed subnetwork can therefore coexist with an unchanged or deteriorating opportunity to obtain assistance outside that subnetwork. Inquiry should attend to the construction of sampling frames, missing-service histories, and lawful methods of registering access barriers without creating unnecessary personal records.

There may also be legitimate separation. Safeguarding provisions, professional confidentiality, different expectations, and a participant's choice to refrain from contact can justify restricting an edge. The aim of a historical description is to distinguish barriers that frustrate a justified purpose from boundaries that protect persons or institutional responsibilities. A generalized imperative to maximize density would erase that distinction and could create serious harms.

16.7 Multiplex Relations and Task-Specific Circulation

An organization can be connected to another through funding, supervision, information transfer, shared training, or a consent-governed referral. These layers may reinforce one another, interfere, or remain largely independent. A supervisor can authorize a task without having the linguistic expertise to perform it; a trusted friend may possess such expertise without holding a permissible service role. Consequently,

evidence for one layer cannot automatically populate another. A multiplex description retains the kind, temporal scope, direction, and conditions of each candidate tie.

The circulation of value examined in Section 15 adds a further qualification. Resources, knowledge, appreciation, recognition, responsibility, and burdens may follow different pathways through the same actors. An increase in informational reach may redistribute uncompensated work toward a small number of volunteers. A new funding connection may stabilize a service but subordinate referral priorities to narrower eligibility categories. A pathway may benefit one group and exclude another, with consequences evaluated under different standards. The social historian should trace these distinct circulations before assigning a broad claim of network improvement.

Direction matters. A referral from unit A to unit B is not evidence that B has agreed to receive arbitrary future referrals, and a shared information form does not imply reciprocal disclosure permission. An analyst may model a route as directed and conditional while leaving the capacity of the reverse route unresolved. This is a principled alternative to drawing symmetric ties from records that document only one direction of action.

16.8 Boundary Objects, Translation, and Coordinated Heterogeneity

Collective coordination does not always require a uniform interpretation of a problem. Participants may cooperate while holding different professional knowledge, motivations, standards, or accounts of the action's value. Star and Griesemer's original historical study of amateur and professional scientific work proposed boundary objects and methodological standardization as ways of coordinating heterogeneous social worlds without eliminating their local differences [65]. The original case concerns scientific cooperation; its relevance to volunteering is heuristic and requires independent assessment of an actual institutional setting.

A jointly maintained referral guide, for example, may have different uses for volunteers, professional personnel, and community partners. Its ability to support cooperation depends on a stable common interface combined with room for locally appropriate interpretation. The guide may also become dangerous if a local actor treats a nonbinding example as authorization, or if the document silently distributes work to a group without adequate training. A successful boundary object therefore needs version control, named stewardship, procedures for correction, and clarity about which judgments remain reserved to qualified personnel.

Boundary objects should also be examined historically. A shared template can gradually become a mandatory reporting category, or a once-useful coordination diagram can survive after the real access pathways have changed. Its circulation may produce new recognition and exclusion. The analyst should test whether a document mediated practical cooperation, merely represented hoped-for cooperation, or actively reorganized the network through its institutional adoption.

16.9 Collective Coordination and Network Governance

Coordination may be organized through a participating group, a designated lead organization, or a more independent network administrative arrangement. Provan and Kenis analyze different modes of interorganizational network governance, their structural conditions, and tensions relevant to effectiveness [55]. Their model concerns organizational networks and is not automatically a prescription for volunteer teams, hospital functions, or heterogeneous recipient-support relationships. It nonetheless helps locate a question the GR framework must address: who is competent and authorized to coordinate which part of a collective process, under what review arrangements, and with what distribution of costs?

A shared-governance arrangement can allow locally knowledgeable parties to negotiate decisions but may incur burdens of repeated consultation. Concentrated coordination may permit rapid decisions and a consistent handover, while making information and recognition dependent on a gatekeeper. A designated administrative unit may stabilize recordkeeping yet become disconnected from situated needs. These are candidate tradeoffs, not rankings that can be resolved from network form alone. Decision rights,

workload, urgency, safeguarding, participant voice, and the practical availability of review mechanisms condition an appropriate judgment.

Historical institutionalization may change governance without immediately altering formal membership. A volunteer group may retain its name while referral permission moves to professional personnel; an informal broker may cease coordinating after a revised safety policy. Coordination histories should therefore distinguish who acts, who can authorize action, who bears responsibility, who controls records, and who can object or withdraw. Informal influence does not create formal mandate, and an official mandate may not establish the ability to carry out an assigned task.

16.10 Centrality, Brokerage, and the Assumptions of Network Measures

Measures of degree, betweenness, or reachability can be informative descriptions of an explicitly defined network. Their significance depends on what flows through the network and on how paths are traversed. Borgatti's work identifies the importance of matching centrality measures to different assumptions about the paths and modes of transmission [14]. The present manuscript adopts this caution rather than proposing an untested centrality score for volunteer contribution, moral worth, or authority.

A person can occupy a geometrically central location in a communication network while being peripheral to legitimate decision-making. A worker responsible for routine administrative routing may appear as the intermediary for almost every referral, even when the consequential clinical or welfare decisions are made elsewhere. Conversely, someone with few measured contacts may supply essential safeguarding expertise for a rare situation. The analyst should specify the target outcome and its presumed propagation mechanism before selecting any structural statistic.

Changing observation boundaries add another difficulty. An increase in measured betweenness can follow the removal of unobserved actors or the merger of different kinds of edges into a single relation. Even where a network measure is reliable, it remains descriptive until a carefully designed study connects it with a historically specified outcome. Disentangling selection, exogenous policy changes, common causes, and unrecorded channels is necessary before assigning causal significance to a measured position.

16.11 Collective Capability, Resilience, and Unequal Burdens

A connected configuration can support a collective capacity that its participants could not individually realize, for example a sequence involving orientation, translation, specialized assessment, and an authorized handover. Yet a usable network requires more than a formally possible path. Participants must have suitable competence and resources, and the pathway must remain accessible within the relevant time window. Its operation should also be compatible with governing restrictions and the persons' informed choices. Thus *collective capability* is task-relative, institutionally situated, and historically revisable.

Redundancy may improve continuity where several qualified and authorized paths exist. It may also impose excessive administrative effort, confuse accountability, or disclose information to unnecessary parties. Historical resilience should not be inferred merely from an increased number of connections. An important question is whether a network can continue to provide an appropriate service after a participant withdraws without coercing successors, violating information boundaries, or shifting an unsustainable burden onto a smaller group.

The history of a collective capacity can include contraction. Ending an unsafe information channel can reduce edge count while improving safeguarding. Consolidating duplicate coordination may free labor for difficult cases, although concentration can create new dependency. A change in graph topology therefore admits plural and sometimes conflicting evaluations; factual network description, counterfactual capability, and normative assessment require distinct warrants.

16.12 Network History under Partial Observation

Records frequently describe an institution's intended organization more clearly than they describe practical relations. An official list may show registered membership but omit temporary handovers; a meeting

minute may mention a proposal that was never enacted; a contact log may record an attempted request without confirming receipt. Privacy safeguards may appropriately prevent an analyst from accessing the most detailed traces. The historical reconstruction should consequently mark absent and restricted information as unresolved instead of filling it with plausible ties.

A useful research design first specifies the question, observation window, vertex rule, tie rule, and source provenance. It then compares multiple types of evidence where available and lawful: dated protocols, training revisions, aggregate service records, appropriately consented participant accounts, documented handovers, and records of unsuccessful contacts. Relevant external changes, including revised eligibility rules or new funding, should be registered as rival explanations for apparent network change. Comparison across periods should explicitly test whether vertices, meanings of edges, and recording practices remained comparable.

Such a design avoids the assumption that the most visible or well-connected participant is the most important contributor. The historically decisive labor may occur through maintenance, training, access mediation, or quiet prevention of foreseeable harm. In a support context the confidentiality and autonomy of recipients take precedence over the analytic convenience of exhaustive network mapping. Use of aggregated, synthetic, or purpose-limited data may be preferable to publishing recognizable relationship diagrams.

16.13 A Typed Historical Network Dossier

For a historically specified question q and observation interval I , the following partial dossier records the minimum categories needed to interpret a network claim. Its components are *typed fields*, not measurable magnitudes presumed comparable across cases. Equation 30 gives the representation.

$$\mathcal{N}_{q,I} = (V_{q,I}, E_{q,I}^{\kappa}, \partial_{q,I}, \tau_{q,I}, \rho_{q,I}, \alpha_{q,I}, \gamma_{q,I}, \mu_{q,I}, \chi_{q,I}, \delta_{q,I}, \pi_{q,I}, v_{q,I}). \quad (30)$$

Here V records the explicitly chosen units; E^{κ} the directional, relation-type-indexed candidate ties; ∂ the membership, access, and jurisdictional boundaries; τ event times and effective intervals; ρ resources and task-specific competence; α authorization, consent, and role constraints; γ candidate coordination processes and handovers; μ documentary manifestations and their revisions; χ access barriers, exclusions, and unobserved positions; δ dependencies, burdens, and possible withdrawals; π provenance and competing explanations; and v uncertainty, source gaps, and permissible evidential uses. Each field may be partial, disputed, or unavailable. In particular, a missing edge is not automatically a negative observation and an edge's presence is not a finding that the connection could be used for a particular task.

The dossier can be implemented with event records and typed relational links, subject to data protection and independent scrutiny. It does not specify an exhaustive underlying graph, assign weights by fiat, or estimate causal effects. Its usefulness depends on whether the researcher can recover the definition and evidential provenance of each selected relation. Interfaces with earlier dossiers remain partial: a value-transfer record may correspond to an authorized referral edge for one purpose but provide little information about governance authority or the history of personal trust.

16.14 Guarded Admission of Historical Coordination Claims

Let c be a narrowly specified claim that a change in a certain network pathway contributed to a defined coordination outcome for particular actors, relation types, and intervals. Seven case-specific guards assess the evidence: g_1 evaluates the provenance and comparability of units and boundaries; g_2 checks the presence and temporality of the relevant ties; g_3 tests task competence and practical reachability; g_4 examines authorization, consent, and relevant institutional constraints; g_5 checks the claimed handover or coordination outcome; g_6 tests missing relations, burdens, and credible rival explanations; and g_7 evaluates temporal sequence, selection effects, and uncertainty. Each guard can have adequate support, decisive counterevidence, or remain unresolved. The criteria for those states must be justified for the individual study before claims are classified.

Table 16: Historical evidence objects and limitations for relational networks and collective coordination

Object	Potential traces	Interpretive caution
Specified relation and task	Requests, permitted handover descriptions	Contact is distinct from effective assistance.
Vertex and role definition	Dated rosters, role descriptions	Persons, positions, and units differ.
Boundary and jurisdiction	Versioned eligibility and access rules	Changed definitions alter measured membership.
Temporal formation and end	Sequenced events, closure records	Database date may differ from effective interval.
Authorization and consent	Task-scoped protocols, permissible permissions	Visibility does not confer mandate or consent.
Bridging and reachability	Eligible pathways, response and failure records	Graph path may be practically unusable.
Coordination and uptake	Confirmed handovers, task outcomes	Completed transfer does not prove broad benefit.
Isolation and missingness	Coverage frames, appropriate barrier accounts	Absence may be unobserved or deliberate.
Resources and burdens	Maintenance, withdrawal, workload histories	Added edges can concentrate unpaid costs.
Countermodels and provenance	External policy changes, source and version logs	Selection and common causes mimic change.

Equation 31 defines a conservative evidential convention for the candidate claim.

$$\text{Coord}_I(c) = \begin{cases} \text{supported candidate,} & \text{if each necessary } g_i(c) \text{ has adequate support,} \\ \text{contradicted,} & \text{if a necessary } g_i(c) \text{ has decisive counterevidence,} \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (31)$$

The selection of necessary guards depends on the claim's reach. A narrow observation that a dated referral was completed may have support even where a broader claim that the entire network became more equitable remains unresolved. If a documented connection breached a binding authorization constraint, it cannot be counted as a supported *permissible* coordination pathway merely because information moved. A verified local coordination outcome still leaves causation, welfare, distributive fairness, legal compliance, and institutional endorsement open to independent analysis. The convention is an audit device, not a scoring system or a decision algorithm for live services.

16.15 Evidence Audit for Relational Network Histories

Table 16 identifies complementary evidence objects for network histories. The examples are possible kinds of traces, not instructions to assemble identifiable records without a legal basis, permission, and appropriate human-participant safeguards.

Evidence from distinct layers should remain distinguishable when records are joined. The analyst should record why a particular administrative record, interview, aggregate indicator, or public description warrants a particular tie interpretation. Where historical sources conflict, a documented discrepancy may itself be an important finding about contested boundary authority or changing manifestations. The ethical limits of collecting information are part of the research boundary rather than evidence that missing relationships did not exist.

16.16 Constructed Comparisons and Provisional Implications

Case A: A visible bridge with an unusable referral route. In a constructed multi-organization support setting, a volunteer coordinator knows an interpreter at a neighboring service and records the contact in a network diagram. An administrator treats the diagram as evidence that multilingual access has been secured. The receiving service, however, offers interpretation only under a narrowly defined arrangement that does not cover the recorded type of referral, and the interpreter has no permission to receive the intended person's details. The social connection is real within the stipulated case, yet the proposed service

pathway is neither authorized nor operational. The diagnosis should preserve the coordinator's possible contribution to orientation and separately classify the unverified claim of effective access. Possible remedies involve competent institutional arrangements and consent-respecting pathways, not simply an increase in informal ties.

Case B: Network consolidation with unequal consequences. A hypothetical support consortium replaces several local coordinators with one central routing desk. Aggregate completion time falls for common requests, and the new database shows fewer duplicated contacts. At the same time, specialist questions accumulate at the desk, a former informal accessibility channel disappears, and the remaining coordinators perform unrecorded evening follow-up. Different evaluations can hold at once: some routine handovers are faster, some participants face new barriers, and the reduction in duplicate reporting may be genuine. The study must compare task categories, service boundaries, decision rights, missing cases, and alternative explanations. Neither centralization nor decentralization is justified by topology alone.

Case C: Reorganized boundaries and a partially preserved capacity. A fictional voluntary association dissolves after its facilities contract ends. Some participants withdraw, and an independently governed organization makes a revised training resource publicly accessible with appropriate permission. Former members occasionally contribute to its maintenance but carry no continuing obligation. One previously useful referral relation ends because its receiving organization changes eligibility, while an authorized community-language connection arises elsewhere. A later network map may depict both a contraction and a new bridge, depending on the vertex and tie definitions. The historical account can document particular transferred capacities and lost relationships without equating the old and new organizations or presuming overall social improvement.

All cases are analytic constructions, not descriptions of identifiable hospitals, charities, service recipients, or actual network datasets. Four provisional implications follow. First, network history is more intelligible when actor boundaries, relation types, and temporal intervals are kept explicit and revisable. Second, historical bridging and increased connectedness can create a possibility of coordination, while actual capability depends on accessible resources, permission, competent action, and uptake. Third, representations of networks can alter coordination and recognition, including through the exclusion of less visible persons, but such feedback requires independent temporal evidence. Fourth, the quality and fairness of collective coordination are plural evaluative questions that exceed connectivity measures and the admission convention proposed here. These distinctions prepare the study of power, counterweights, and historical control over available alternatives without attributing decision authority or normative legitimacy merely to a structurally prominent position.

17 Power, Counterweights, and Historical Control over Alternatives

The histories of supportive cooperation examined in this paper are also histories of unequal capacity to shape the conditions under which cooperation occurs. An organization may control access to a task, a participant may determine which proposals are heard, and an intermediary may enable an otherwise inaccessible relationship. These effects differ in their sources, duration, reversibility, and justification. This section develops a provisional generative relational (GR) account of historical power by identifying the actors, resources, dependencies, decision procedures, and feasible alternatives at issue. It then analyzes agenda control, institutional and informal counterweights, the possibilities of voice and withdrawal, and changes in the organization of alternatives over time. The mode of argument is historical and comparative, with formal devices restricted to evidence-indexed descriptions and conditional assessments. The investigation concerns relational mechanisms rather than an assumption that power can be represented by a universal scalar or that observed influence entails domination.

17.1 Historically Specified Objects of Power Inquiry

A claim that an actor possesses power requires a relational specification. The relevant questions concern whose conduct or opportunities may be affected, through what position or resource, during which interval, and in relation to which decision, practice, or possible action. A coordinator's ability to assign a meeting time, an institution's authority to restrict access to sensitive records, a donor's ability to withhold funds, and a recipient's capacity to decline a proposed intervention are different objects. They should not be collapsed into one ranking of powerful and powerless persons. Some powers are formally allocated; others arise through practical knowledge, dependence, institutional position, or control of representations.

The historical unit of analysis may be a single encounter, a repeated relationship, a rule-setting episode, or the reconfiguration of an entire support network. The investigator should specify whether the interest is a capacity to affect outcomes, an attempted exercise, an observed alteration in conduct, or a mechanism that narrows future options. Each has different evidential demands. Where an administrator signs an authorization, the record may support the occurrence of a decision while leaving its implementation uncertain. Where a volunteer reports feeling unable to object, the account is important evidence of perceived constraints but does not by itself identify the actor or mechanism that produced those constraints.

GR uses *power relation* provisionally for a historically situated configuration in which some actors, roles, or organized processes can condition the feasible actions or recognized claims of others. The definition includes enabling as well as restrictive capacities. Assessing domination, coercion, exploitation, or legitimate authority requires further and distinct argument. A powerful arrangement may support a vulnerable person's safety; a well-intended arrangement can also concentrate discretionary control or suppress a relevant alternative. The terms of analysis must remain specific enough to register both possibilities.

17.2 Relational Dependence, Resources, and Outside Possibilities

Dependence provides one established entry point. Emerson's account treats power and dependence as relational and directs attention to the importance of a goal and the availability of alternative means to reach it [27]. Within volunteer and aid relationships, the relevant goals may include language access, companionship, safe navigation, practical autonomy, or continuity of support. The same actor can be dependent for one task and comparatively independent for another. A resource holder may have substantial leverage when alternatives are inaccessible, yet little leverage if substitutes are timely, competent, authorized, and acceptable to the person concerned.

Historical reconstruction should therefore distinguish a nominal resource from an accessible one. An institution may appear to offer three referral channels, although only one is open during the relevant hours. A volunteer may have several potential supervisors, while all referral decisions are reserved to a single authorized office. The institutional directory describes possibilities of one kind, whereas task-specific practical options may be far narrower. Conversely, a formally scarce resource can coexist with useful independent assistance if a legitimate alternative practice emerges. What matters is the relation between a participant's aims, effective opportunities, and the conditions of substitutability.

Dependence may also be mutual yet asymmetric. A community organization might rely on a public facility for meeting space, while the facility relies on volunteers for forms of orientation that its personnel cannot reproduce without additional resources. The obligations, permissions, and vulnerabilities on each side need independent description. Mutual contribution does not entail equal bargaining capacity, and an asymmetric dependence cannot be evaluated simply as harm. The historical account should ask who can refuse, revise the terms of collaboration, obtain a substitute, or continue a valuable practice after the relationship changes.

17.3 Actor-Relative Feasible Alternatives and Historical Comparison

An alternative is meaningful only relative to an actor, a task, an interval, and a historically available institutional setting. A service nominally offered in another city may be irrelevant to someone who cannot

travel. A suggested change of provider may involve new disclosure obligations, waiting times, money, or risks that make it practically unavailable. A professional's option to reassign a volunteer may likewise depend on training coverage and authority that a volunteer does not possess. Alternative sets are therefore actor-relative and cannot be inferred from a generic organization chart.

An admissible alternative should be described through at least five characteristics: a task-relevant path; available resources and competence; the necessary authorizations and consents; a temporal interval in which the path can actually be used; and burdens or conditions of uptake for the actor concerned. These characteristics need not be numerically comparable. A historical change can create a new option, make an existing option more usable, or remove the conditions that previously made it feasible. Such changes may affect different participants in opposed directions.

The evidential asymmetry between observing a path and asserting that a path was unavailable is important. A completed referral supports the existence of one performed route under its actual conditions. Failure to find another route in a surviving archive does not establish its impossibility. A strong claim that an institution eliminated a particular option needs evidence of a relevant restriction or of the loss of necessary conditions, with a defined search frame. The resulting option comparison is a partially known order of possibilities, not a complete counterfactual universe reconstructed from present-day expectations.

17.4 Decision Authority, Agenda Selection, and Nondecision

Power can influence what is decided and which matters reach a forum of decision. Bachrach and Baratz's account of the two faces of power directs attention to the selection of issues, institutional barriers, and procedures that keep some grievances or alternatives outside visible deliberation [8]. Applied cautiously to volunteer support, the insight suggests examining who can propose a revised service, who determines eligibility for discussion, and what happens to concerns before an official meeting. A meeting minute may document a unanimous vote among the proposals admitted to the agenda while saying little about proposals excluded beforehand.

Agenda selection can be warranted and necessary. A safety review may decline a proposal because it lacks the required permissions or presents an unacceptable risk. An office may legitimately prioritize time-sensitive cases within its assigned competence. The historical question is therefore more specific than whether an agenda was controlled. It concerns the source of authority, the grounds offered, their application across participants, any available appeal or revision, and the consequences of the exclusion. A claim of unjustified suppression additionally requires an appropriate normative or legal standard.

Evidence may include a dated request, a rule governing submission, correspondence explaining exclusion, or a change in the permitted route for review. Informal accounts can identify questions worth investigating, but testimony about absence from deliberation does not establish intention or a hidden coordinating actor. Distinguishing an unavailable proposal, a considered and rejected proposal, and a proposal never recognized as admissible helps prevent an inference of domination from every disappointing outcome.

17.5 Preference Formation, Recognition, and Latent Constraints

Power may also condition the categories in which interests and choices are understood. Lukes' expanded analysis of power invites attention to the formation of preferences, the visibility of conflict, and the relation between apparent agreement and structures of constraint [41]. In the present GR reconstruction, this is a research question rather than a license to substitute an observer's presumed true preferences for a participant's own account. A person's endorsement of a difficult role can be genuine; the same endorsement may occur amid narrow opportunities, expectations of gratitude, or inadequate information. The inquiry needs to examine how such conditions develop without deciding in advance which explanation holds.

Recognition practices can mediate those histories. A public account that celebrates volunteers as selfless may support belonging and recruitment while creating pressures against acknowledging exhaustion. An evaluation that counts completed services but omits declined requests can stabilize an appearance of

unproblematic success. A recipient classified as difficult or uncooperative may experience a narrower range of subsequent offers. These are candidate pathways through which manifestations feed back into relational reality; a dated narrative, its reception, and a subsequent alteration of conduct would have to be documented to substantiate the causal sequence.

Interpretations of latent interests carry special epistemic and ethical risks. Researchers may have more access to administrative archives than to participants' reasons for action; they may mistake a cultural practice for compliance or interpret quiet refusal as a deficiency of agency. A responsible design preserves the participant's voice, opportunities for correction, and uncertainty about preferences. It also distinguishes the descriptive question of how a preference was formed from the normative question of whether a choice was free, informed, or justifiable under a specified standard.

17.6 Capacity, Attempted Exercise, and Historical Effects

An institution can retain a formal competence that it does not exercise during the observed period. A volunteer coordinator may be able to redirect requests but have performed only routine handovers. A funder may threaten withdrawal without actually terminating support. These examples motivate a threefold distinction among *capacity*, *exercise*, and *effect*. Capacity concerns the action that an actor could take under documented conditions; exercise concerns an actual intervention, refusal, allocation, or decision; effect concerns what changed after that exercise. Such distinctions prevent an inference of realized domination from the possession of a resource and an inference of benevolent power from a favorable outcome alone.

The evidential chain is particularly demanding when the outcome would plausibly have occurred through multiple routes. If a training program ended after a budget cut, the cut may be a contributing condition, while instructor availability, revised policy, or diminished demand may also matter. If volunteers cease attending after a new attendance rule, their motives may differ and unrecorded personal constraints may be decisive. Historical power claims become more informative when they indicate the mechanism, timing, comparison class, and competing explanations.

Power that remains unexercised can nevertheless shape action when credible expectations of its exercise affect planning or deliberation. Establishing that proposition for a particular episode requires more than a formal job description: the inquiry needs evidence of awareness, credible capacity, and changed conduct. A theoretical possibility of sanction does not automatically prove anticipatory compliance. Conversely, a threat can matter even without appearing in the official decision record, if reliable contemporaneous traces support its occurrence.

17.7 Roles, Mandates, Professional Limits, and Informal Influence

A historical account of institutional power must preserve the distinctions developed for role formation and delegated authority. An occupant of a coordinating role may have an assigned competence to schedule participation without authority to disclose health information, direct professional treatment, or bind an external organization. The role's written scope, practical implementation, and external recognition may change at different times. An organization may wrongly attribute to an informal intermediary an authority that has never been granted. Conversely, a participant with no formal title may exercise substantial influence through knowledge, trust, or privileged access to communication channels.

Formal authority has several possible justifications, including competence, institutional responsibility, safeguarding, and law. Its existence and limits are jurisdiction- and institution-dependent. A legitimate restriction can still produce distributive consequences worth studying; an informal influence relationship can remain benign or problematic depending on consent, dependence, and effects. The present account avoids inferring legality from repetition or morality from documentary recognition. Where a binding legal claim matters, the applicable rules and professional duties must be separately verified for that particular setting.

A common organizational error is to move from evidence of reliable past cooperation to expectations of indefinite personal availability. A volunteer's experience may make the participant influential in

practice without creating a continuing duty to accept new tasks. Control over assignments can become power over a person when access to belonging, recognition, or future opportunity is made contingent on acquiescence. The inquiry should assess the actor-relative cost of declining as carefully as the apparent availability of a formal refusal option.

17.8 The Three GR Reality Levels in Historical Power

At the level of *ontological reality*, the ultimate nature of agency, power, and relational being remains suspended. A network, field, operator, or spacetime formalism can describe selected relations without proving that power is physically constituted as a field or that a person's agency can be exhaustively represented through formal alternatives. This restraint is significant where conceptual metaphors from physics or political economy are extended to intimate, ethical, or institutional relationships.

At the level of *relational reality*, historically constituted dependencies, institutions, capacities, and patterns of recognition may condition what participants can do. A credential requirement, an entrenched referral route, a repeated expectation of deference, or a diversified support network may have real consequences for the feasibility of action. Those effects arise through situated interactions among resources, knowledge, organized roles, authorizations, expectations, and previous events. Their historical trajectories are a central object of GR reconstruction.

At the level of *manifestation reality*, power appears through decisions, classifications, performance indicators, complaint records, ceremonial acknowledgments, and narratives of responsibility. These manifestations provide partial evidence and can themselves reorganize incentives, belonging, and access. A role chart may overstate the actual reach of an office; an invisible informal practice may continue to condition important decisions. The analyst should reconstruct possible transitions among the levels without promoting an official representation to an exhaustive account of relational reality or assigning ontological certainty to a preliminary model.

17.9 Historical Reinforcement and the Reproduction of Control

The power associated with a resource or position can persist through mechanisms that extend beyond its original allocation. A unit receiving the most referrals may gain more information, develop more expertise, and become increasingly difficult to bypass. Its resulting expertise can yield genuine improvements in coordination while strengthening its capacity to define eligibility and evaluative standards. A funding arrangement may similarly finance indispensable infrastructure while making alternative sources hard to develop. Such sequences are candidate self-reinforcing pathways, conditional on observed resource transfers, institutional decisions, and changing outside options.

Reproduction should be separated from simple recurrence. A rule that remained stable throughout an interval does not establish that its past use increased the later cost of abandoning it. Evidence for historical reinforcement would connect prior choices to subsequent dependence, skills, capital, reputation, or procedural constraints. Some apparently concentrated power may instead reflect a continuing external requirement or a task that genuinely needs a singular accountable authority. Comparison with such rival mechanisms can distinguish a historical lock-in process from functional specialization or stable legal jurisdiction.

Historical control may also weaken through succession, public disclosure, new competencies, loss of trust, rights-based challenge, or the opening of substitutable service paths. The direction of change should not be assumed. A decentralized network may distribute control yet leave each participant dependent on informal gatekeepers; a centralized service may enforce consistent standards and strengthen protections against arbitrary personal influence. The evaluative issue concerns the conditions and consequences of each configuration for particular actors, not a presumption that one topology is inherently emancipatory.

17.10 Counterweights and Differentiated Balancing Mechanisms

A *counterweight* is provisionally an arrangement or practice that limits, reviews, redistributes, or makes contestable a specified capacity to control others' feasible actions. Counterweights can consist of independent review, transparent eligibility reasons, distributed practical competence, multiple authorized referral routes, protected complaints, documented mandates, or sufficient material support for genuine choice. They may be located inside an organization or in relationships with other institutions. The relevant historical question is how a counterweight becomes usable and what effect it has on a particular dependence relation.

Counterweights differ in their objects. An appeal process may constrain arbitrary refusals without providing substitute transportation. A second provider can improve the possibility of exit while lacking competence for a specialized need. A rotation of coordinators may prevent personalized gatekeeping but weaken accumulated knowledge unless handover practices are maintained. A public reporting channel may increase accountability while exposing sensitive participants or creating incentives to conceal difficult cases. The analytical benefit of distinguishing mechanisms is that a counterweight can work for one threat and be ineffective, costly, or harmful for another.

Balancing also has distributive conditions. A rule requiring every voluntary decision to be reviewed by a committee can protect participants in some settings while imposing waiting costs on persons with urgent needs. The availability of a complaint mechanism may be nominal where language, disability, insecurity, or fear of retaliation makes it difficult to use. The resources required to maintain counterweights must be renewed, and those costs should not be invisibly transferred to already burdened volunteers or recipients. Evaluating their desirability therefore belongs to an independent normative analysis informed by, but not reducible to, the historical reconstruction.

17.11 Exit, Voice, Loyalty, and Consent-Sensitive Participation

Hirschman's account distinguishes exit and voice as responses to perceived organizational decline and explores the circumstances in which loyalty affects their interaction [38]. For volunteer participation, these categories illuminate different routes through which participants may contest conditions, with important limits. A volunteer might negotiate an assignment, submit criticism, take a temporary pause, or withdraw. A recipient might seek a different authorized support route, decline a nonessential service, or challenge how a decision was made. A professional may have an institutional duty to remain on a task even where a volunteer has a broader right to cease participation. The costs and practical options of each actor need separate study.

Voice requires an addressable forum, a means of communication, and some prospect of response. A suggestion box that is never read offers a symbolic manifestation of consultation with little demonstrated practical effect. Exit requires more than a formal sentence permitting withdrawal; the inquiry should consider penalties, loss of needed assistance, reputational pressure, and material dependence. Loyalty can support patient cooperation and constructive criticism, but an observer should not presume that a participant's commitment makes continued unpaid labor obligatory or excuses failures of organizational accountability.

A consent-sensitive institution can preserve both meaningful engagement and the opportunity to withdraw, subject to appropriate handover and safeguarding arrangements. Withdrawal may disrupt a service, and those effects can be analyzed without morally condemning the person who leaves. Conversely, an institution's obligation to protect service continuity is a design and resource question, not automatic evidence of a right to command indefinite voluntary effort. Historical evidence should compare stated exit and voice procedures with actual experiences of their use, subject to consent and privacy protections in any research.

17.12 Evidence, Causal Attribution, and Normative Separation

Historical power analysis encounters difficult selection problems. Surviving minutes usually record completed decisions more readily than abandoned proposals; official communications may underrepresent informal pressures; and interviews are retrospective and shaped by position, memory, and perceived risk. Research designs should specify a question, observation interval, source population, potential missingness, and admissible corroboration before building a narrative of control. Within available permissions, dated rule changes, successive agendas, recorded requests, aggregate outcomes, and accounts from differently positioned participants can sometimes help discriminate among explanations.

A strong causal claim that actor a restricted a particular alternative for actor b requires evidence that the alternative was relevant and previously feasible, that a mechanism associated with a altered its enabling conditions, and that credible rivals have been addressed. Where only the sequence of events is known, the appropriate conclusion may be a temporally associated change or a candidate mechanism. If an option disappears from a record after new reporting software is adopted, changes in coding or coverage may explain the appearance of exclusion. If a person remains silent, the interpretation should leave room for satisfaction, caution, lack of access, disagreement, or an informed choice to avoid participation.

Finally, description and evaluation serve different inquiries. A historian may demonstrate that a coordinator controlled agenda access while being unable to determine whether a specific exclusion violated a binding rule. A philosopher may find reasons to criticize a concentration of unreviewable discretion despite incomplete evidence of a particular incident's effects. An institutional designer may be able to identify safer procedures while leaving historical causality unresolved. The paper treats such conclusions as compatible yet distinct, requiring their own evidence and normative premises.

Alternative control and the problem of observed choice. A limited choice set may arise through deliberate agenda exclusion, legal restrictions, genuine scarcity, professional triage, or preferences that participants developed independently of institutional pressure. A power attribution therefore needs a historically documented capacity and pathway through which one position conditioned another actor's feasible options, together with evidence distinguishing this pathway from relevant constraints. Minutes that omit a proposal may reflect a closed agenda, but may also reflect a proposal never submitted or withheld to protect confidentiality. The historian should examine opportunities to introduce the proposal, who controlled submission and classification, applicable permissions, and accessible channels for appeal. A rejected appeal is a trace of exercised control only under a defined procedure and jurisdiction; it does not establish domination or illegitimacy on its own. Power and counterweights may causally co-develop, so treating a counterweight as an independent input without checking the historical response to prior power can distort attribution.

17.13 A Typed Dossier of Power and Historical Alternatives

For a question q concerning specified actors, tasks, and interval I , the partial dossier in Equation 32 records the categories relevant to assessing a historical power relation. The symbols name evidence types and analytical fields, not cardinal quantities. Each record should identify its provenance, comparison rules, and scope before it is joined to records from other domains.

$$\mathcal{P}_{q,I} = (A_{q,I}, T_{q,I}, R_{q,I}, D_{q,I}, \Omega_{q,I}, M_{q,I}, G_{q,I}, X_{q,I}, B_{q,I}, C_{q,I}, \Pi_{q,I}, U_{q,I}). \quad (32)$$

Here A identifies the actors and role occupants; T their bounded tasks and event intervals; R resources, skills, and recognized claims; D dependence relations and their conditions; Ω actor-relative candidate options and access requirements; M mandates, consent, and operative constraints; G agenda selection, decisions, and nondecisions; X attempted exercises, recorded effects, and relevant mechanisms; B barriers, displaced burdens, and withdrawals; C counterweights, complaint channels, substitutes, and checks; Π provenance, observation coverage, and rival explanations; and U unresolved distinctions,

including normative and legal questions. Each field may have several versions or contested entries. An absent value indicates a gap in the dossier unless independently supported evidence establishes the absence of the underlying condition.

Ω is a *partially observed family of feasible-option descriptions*, not a set of choices assumed known to the analyst. A candidate option may be tagged as supported, shown inaccessible under specified conditions, or unresolved. For any asserted historical loss of option o , positive support for the later restriction is required; an option's nonappearance in a later enumeration is insufficient. Joining Ω to network records from Section 16 additionally requires compatible actor, task, interval, consent, and jurisdictional definitions. The dossier does not define a numerical index of power, prove the existence of hidden coercion, or replace an applicable governance review.

17.14 Guarded Assessment of Alternative-Control Claims

Let c assert a specific historical alteration of actor b 's task-relevant feasible options associated with actor a , a role, or an organized mechanism. Seven claim-dependent guards are proposed: h_1 examines actor, task, and time comparability; h_2 the provenance of the earlier alternative and evidence of its actual feasibility; h_3 the subsequently changed access condition, including affirmative evidence of exclusion where loss is claimed; h_4 the attribution of a traceable mechanism to the relevant actor or arrangement; h_5 relevant mandates, consent conditions, and the scope of permissible action; h_6 competing explanations, source selection, and displaced burdens; and h_7 temporal sequence, uncertainty, and the reach of the conclusion. A guard's evidential status is established within a specified investigation and cannot be inferred from its mere inclusion in the dossier.

Equation 33 gives a three-state convention for reporting the candidate historical claim.

$$\text{AltPower}_I(c) = \begin{cases} \text{supported candidate,} & \text{if all necessary } h_i(c) \text{ are adequately supported,} \\ \text{contradicted,} & \text{if a necessary } h_i(c) \text{ has decisive counterevidence,} \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (33)$$

A claim of a documented decision may satisfy fewer guards than a claim of causal, deliberate, and unjustified domination. For the latter, the convention can at most organize part of the historical evidence; intention, causality, applicable duties, and moral evaluation require additional independent assessment. Counterevidence against an asserted mechanism should not be hidden merely because a disadvantage occurred, and unresolved evidence should not be treated as confirmation of benevolent power. The criterion is a reporting discipline for research, not a procedure for making real-time decisions about individuals.

17.15 Evidence Audit for Power, Alternatives, and Counterweights

Table 17 groups evidence objects that may distinguish power mechanisms from mere positional descriptions. Identifiable participant records would require independent permissions and safeguards; the table specifies analytical questions rather than authorizing data collection.

The table is intended for comparative inquiry across historical episodes with differing available evidence. A study may register adequate support for a narrow exclusion and unresolved evidence about whether the exclusion caused a later departure. Where participants have provided sensitive accounts, privacy and possible retaliation risks may favor de-identified, aggregated, or synthetic illustrations over public relational diagrams. The historical record may remain partial after careful inquiry; a clearly bounded unresolved result has value when it prevents a misleading claim of certainty.

17.16 Constructed Comparisons and Historical Implications

Case A: Formal refusal with costly practical alternatives. In a constructed support organization, volunteers are told that every assignment is optional. One coordinator controls access to future training

Table 17: Evidence objects and inferential limits for historical power and accessible alternatives

Object	Potential traces	Interpretive limit
Actor and task scope	Dated roles, bounded service descriptions	A title alone does not establish practical power.
Dependence and needs	Authorized service histories, resource conditions	Mutual reliance need not imply equal alternatives.
Initial alternative	Dated operating routes and feasibility evidence	Archival mention alone does not prove usability.
Altered option condition	Versioned rules, access records, confirmed closure	Missing records do not prove option loss.
Agenda and exclusion	Submission paths, minutes, reasoned refusals	Rejected and unconsidered proposals differ.
Exercise and outcome	Dated actions, implementation, response traces	Sequence alone does not identify causation.
Mandates and consent	Task-specific permissions, applicable restrictions	Exercised influence does not establish legitimacy.
Voice and withdrawal	Protected feedback, properly scoped exit records	Formal rights may be costly or inaccessible.
Counterweight operation	Review outcomes, alternative routes, maintenance	A check can generate new burdens or gatekeeping.
Rival explanations and gaps	Rule changes, sampling frames, conflicting accounts	Hidden mechanisms require positive corroboration.

and makes eligibility for that training depend on accepting repeated evening assignments. A volunteer can formally decline; no substitute training channel is practically available during the stipulated interval. The case illustrates a possible divergence between nominal refusal and actor-relative exit costs. Establishing a real historical mechanism would require records of the condition, its actual operation, the participant's opportunities, and competing explanations. A constructive counterweight might separate training decisions from short-term availability, but the design's feasibility and authority would need independent review.

Case B: Protective gatekeeping and contested agenda access. A hypothetical institution introduces a single authorization route for sensitive referrals. The reform blocks an informal channel that previously operated without appropriate consent; it also delays some routine information requests that could have been handled safely through a less burdensome protocol. One actor claims exclusion from the agenda and another cites necessary safeguards. The power inquiry can support that a gate was established and that certain alternatives changed, while leaving the proportionality of the restriction and the best feasible design to a separate legal, professional, and ethical assessment. A faster route is not automatically a permissible route; a protective rule can still have remediable distributive effects.

Case C: Network diversification and a new intermediary dependency. In a fictional regional aid collaboration, three organizations develop multiple authorized referral channels to reduce reliance on a single provider. Access improves for common cases, but the shared information desk becomes the sole holder of current eligibility rules. The network's topology appears decentralized even as agenda and information control concentrate. A proposed independent review channel may constrain that desk's discretion, although it also requires renewed staffing and trustworthy handovers. The case illustrates why link multiplicity, actual substitution, and control over descriptions of alternatives should be evaluated separately and over time.

The cases concern fictional arrangements and make no empirical claims about identifiable institutions. Four provisional implications follow. First, power histories should specify actors, tasks, alternative conditions, and evidence before assigning attributes of domination or empowerment. Second, counterweights should be assessed by their practical use and maintenance, including the burdens they impose and the rights they protect. Third, voice, consent, and withdrawal form historically situated possibilities rather than mechanically available options. Fourth, the legitimacy of a powerful arrangement requires an independent normative or legal inquiry, even when the arrangement's effects can be historically described.

These distinctions prepare the analysis of subsequent practice transformation and institutional transfer without treating either concentration or diffusion of organizational control as a sufficient explanation of system change.

18 Practice Transformation, Institutional Transfer, and System Reconfiguration

Historical accounts of volunteer action frequently describe a practice as having expanded, moved, been adopted, or survived an organizational change. Such expressions can refer to substantially different trajectories. A procedure can be copied while the competence required to perform it disappears; a network can preserve its practical support capacity after its formal organization closes; and a service can retain its title while its authorizations, beneficiaries, or responsibilities change. This section examines the conditions under which supportive practices are transformed, transmitted between institutional settings, or assembled into reconfigured relational systems. The objective is to separate evidence of documentary resemblance, performed adaptation, transferable capacity, and historically warranted continuity. The discussion combines conceptual reconstruction, carefully limited organizational and institutional precedents, a typed historical description, guarded evidential comparison, and constructed cases. No particular jurisdiction, hospital, or nonprofit arrangement is presumed to instantiate the proposed model.

18.1 Objects and Units of Historical Transformation

A *practice* is provisionally treated as a historically reproduced configuration of activities, competences, expectations, resources, and relationships oriented to one or more situated tasks. A *practice instance* is a particular occurrence, including an attempt that may fail to produce its intended effect. A *practice description* may be an instruction, training script, checklist, recorded narrative, or classification that presents selected features of the arrangement. These objects have different temporal extensions and evidential footprints. Recorded repetition can support recurrence without proving that the same configuration was available across episodes. Conversely, substantially revised instructions may accompany stable underlying forms of coordination.

A *transfer episode* involves a historically traceable relation between a candidate source arrangement and a candidate receiving arrangement. The relation may concern persons, artifacts, learned competencies, an authorization pathway, resources, or a jointly maintained network. Source and destination are analytical roles fixed for a specified claim, rather than enduring qualities of organizations. A transfer may be reciprocal, distributed among several sites, interrupted, or partially reversed. The individual who initiates an arrangement need not own it, and a receiving organization need not gain authority over all relationships through which the original practice was produced.

A *system reconfiguration* refers to a change in the constitutive pattern of task-capable relations within a bounded historical inquiry: the participating roles, their accessible connections, conditions of authorized action, and possibilities for continued reproduction. It may occur within one organization, across several institutions, or without a single administrative successor. Historical claims should state the selected system boundary and the relevant service or capability before identifying a reconfiguration. They should also distinguish the disappearance of an administrative unit from the disappearance of a relational capacity.

18.2 Adaptive Revision within an Existing Practice

An adaptive revision changes the conditions or conduct of a practice while retaining some relevant continuity. Volunteers may revise orientation sequences following feedback from recipients, negotiate alternative schedules, or replace an unreliable communication tool. Such developments can involve learning and a new distribution of work, although their consequences remain conditional on competence, consent, and subsequent use. The practice's continued name, coordinator, or location can be evidence of a historical link but cannot determine whether the activities still support the same task.

Feldman and Pentland distinguish the ostensive and performative aspects of organizational routines and analyze their mutually consequential relation [32]. Their organizational argument helps motivate attention to both accounts of how a practice ought to unfold and the situated enactments through which participants reproduce and modify it. In the present GR reconstruction, the distinction is an intellectual precedent, not a claim that every volunteer practice qualifies as an organizational routine. A one-time improvised response may be historically important without already having a reproducible ostensive aspect.

An empirical study of adaptation should examine the reason for revision, whose experiences were considered, who could propose or decline it, and which effects were subsequently observed. Successful adaptation for one participant may impose monitoring burdens on another. A revised rule may protect confidentiality while restricting access to a previously convenient but unauthorized procedure. Hence the account should preserve both service-specific conditions and the normative questions raised by a revision; improvement in the number of completed tasks does not settle whether the distribution of burden or control was appropriate.

18.3 Knowledge Carriers and Relational Dependencies of Transfer

A transfer can convey written directions, embodied competencies, working tools, social introductions, access permissions, or the capacity to adjust a procedure to unfamiliar conditions. The different carriers are not interchangeable. An instruction manual may identify a sequence while omitting the practical judgment needed to recognize exceptions. A skilled volunteer may demonstrate an action but lack the receiving setting's authorization to perform it. A shared digital platform may preserve access to information while changing who can observe or amend records. Transfer histories should follow the carriers relevant to the specific capability rather than treating a bundle of documents as the complete practice.

Argote and Ingram examine organizational knowledge transfer using relations among people, tasks, tools, and knowledge reservoirs; their analysis emphasizes the difficulties of moving context-dependent interactions [6]. Szulanski studies impediments to best-practice transfer within firms, providing an additional precedent for investigating knowledge-related transfer obstacles [70]. Both works have bounded corporate and organizational settings. Their extension to volunteer and humanitarian relationships is an explicit GR research hypothesis, not an established empirical result about those sectors.

The history of a nominally transferred capability should therefore ask what must be retained together. The relevant unit may be a trained individual and a trusted interpreter, a consent procedure and the lawful means of implementing it, or a directory and the relationships that keep its entries current. If any indispensable relation is severed, transfer of another component may remain valuable but insufficient. The analyst should retain this partial outcome instead of coding all movements of a designated resource as equivalent successful transfers.

18.4 Translation between Institutional Contexts

Institutional settings can differ in their roles, professional boundaries, schedules, languages, data rules, forms of responsibility, and the authority to approve action. A practice moving across those settings commonly undergoes translation. A community-run navigation activity, for example, may acquire a professional escalation pathway when incorporated into a larger service. A training script written for one group may need redesign when the recipient population changes. The useful historical object is the situated modification of the action and its supporting relations, including any loss of capacity, rather than an unqualified relation of sameness.

Translation can preserve a target function while reorganizing its means. It can also alter the function itself. A welcoming conversation conducted for an individual's convenience may become a standardized triage intake governed by performance targets. Some original benefits might persist, while opportunities for open-ended engagement decline or new safety checks become available. Claims of preserved practice require a specified evaluative domain: accessibility, autonomy, safety, workload, or another relevant dimension. Without such specification, a declaration that a practice was successfully adopted is often underdetermined.

The process may be contested. Source participants can disagree about which elements are essential, and receiving participants may correctly identify restrictions that were previously ignored. A recipient may value a practical resource while rejecting a social expectation attached to it. Translation therefore raises questions of voice, consent, epistemic authority, and displaced labor. These questions are not resolved by administrative permission to copy a manual. Cross-jurisdictional comparisons further require a distinction between general questions about lawful coordination and the binding rules of any particular legal order; neither is supplied by the fact of transfer alone.

18.5 Recombination, Substitution, and Distributed Adoption

Several trajectories may occur together. A receiving network might combine an inherited volunteer training method with its own referral protocol, substitute a new communications tool for a discontinued one, and distribute tasks previously concentrated in one coordinator. The resulting arrangement may be genealogically related to more than one predecessor. When sources and recipients interact repeatedly, the distinction between sending and receiving sites can also change. The historical account should therefore allow multiple antecedents, partial contributions, and reciprocal modification.

Recombination cannot be inferred merely from organizational merger or co-location. Sharing a building need not create a coordinated practice. A new common label can obscure distinct teams that continue independently. Conversely, two organizations may jointly maintain an accessible assistance route while formally separate. A process-centered inquiry asks whether information is timely, tasks are actually covered, participants are competent, necessary authorizations remain effective, and failure paths have been addressed. The features relevant to a particular service need justification and should not become a universal checklist of institutional success.

Substitution deserves similar caution. Replacing a volunteer with paid staff, or paid staff with volunteers, can alter professional accountability, training requirements, labor burden, continuity, and the range of duties that may legitimately be performed. A replacement's ability to reproduce the visible output establishes only one aspect of the comparison. The larger transfer question concerns what relational capabilities, protections, resources, and responsibilities are retained, newly produced, or lost. A description of substitution should never be treated by itself as a justification for transferring mandated duties to people lacking the relevant authority.

18.6 Institutional Naming and the Persistence of Practice Labels

Institutional labels are historical artifacts with practical effects. A program name may be retained through organizational changes to secure recognition, facilitate navigation, preserve fundraising commitments, or signal continuity. The same label can refer to changing participant populations, operating boundaries, budgets, professional interfaces, and service purposes. A historical investigator should document this semantic trajectory, because classifications shape which records are retrieved and which comparisons appear plausible.

An announced relocation, relaunch, accreditation, or adoption can be reliably evidenced as an announcement even when evidence of actual service reproduction is absent. The difference is substantial. A memorandum of understanding may describe an intended referral relationship without showing that a recipient could use it. Records of completed referrals provide stronger performance evidence, yet may conceal unserved cases, consent problems, or burdens absorbed informally. Archived totals may increase because a reporting category expands while effective access remains stable or declines. Such possibilities warrant direct investigation rather than automatic skepticism of all institutional claims.

Manifestation-level changes can become causally consequential. A new category can make some contributions count for training credit while excluding another form of assistance; a revised public description may alter demand or participant expectations. The representation is therefore both evidence of a historical episode and potentially one of the mechanisms transforming later relations. The analyst should identify these two evidential roles separately to avoid confusing the official narrative of transfer with independent proof that the reported capability was reproduced.

18.7 Succession of Participants and Competence Maintenance

Many transfers depend on successive participants rather than unchanged organizations. A departing volunteer may teach a successor how to use a resource directory, handle a language-specific interaction, or determine when to seek professional guidance. The successor's competence may develop through repeated supervised performance, peer support, and access to well-maintained information. Historical continuity then depends on the conditions under which learning can take place and the ongoing work necessary to make transferred knowledge usable.

The transfer should not presuppose an obligation to remain available. A participant can withdraw without thereby defeating the legitimacy of all prior contribution. Good historical inquiry records whether the organization had funded, authorized, and staffed a pathway for competence reproduction; it does not assess continuity solely by whether one person continued to give unpaid labor. When a transfer relies on an indispensable unpaid mediator, the record should identify this concentration of dependence and the costs of creating alternatives. Questions of compensation, occupational boundaries, and duties are independently institutional and normative.

Continuity can also be distributed. A new team may reproduce the original service by splitting observation, information provision, and referral among multiple positions, provided the combined route remains usable, competent, and authorized. This configuration may be more robust against individual departure while more demanding in coordination and confidentiality management. Any resilience claim requires a bounded counterfactual or a sequence of observed changes; counting additional role titles does not itself establish resilient capability.

18.8 Authority, Consent, and the Limits of Institutional Borrowing

Practical knowledge and legal or organizational authority travel through different mechanisms. An experienced volunteer may be able to demonstrate a supportive task at a new site without receiving the mandate required to carry it out there. A receiving institution may approve a program design without obtaining individuals' consent to share personal histories used in the earlier arrangement. A transferable artifact may remain subject to intellectual-property terms, privacy obligations, professional boundaries, or other restrictions that cannot be inferred from a general promise to collaborate.

Descriptions of transfer should disaggregate the permission to observe, the competence to perform, the authorization to act, the consent of persons affected, and the responsibility to review adverse events. Their existence may depend on different actors and procedures. A documented authorization to copy a training document cannot substitute for the agreement of a participant to be assigned a task. Conversely, a participant's willingness to help does not establish the institution's right to delegate a reserved professional judgment. Such distinctions apply internationally as general design questions, while their legally binding specification varies among jurisdictions and institutional settings.

A historically defensible transfer assessment thus preserves unresolved legal, safety, and ethics questions instead of placing them inside a single efficiency score. A practice can be reproduced in the narrow sense of an observed sequence yet require redesign because its underlying authorization chain is defective. Protection of an individual may justify refusing a transfer even when the projected number of completed interactions would increase. The paper's formal descriptions are research aids only; they do not authorize an actual service, disclosure, or institutional change.

18.9 The Three GR Reality Levels in Transformational Histories

At the level of *ontological reality*, the ultimate standing of persons, practices, institutions, and system identity remains suspended. The present investigation offers no demonstration that a practice possesses an intrinsic essence that survives organizational movement. Nor does it assume that a system is reducible to an administrative identifier or a collection of documented events. Ontological restraint keeps identity questions open while allowing empirical and theoretical work on specific relations.

At the level of *relational reality*, practices are modeled as historically constituted, sufficiently stable configurations with potentially consequential capacities. Translation and recombination change relationships among participants, resources, rights of access, forms of competence, and opportunities for further action. A system's continuity may be supported by the reproduction of these relations even when its recorded institutional boundary changes. This is a provisional explanatory commitment within GR, not a proof that the representation captures all relevant social processes.

At the level of *manifestation reality*, training records, diagrams, announcements, narratives, databases, statistics, and recollections make partial trajectories available for observation and interpretation. Manifestations differ in coverage and can be strategically selected or unintentionally truncated. They may influence later decisions, reputations, recruitment, and resource access. Consequently, an inquiry must both assess whether a recorded change corresponds to transformed relational conditions and examine whether the act of recording itself contributed to the change. The links between the three levels are methodological relations to be investigated, not automatic deductions from one vocabulary to another.

18.10 Gradual Institutional Transformation and Reconfiguration Mechanisms

Institutional changes can accumulate through revised interpretations, selective implementation, additions to established arrangements, and redirection of existing roles. Mahoney and Thelen foreground incremental change and the role of ambiguity, agency, and distributional contestation in institutional development [43]. Their analysis supplies a disciplinary precedent for asking how changes emerge within continuing arrangements. The GR extension addresses the histories of supportive cooperation and uses its own task-bounded evidential restrictions.

For example, a nominally unchanged referral procedure may become practically different as one organization assumes gatekeeping, another ceases to maintain current contacts, and participants rely increasingly on an informal translator. The change may unfold without a sudden legal reform or a recognized institutional transfer. Conversely, a highly visible structural reorganization can leave key pathways of support largely intact. Historical reconfiguration should therefore be evaluated through alterations in relation-specific functions and access, not exclusively through the magnitude of administrative announcements.

Different mechanisms can yield similar appearances: deliberate redesign, adaptive learning, resource scarcity, shifting professional regulation, imposed consolidation, unrecorded informal work, and changes in who is counted. An observed improvement after a merger does not establish that the merger caused the improvement. A deteriorating service after transfer may reflect a contemporaneous demand shock rather than lost institutional memory. Process evidence, alternative explanations, and bounded counterfactual comparisons are needed before stronger causal interpretation. The paper distinguishes these possible mechanisms without pretending that the conceptual typology identifies one in a particular historical case.

Transfer selection, adaptation, and genuine uptake. An institution capable of adopting a transferred practice may already be more competent, better funded, or better connected than those that decline it. Its subsequent outcomes cannot be attributed to the transfer without examining these selection processes. A documented mechanism requires an identifiable carrier or translation channel, evidence that the receiving institution acquired the relevant practical competence, and observation of its use under the receiving institution's actual permissions and task conditions. A transferred manual with stable labels but no workable language-access procedure supports documentation continuity, not functional reproduction. Conversely, an institution may improve performance through its own concurrent reforms while a borrowed procedure is merely present. Histories of failed or partial adoption are useful because they distinguish symbolic affiliation from access, skill uptake, and authority to act. The identity of a successor institution remains a separate multidimensional judgment.

18.11 Temporal Ordering, Delays, and Interim Arrangements

Transfer trajectories have stages that may overlap: decision to change, preparation, withdrawal from an existing arrangement, training, trial operation, correction, routine service, and possible further adaptation. An administrative transfer date can occur before the receiving practice is operational. An outgoing network can persist informally after closure of its program budget. Comparing two institutions at their formal reporting dates may therefore overlook the interval during which a needed capacity was unavailable or sustained by unrecognized participants.

Time matters differently for different actors. A two-week gap in a low-frequency cultural program may be manageable, while the same interruption in an urgent accessibility arrangement may be consequential. A slow licensing or supervision process may be appropriate for a sensitive task even when participants experience service delay. Short-term performance gains may draw down the tacit knowledge and goodwill required for subsequent reproduction. Analysts should specify response deadlines, preparation periods, maintenance cadence, and relevant exposure to interruption, rather than imputing a universal organizational timescale.

A stronger historical claim requires dated evidence of both the withdrawal or alteration of prior conditions and the establishment of replacement conditions. Some traces, such as a future plan, are evidence of intended change, while other traces, such as authorized transactions, show particular performances. Missing intermediate records should lead to an unresolved interval, not a fabricated smooth transition. A continuous-looking aggregate service series can conceal participant-specific interruptions and changes in the kinds of support performed.

18.12 Historical Identity and Multidimensional Continuity

A proposition that a practice or system continued after institutional transfer depends on a declared *identity question*. The question may concern continuity of a named program, task purpose, ability to support a class of needs, participant relationships, governance, or historically traceable organizational lineage. Two arrangements can be continuous in one of these respects and discontinuous in another. They may also coexist for a period or descend from multiple predecessors. An equivalence label supplied by an administrative database cannot determine a unique relation of identity across all these dimensions.

For a bounded research purpose, identity can be operationalized through documented lineage plus task-relevant similarities and differences. Its dimensions may include continuity of recipients' access, reproducibility of competent acts, authorized roles, relationships of trust, operational dependencies, and mechanisms of maintenance. Identity here is a claim with evidential criteria, not a metaphysical fact deduced from a structural score. Similarity without historical linkage may reflect independent innovation; lineage without contemporary capability may reflect residual naming or archival preservation.

A central methodological risk is allowing the outcome of interest to define identity retrospectively. If a researcher decides that a program continues whenever outcomes improve, favorable cases become continuous by construction. If identity is defined solely by a legal entity, useful practice reproduction outside that entity disappears from view. A research design should specify its criteria before classification and report sensitivity to alternative, defensible criteria. The same transfer can be coded as legal discontinuity, functional partial continuity, and changed relational governance without inconsistency.

18.13 Typed Transfer Dossier and Partial Historical Correspondence

A formal representation can prevent heterogeneous evidence from being collapsed into a single inherited-program category. Let I be a specified historical comparison interval and q a bounded task or capability of interest. Let s and r denote candidate source and receiving configurations, which need not coincide with whole organizations. Equation 34 defines a typed, evidence-indexed *transfer dossier* for this research purpose.

$$\mathcal{T}_{q,I}^{s,r} = (E_{q,I}, P_{q,I}^{s,r}, K_{q,I}, R_{q,I}, M_{q,I}, C_{q,I}, F_{q,I}, D_{q,I}, H_{q,I}, B_{q,I}, \Pi_{q,I}, U_{q,I}). \quad (34)$$

Here E specifies the task, actors, site boundaries, and dated episodes; $P^{s,r}$ describes the source and receiving practice configurations; K records carriers of practical and documentary knowledge; R records resource, skill, and participant relations; M covers relevant mandates, safeguards, and consent; C traces candidate continuity of access and task-capable coordination; F describes revised practices, replacements, and recombinations; D records dependence, delays, and maintenance arrangements; H identifies claimed historical lineage and possible multiple predecessors; B records discontinuity, exclusion, and transferred burdens; Π retains provenance, coverage, and competing mechanisms; and U retains unresolved historical, ethical, and legal questions. The letters identify typed fields rather than commensurable variables, and the dossier carries no assumption of comprehensive observation.

A proposed *correspondence* between source and receiving activities is a partial relation over explicitly defined task features. It may link a knowledge carrier without linking a mandate, or link an authorized referral route without preserving the social relations that previously made it accessible. Accordingly, correspondence is not assumed to be a total map or an isomorphism between organizational systems. Where source and receiving actors disagree about equivalence, the dossier should retain the disagreement and its provenance. Connecting this record to the path, resource, value, and power dossiers introduced earlier in the paper requires compatible actors, tasks, consent conditions, time intervals, and evidence scopes. A shared word such as *service* does not establish those compatibility conditions.

18.14 Guarded Claims of Transfer, Continuity, and Reconfiguration

For a claim c that a specific task capability was historically transferred, the researcher can examine seven claim-relative guards. The first specifies comparable actor, task, and temporal boundaries; the second requires an adequately supported source capability rather than a source label alone; the third identifies the historical pathway, including the carriers, participants, and dated actions at issue; the fourth assesses receiving-side competence, access, maintenance, and necessary permission; the fifth compares performed action and sustained availability without inferring either solely from a plan; the sixth examines contrary evidence, missing histories, alternative sources, and shifted burdens; and the seventh constrains the asserted causal, identity, legal, and normative conclusions to what the case evidence permits. Each guard may require different records depending on the claim and setting.

Equation 35 states a deliberately conservative reporting convention. It is intended for a *bounded candidate proposition*, rather than for establishing that an institution as a whole is legitimate or that a system has a metaphysically unique identity.

$$\text{Transfer}_{q,I}(c) = \begin{cases} \text{supported candidate,} & \text{if each necessary } g_i(c) \text{ has adequate evidence,} \\ \text{contradicted,} & \text{if decisive evidence defeats a necessary } g_i(c), \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (35)$$

A source announcement may support the limited claim that transfer was proposed; it does not satisfy the guards for sustained reproduction of capability. A documented failed attempt does not disprove that some narrower knowledge carrier was successfully passed on. Crucially, a practice missing from a later archive is not shown to have been lost. An asserted loss requires affirmative evidence of discontinued access or necessary conditions under the specified inquiry. Positive and adverse findings should each retain their bounded object, so the same history may support documentary transfer, contradict continuous service access, and leave institutional lineage unresolved.

18.15 Evidence Audit of Transfer and Reconfiguration

Table 18 presents ten candidate evidence objects. The table is an audit of claim structure rather than authorization to gather personal records. When traces contain sensitive narratives, investigators should evaluate necessity, consent, confidentiality, safeguarding duties, and the appropriateness of using synthetic rather than identifiable reconstructions.

Table 18: Evidence objects and inferential boundaries for practice transfer and system reconfiguration

Evidence object	Possible traces	Principal interpretive boundary
Bounded source capability	Dated performed tasks, supervision records	A named program need not indicate operating capability.
Historical transfer path	Handover events, meetings, participant accounts	Planned exchange and completed exchange differ.
Knowledge carriers	Training artifacts, witnessed demonstrations	Copied instructions need not convey tacit judgment.
Receiving competence	Qualified practice, feedback, supported trials	A single success need not establish reproducibility.
Mandate and consent	Scope-specific approvals, safe information paths	Consent to one use does not authorize later disclosure.
Access and continuity	Time-stamped use, waiting and refusal records	Aggregate totals can conceal participant-specific gaps.
Adaptive alteration	Versions, justified task redesign, situated records	Changed procedures need not imply changed outcomes.
Lineage and alternatives	Dated predecessor relations, rival sources	Similarity does not prove descent from one source.
Maintenance and burden	Updated directories, labor and resource histories	Sustained output can rely on hidden or displaced work.
Counterevidence and scope	Conflicting records, sampling limits, legal questions	Missing records do not prove failed transfer or continuity.

A comparative study should make source-availability differences visible. A highly documented institution can appear to have undergone more transformations than a poorly documented one. A record of one failed handover may be more informative than many undated success statements. Documents produced as part of public reporting may differ from those generated for safe service coordination. Defensible inference depends on the role, incentives, completeness, and temporal fit of such evidence. A bounded unresolved result is often preferable to the false precision of labeling an entire organization either continuous or replaced.

18.16 Constructed Transfer Histories and Comparative Implications

Case A: Manual transfer with interruption of practical competence. A hypothetical neighborhood assistance group gives another organization its training manual and a contact directory. The receiving organization publicly adopts the program name but cannot yet train participants to handle exceptions and has no approved way to update the directory. Several introductory conversations occur, while a required referral pathway remains inaccessible for two months. The case supports a distinction between documented material transfer and incomplete capability reproduction. It also illustrates why a time-bounded service interruption may coexist with eventual competent adaptation. In a real history, the dates, task coverage, authorization conditions, and participant experience would need verification; no causal result can be derived from the fictional sequence.

Case B: Service continuity with organizational discontinuity. A constructed volunteer association dissolves, but its former participants, a professional partner, and an independent community group jointly create a new authorized support route. Some relationships of trust continue, a new safeguarding procedure is introduced, and the earlier legal entity ceases to exist. The history is discontinuous under the identity criterion of legal incorporation, potentially continuous for selected participant relationships, and partially continuous for task-capable practice. It would be misleading to assert that the organization survived. It would be equally misleading to conclude that the supported capability disappeared merely because the original association ended. The case isolates identity criteria without predicting any real organization's fate.

Case C: Administrative merger with reconfigured control. Two fictional aid coordinators consolidate their databases and publish a unified service map. Common requests are routed more quickly, while a small-language support route now depends on one centrally authorized interpreter. The merger increases visible network coverage yet concentrates a previously distributed gate. A later independent training channel could redistribute some dependence, subject to safe authorization and maintenance resources. The case distinguishes structural consolidation, improved average access, unequal effects, and changes in power over alternatives. Neither the advantages of unified reporting nor the risks of centralization establish the merger's net normative standing.

The constructed cases suggest a limited comparative strategy. Investigators should separately report what moved, what was competently enacted, what remained accessible, whose responsibilities changed, and which system identity criteria were invoked. Where several predecessor lineages coexist, histories may be better represented as partial and contested continuities than as a singular succession. The same records can support different, noncontradictory findings about administrative, functional, and relational change. This account prepares the separate investigation of dissolution, residual capacities, and successor relations, whose analytical distinctions will be developed in the following section. The present section supplies neither a universal transfer-success metric nor a claim that organizational transformation is necessarily beneficial, necessary, or justified.

19 Dissolution, Failure, Residual Capacity, and Successor Relations

The historical study of voluntary support requires an account of endings as well as formation and reproduction. This section specifies the objects and evidential boundaries of organizational dissolution, task interruption, capability loss, residual relational capacity, and successor formation. Its objective is to establish a vocabulary for comparing different endings without inferring that the end of a named organization is identical to the end of the relations it once supported. The argument combines historical reconstruction, analytically bounded formal notation, and constructed comparisons. It examines changing units of description, pathways of closure, disputed evaluations, retained knowledge, successor relations, and competing explanations. The underlying generative relational (GR) proposition is modest: capacities are historically conditioned by relationships among people, practices, material arrangements, permissions, and interpretive categories; different components may survive or fail at different times.

19.1 Historical Units of Ending and Continuation

A termination claim requires a specified object. A legal entity may cease to exist; a funded programme may end while its parent organization continues; a volunteer roster may dissolve while former members maintain informal assistance; a particular access pathway may be discontinued although an equivalent service is provided elsewhere. These descriptions involve different units, so their dates and evidential requirements should be kept separate. The relevant unit might be an organization, task arrangement, coordination mechanism, resource channel, authorized role, or historically situated relation among participants. Selection of the unit is a substantive research decision rather than a neutral consequence of an archive's naming conventions.

Organizational ecology has examined the founding, mortality, and variation of organizational forms at a population level [36]. The population-level subject of this literature differs from the case-specific fate of an authorized volunteer task or accessible aid relationship; the latter is the local reconstruction proposed here. The present paper draws a narrower methodological lesson from that literature: counts of organizational exits depend on how entities, boundaries, and endings are defined. An administrative termination does not by itself answer whether an accessible assistance relation continued. Conversely, an enduring brand or registration number does not show that beneficiaries can still obtain support. A careful record therefore allows organizational survival and practice discontinuity to coexist, and also allows an organizational closure to accompany continued interaction beyond the original institution.

A historical comparison should identify the observation window and the population whose opportunities matter. During an interval of closure, occasional informal acts may occur without constituting a continuously available service. A successor might accept only some earlier beneficiaries or tasks. The historian should report these distinctions in the terms relevant to the inquiry rather than assigning a single binary survival variable to every component of the case.

19.2 Dissolution Processes and Temporal Boundaries

Dissolution may be announced, contested, negotiated, enacted, revised, and remembered through distinct episodes. Budget exhaustion, withdrawal of a host's authorization, departure of essential personnel, loss of a meeting place, a change in professional requirements, and voluntary completion of a finite project can generate superficially similar closures. Multiple processes may intersect; one precipitating event need not explain their timing or distribution of consequences. Reconstructing a sequence requires contemporaneous records where available, the perspectives of differently situated participants, and explicit alternatives to the proposed causal account.

Sutton's work on organizational death foregrounds disbanding and reconnection as processes worthy of study [68]. The present GR extension concerns the possibility that relations carrying practice knowledge or mutual commitments may continue after a formal ending. The article is cited as an antecedent for the process orientation, not as a demonstration of the particular types or consequences hypothesized here. Its detailed findings require separate passage-level verification before stronger borrowing.

At least four temporal markers may need different dates: the last authorized activity, the last actual task performance, formal dissolution, and the end of maintenance or redirection obligations. An organization might stop accepting new referrals before notifying existing participants. Its archived website may persist after assistance stops; former volunteers may continue answering inquiries after the programme's official end. Accordingly, a historical timeline should distinguish announced intentions, implemented closure, observed continuation, and retrospective classification. Where sources do not permit an exact date, an interval-censored or explicitly unresolved boundary is preferable to artificial precision.

19.3 Success, Failure, Completion, and Evaluative Standpoints

The word *failure* denotes an assessment relative to an object, temporal horizon, and criterion. A finite initiative may complete its authorized purpose and then close. A programme may achieve a short-term target while depleting volunteers or eroding a necessary support relation. A continuing organization may fail to meet its participants' expectations. These cases make the evaluator and evaluation domain indispensable. Relevant domains include access, safeguarding, task completion, equity, freedom to withdraw, organizational commitments, learning, and the capacity to reproduce assistance under changing circumstances.

Institutional performance records may establish a count of completed tasks, yet a different evidential inquiry is needed to assess unmet demand, transferred workloads, experienced dignity, or possible harms. An actor's dissatisfaction is a historically important manifestation of evaluation even where the analyst cannot endorse its factual premises. Likewise, a formal declaration of success is evidence of an institutional judgment rather than sufficient evidence of every claimed consequence. Competing perspectives deserve faithful attribution without presupposing that their standards are identical or directly commensurable.

An account of ending must also permit *justified termination*. A programme may be discontinued because continuing would expose participants to unacceptable demands, fail to meet safety conditions, or displace appropriately qualified work. Under such circumstances, preserving the formal programme is not necessarily preferable to closure. Whether a decision was justified requires case-specific normative reasons and, where applicable, legal analysis. Historical persistence, organizational efficiency, and ethical warrant remain analytically distinct throughout this section.

19.4 Ontological Suspension and the Three GR Reality Levels

At the ontological level, the GR framework suspends claims that an organization or an assistance relation has an ultimate, context-independent essence. A named entity is an important object of historical description, but naming does not resolve metaphysical identity. The section's formal variables therefore record possible continuities and discontinuities without presupposing that a single organization is a substance whose properties can be exhaustively carried into a successor.

At the level of relational beings, investigators can examine historically constituted configurations that acquire sufficient stability and causal efficacy to condition action. Competence learned through cooperation, access to a trusted intermediary, continuing obligations, and resource-sharing arrangements can persist or disappear even as institutional forms change. An ending can transform these relational beings, terminate a particular configuration, or separate components that had formerly operated together. Causal efficacy is a contextual hypothesis requiring process evidence, not an automatic consequence of conceptual description.

At the manifestation level, administrative registers, commemorative narratives, service labels, annual reports, archival classifications, and testimonials represent and sometimes reshape the relation being studied. A programme may be listed as closed because its budget code was abolished, while another register calls the successor service a new project. Such documentary differences can affect access, memory, recruitment, and responsibility. The investigator should distinguish what a record states, how it was produced, what it omits, and whether its publication influenced later participation. This three-level separation prevents a reporting category from being mistaken for an exhaustive account of relational existence.

19.5 Residual Capacity and Situated Availability

Residual capacity denotes a bounded, historically grounded possibility of performing or supporting a specified task after a configuration has ceased operating in its earlier form. It can be embodied in participants' skills, retained directories, accessible materials, relationships of trust, technical infrastructure, or preserved coordination habits. Such resources may be dormant, costly to reactivate, restricted to a few actors, or subject to consent and permission. Therefore the presence of a carrier supports a weaker claim than the continued availability of a functioning service.

A residual skill may depend on a trained person's choice to participate. A preserved document can become inaccurate; a communication channel may require new authorization. A remembered practice might be useful in one setting and unsafe in another. Capacity should thus be indexed to task, people, context, time, resources, and acceptable conditions of action. The distinction permits an investigator to document real legacies without converting those legacies into unsupported promises of reactivation.

A recipient who once depended on a now-ended programme may experience a service gap although former volunteers retain substantial expertise. That gap is historically consequential in its own right. The analysis should also record burdens imposed by informal continuation, particularly when official support has ended while former coordinators still receive requests. Recognition of residual capacity must not create a presumed obligation of indefinitely unpaid availability. Ethical concerns about consent, workload, and fair responsibility arise separately from the evidential proposition that a particular capability is retained.

19.6 Relational Memory, Archives, and Recoverable Traces

Relational traces can include documentary records, habitual practices, shared language, remembered routes of referral, and tacit expectations about whose advice is trustworthy. Walsh and Ungson's account of organizational memory distinguishes acquisition, retention, and retrieval and draws attention to possible uses and misuses of retained information [76]. This literature motivates analysis of retrieval conditions; it does not show that every stored trace amounts to a usable collective memory or a legitimate basis for contacting past participants.

The historical survival of an archive differs from lawful or practical accessibility to it. Records can be destroyed according to justified retention policies, preserved but inaccessible to former members, or distorted through changes in software and metadata. The availability of a document is itself a relation among custodians, interfaces, permissions, and intended uses. Especially where a trace contains sensitive information, archival continuity should be assessed together with confidentiality, consent, lawful purpose, and protection against secondary misuse. Jurisdiction-specific duties can vary, and this paper does not formulate universal retention rules.

Memory may also persist through disagreement. Participants can remember divergent purposes or reasons for ending a project. Such divergence is analytically informative: it may reveal competing evaluations, unequal information, or retrospective reinterpretation. A single official historical summary can suppress these distinctions. Stronger lineage claims therefore need independent provenance, dated corroboration, and acknowledgement of missing or conflicting testimony. Where records have been selectively retained, apparent continuity might be an artifact of what institutions chose to preserve.

19.7 Successor Relations and Multiple Historical Lineages

Successor formation can involve authorized transfer of responsibility, independent appropriation of a practice, migration of participants, redistribution of equipment, or the renewal of a previously interrupted access path. A successor need not be the formal legal replacement of the predecessor. Conversely, legal succession may occur without reproduction of the specific capability being investigated. The researcher should therefore identify the relation alleged: continuity of mandate, participants, knowledge, material resources, practical coordination, recipient access, or publicly claimed institutional identity.

Several sources may contribute to one successor arrangement. A new network may combine training inherited from a dissolved association, funding from a third institution, and oversight from a professional body. The resulting activity has multiple partial genealogies. Such a case is better represented as a set of evidence-indexed historical relations than as a unique predecessor-successor arrow. Recombination also means that a successor can produce novel capabilities or exclusions: preservation of an earlier component does not settle the identity or quality of the composite arrangement.

Claims of succession are often politically consequential. Invoking a predecessor's reputation may facilitate trust or funding, yet may obscure new gatekeeping, altered purposes, or contested responsibility. Former participants may object to uses of the predecessor's name; others may welcome renewed public visibility. A historical account should separate succession as declared, succession as operationally demonstrated for a task, and succession as legally or normatively authorized. Those relations may overlap, but the evidence supporting one cannot simply be substituted for evidence supporting another.

19.8 Task Coverage, Continuity Gaps, and Affected Participants

Service continuity is a participant-relative and task-relative proposition. An ending may have different effects for people who need language interpretation, accessible transport, specialized referral, or routine information. A successor may offer nominally similar services at a different time, location, eligibility boundary, or medium. Its existence is therefore inadequate evidence that each affected group retains a feasible and acceptable path to support.

Historical reconstruction should specify the interval between old and new arrangements, the scope of unmet need that can reasonably be observed, the channels through which changes were communicated, and available alternatives. Where personal information is involved, examining service gaps must respect consent and appropriate governance. Retrospective surveys may privilege people who remained connected, while those most affected by discontinuity may be hardest to locate. Sampling and missingness therefore condition claims about how closure was experienced.

A named successor can inherit expectations without inheriting competence or jurisdictional permission to perform the task. Conversely, a network of independent participants may maintain part of an assistance pathway while lacking resources for sustained operation. Both cases require fine-grained descriptions of who could act, for whom, under which safeguards, and with what degree of reliable accessibility.

The framework treats interruption as a historically important state rather than an empty space between formally recorded programmes.

19.9 Failure Mechanisms and Competing Causal Histories

Potential mechanisms of dissolution include resource withdrawal, role concentration, exhaustion, contested authority, coordination breakdown, adverse policy change, loss of trust, altered demand, and the withdrawal of voluntary participation. Each mechanism implies different observations. For example, a record of depleted funds might support a material-constraint hypothesis, while a contemporaneous record of unfilled but funded roles could point toward a distinct coordination or labor condition. In multi-causal cases, investigators should preserve the sequence, mutual conditioning, and possible feedback among mechanisms.

A closure date cannot identify its cause. An apparently abrupt event may follow years of declining access or cumulative maintenance deficits. A gradual phaseout can result from a deliberate successful handover rather than progressive dysfunction. External competition, changes in eligibility, or reclassification of the entity can also alter the record of organizational mortality without revealing the same underlying process. Such alternatives matter because the GR framework is intended to examine relational production of outcomes, not to impose one favored causal mechanism on every ending.

The appropriate evidential design may combine minutes, budgets, task logs, dated correspondence, oral history gathered with suitable permissions, and comparisons with plausible alternative trajectories. Correlation between resource depletion and closure alone is insufficient to prove direction of causation: anticipated closure can itself reduce funding and volunteer recruitment. Likewise, disappearance from a registry can reflect a classification change. A causal claim requires evidence that discriminates among rival pathways, with uncertainty preserved whenever the available sources do not do so.

End-state selection and survivor narratives. Official closure records can overrepresent administrative causes, while interviews with remaining participants may overrepresent capacities that survived. A defensible account of failure examines what outcome was supposed to be sustained, who defined success, when closure became likely, and which services or obligations ended versus moved. Declining participation may help cause organizational dissolution or be an anticipatory response to an already announced closure; a chronology must discriminate the directions where records allow. A successor that serves the same population after a closure may reflect transfer of prior relational capacity, independent recruitment, or a new policy mandate. Evidence of personnel continuity, usable knowledge, authorizations and task coverage should be inspected separately. An unobserved residual network is neither proved absent nor presumed effective merely because former participants kept contact.

19.10 Exit, Consent, Workload, and Residual Obligations

The cessation of collective support can create obligations to communicate, protect information, manage resources, or arrange transition pathways, depending on the relevant relationships and rules. These obligations require independent ethical and legal assessment. An important analytic distinction separates the existence of a service gap from an inference that a particular volunteer must fill it. Voluntary participation is bounded by consent, capacity, institutional conditions, and the possibility of withdrawal; historical dependence cannot on its own establish an indefinite personal duty.

Some closures shift burdens onto people least able to refuse them. Former volunteers may continue receiving messages, family members may have to provide unpaid navigation, or professional staff may absorb unplanned coordination. A successor can claim an inherited resource without making provision for its upkeep. Even when outputs appear stable, such burden transfers change the relational conditions through which they are produced. Reproductive work should be documented as work, with attention to its timing, visibility, and distribution rather than treated as a costless residue of commitment.

Legitimate exit and responsible transition can both matter. A bounded transition plan might notify participants, establish an authorized referral channel, specify custodianship of records, and delimit the

obligations that participants voluntarily accept. Whether such an arrangement is adequate depends on the risks and governing rules. The present theoretical reconstruction identifies these questions without purporting to issue institutional instructions or resolve them under a particular jurisdiction's law.

19.11 Power, Recognition, and the Politics of Organizational Legacy

Power relations shape whose account of an ending becomes official, who controls the records, which contributions are credited, and whose alternatives remain visible. A funding institution may describe a closure as consolidation while service users experience exclusion; former coordinators may represent it as strategic renewal while frontline participants report exhaustion. Such disagreements need not make any single actor's description wholly false. They indicate that accounts of ending occupy different positions within a historically differentiated network of access and authority.

The capacity to choose whether, where, and by whom a practice continues is unevenly distributed. Actors controlling facilities, licenses, repositories, or public communication channels can constrain possible successors even without issuing an explicit prohibition. Other participants may respond by building alternative networks, asking for reconsideration, or withholding expertise. These processes connect the present section to the earlier analysis of power and counterweights, while the evidential inquiry must still show the relevant decisions, feasible alternatives, and constraints in each case.

Public recognition can alter the value of a residual resource. Naming a programme as a successful legacy might attract a new carrier, but it can also impose expectations on people who had intended to leave. Declaring an organization a failure may obscure valuable contributions that persisted outside its formal boundaries. An ethically responsible historical account separates the capacity of an actor to impose a legacy narrative from the truth, utility, and justice of that narrative.

19.12 A Typed Dossier for Dissolution and Successor Relations

A compact dossier helps prevent an organizational end date from absorbing several distinct historical variables. Let q denote a bounded task or support capability, I a specified observation interval, and o the focal predecessor configuration. Candidate successors form a context-dependent set S , which may be empty, plural, disputed, or incompletely observed. Equation 36 defines a typed record of claims and their available evidence.

$$\mathcal{D}_{q,I}^{o,S} = (E_{q,I}, Z_{q,I}, A_{q,I}, K_{q,I}, R_{q,I}, M_{q,I}, C_{q,I}, L_{q,I}, H_{q,I}, B_{q,I}, \Pi_{q,I}, U_{q,I}). \quad (36)$$

Here E gives dated entities, actors, task boundaries and episodes; Z specifies the form and timing of ending; A records actual task access and interruption; K records residual skills, documentary traces and retrieval conditions; R describes carriers, resources and maintenance; M contains mandates, consent and safeguards; C describes re-enactment capability under specified conditions; L records possible successor paths and partial lineage; H captures disputed narratives and participant-relevant histories; B identifies losses, exclusions and displaced burdens; Π preserves evidence provenance, coverage and competing mechanisms; and U contains unresolved identity, causal, ethical and legal matters.

The fields are heterogeneous descriptions rather than quantities to be added. In particular, the existence of K does not guarantee C , and a claimed succession relation in L does not establish M or demonstrate recipient access in A . When the predecessor has multiple partially overlapping boundaries, E should retain them rather than forcing a unique entity. The dossier may be linked to earlier transfer, resource-renewal, and power records only where actors, tasks, time horizons and relevant permissions are mutually compatible.

19.13 Guarded Historical Claims and Three-Valued Evaluation

A claim about an ending should specify its exact object: a registered organization terminated, a service became inaccessible, a competence was lost, a residual capability remained, or a successor reproduced a

Table 19: Evidence audit for dissolution, residual capacities, and successor relations

Object	Candidate trace or comparison	Relevant uncertainty
Focal boundary	Dated organizational and task definitions	Changes of category or scope
Closure process	Announcements, activities and final decisions	Intent versus actual cessation
Task access	Dated attempted and completed requests	Unobserved or excluded users
Residual skill	Documented competence and its current carriers	Choice, decay and scope of use
Memory	Records, custodianship and retrieval route	Permission and archival selection
Material resources	Transfer logs and maintenance conditions	Usability and ownership claims
Successor activity	Independently documented performed tasks	Nominal adoption versus reproduction
Authorization	Mandates, consent and safeguards	Jurisdiction and task limitation
Distribution	Burdens, withdrawal and access differences	Unrecorded costs and standpoints
Rival histories	Chronologies, alternatives and counterevidence	Reverse causation and missingness

bounded task. These propositions may have different evidential states within the same history. Seven guards help delimit a candidate claim c : g_1 identifies the unit and time boundary; g_2 verifies the event or trajectory of ending; g_3 specifies the claimed capability and its prior availability; g_4 establishes the relevant traces, carriers, permission and post-ending accessibility; g_5 traces any successor or reactivation pathway and its performed operation; g_6 assesses missing evidence, rival explanations, burden shifts and contradictory observations; g_7 bounds causal and evaluative inferences to what the evidence can justify.

Equation 37 offers a cautious convention for classifying such propositions. Its guards are evaluated with respect to the particular claim and evidence domain, rather than used as a mechanical score of institutional success.

$$\text{EndState}_{q,r}(c) = \begin{cases} \text{supported candidate,} & \text{if each necessary } g_i(c) \text{ is adequately evidenced,} \\ \text{contradicted,} & \text{if decisive evidence defeats a necessary } g_i(c), \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (37)$$

A verified closure notice may support the statement that the institution announced a termination, while leaving actual task access unresolved. Reliable observation of a continued informal assistance relation may contradict the claim that every supportive interaction ended, but it does not prove that authorized programme services survived. A documented successor's existence establishes neither transfer of responsibility nor functional equivalence without further evidence. The present convention is an interpretive research device. It neither estimates probabilities nor turns a set of records into a proof of relational identity or normative legitimacy.

19.14 Evidence Audit of Endings, Traces, and Successors

Table 19 identifies claim-specific objects that can discipline later historical research. The table is an audit agenda rather than a list of universally necessary documents; sources and protections differ among settings. Potentially sensitive participant histories should be examined only with appropriate legal and ethical arrangements.

Evidence about service recipients may be partial because those who lost access can become absent from institutional records. Evidence about former volunteers can likewise overrepresent those still affiliated with a successor. The investigator should describe who could enter the archive and whose absence remains unmeasured. Provenance constraints also matter when an institution retrospectively merges two formerly independent projects into a single category. A historical audit benefits from retaining original categories alongside later mappings, thereby exposing classification effects rather than concealing them.

19.15 Constructed Histories of Closure, Residual Capacity, and Replacement

Constructed history A: completed finite initiative with preserved learning. A volunteer team is created for a fixed period to assist with the translation of public information. After completing the authorized task, the team dissolves and its communications list is closed. Members retain training, and the materials remain accessible under an appropriate licence. The documented end is compatible with successful task completion and residual knowledge. It does not imply a continuing translation service, and any later reuse requires new attention to accuracy, maintenance and context. A claim of failed organizational survival and a claim of successful bounded completion could both accurately describe the event under different criteria.

Constructed history B: administrative survival with practical loss. An association retains its legal identity and public website after losing essential supervision and a task-specific facility. Its reports describe a continuing programme, but dated requests reveal that referrals have not been completed for an extended interval. Skilled former volunteers remain willing to advise informally; professional safeguards and authority for the original work are absent. Organizational persistence, residual knowledge, informal advice and a gap in authorized service must be described separately. The lack of access is not cured by the continuing institutional name.

Constructed history C: closure with plural successor pathways. A support network closes after a resource contract ends. Participants transfer a non-sensitive directory to one authorized organization, train volunteers in a second organization, and maintain a separately consented peer network. A later institution claims to be the original programme's successor. Some former recipients regain access, others face new eligibility rules, and tasks once performed by a professional are no longer covered. Multiple histories of inheritance, loss, adaptation and new generation are simultaneously plausible. The evidence should identify each pathway without granting any single actor an exhaustive claim of institutional identity.

These cases are deliberately invented. They demonstrate possible combinations of administrative endings, continued traces, capability losses and successor claims. They do not provide observations of any specific hospital, aid programme, legal system, or group of volunteers. Their analytical utility lies in exposing claims that can differ within one trajectory and in identifying questions for later investigation.

19.16 Countermodels, Sensitivity, and Research Limitations

Several countermodels can defeat overextended readings of historical endings. An archive may record disappearance where a service was merely reclassified; an apparent successor may have developed its practice independently; a shared participant may provide no reliable evidence of institutional continuity; a retained manual may contain obsolete information; and a closure attributed to dwindling funds may have been planned before the funding decline. A continuing website can misleadingly indicate operation, while undocumented assistance can remain consequential without meeting standards for a reliable institutional service. Each possibility motivates different evidence rather than a single skeptical conclusion.

The classification is sensitive to the chosen time horizon, task, beneficiary population, and threshold of functional equivalence. Expanding an observation interval may uncover a later successor without eliminating a temporary period of unmet need. Tightening authorization criteria may reclassify informal continuation as residual activity rather than programme survival. These changes should be reported transparently. Comparisons across jurisdictions must begin with general questions of mandate, data stewardship, and responsibility, and only then examine whichever specific legal orders govern the case.

The formal dossier remains a preliminary vocabulary for research. It has no demonstrated causal identification, calibrated predictive capacity, or ability to settle the ethical significance of closure. More detailed scholarship on organizational death, memory, and population-level exit should be used with its original objects and methods intact. Later empirical work would require historical-source evaluation, explicit comparison cases, consent-sensitive methods where participants are involved, and independent treatment of relevant laws and ethics.

19.17 Historical Implications for Generative Relational Inquiry

An ending can release, destroy, preserve, redistribute, or reconfigure parts of a relational system. The historical significance of an act of support may therefore extend beyond the lifespan of the project that enabled it, while some consequences terminate earlier than the project's official existence. This account preserves the possibility of residual capacity without romanticizing unpaid continuity, and it recognizes loss without treating all closure as failure. It also makes successor relations investigable through task-specific evidence rather than organizational resemblance alone.

For the larger GR programme, dissolution clarifies how the three reality levels can diverge: ontological identity remains suspended; relational capacities and constraints are historically transformed; and archival manifestations can selectively preserve, distort, or actively condition later possibilities. A successor may reproduce an accessible task through new relations, or inherit a prestigious label while losing practical competence. The assessment must remain bounded by the participants and tasks at issue, the documentary basis, alternative causal histories, and independent normative questions.

The next section investigates how historical recognition and conditions of subjecthood become differentiated among heterogeneous participants. That inquiry will require special care when legal or moral subject status is contested. The present section supplies its historical antecedent: the end of a particular institutional relation can change who is recognized, who retains a voice, and whose contributions can be carried into a new configuration, without resolving the ultimate ontology of the participating beings or the legitimacy of subsequent arrangements.

20 Heterogeneous Subject Conditions and Historical Recognition

The historical analysis of voluntary support encounters differences in who may act, receive aid, express preferences, be represented, and acquire institutional recognition. These differences affect both the relational formation of support systems and the histories that can be recorded about them. This section identifies the relevant analytical distinctions for heterogeneous human and nonhuman participants without resolving their ultimate ontological status. Its objective is to investigate the historical constitution of recognition conditions, representation routes, participation opportunities, and asymmetries of causal and institutional position. The discussion proceeds through conceptual differentiation, the three generative relational (GR) reality levels, human contexts of supported participation, animal welfare and sentience, artificial systems, inter-system relations, evidential protocols, constructed histories, and limitations. The method is comparative and interpretive with a preliminary, evidence-indexed formal reconstruction. The normative and legal questions remain distinct from the descriptive assessment of causal efficacy.

20.1 Historical Subject Categories and Units of Analysis

A history of support requires a task-specific account of the units to which its claims refer. An individual may be a recipient of material assistance, an initiator of action, a contributor to interpretation, a holder of legal rights, an institutional representative, or several of these in a single episode. A group can occupy a collective role through a recognized procedure without acquiring the properties of each of its members. An animal may be affected by an intervention while having no entry in the institution's ordinary intake register. A computational system may coordinate information exchanges while the authorization and liability for its deployment remain allocated to humans or organizations. A common vocabulary of *participants* need not conceal these consequential differences.

For a bounded historical inquiry, the term *candidate subject position* identifies a question about the relations, experiences, claims, recognized powers, or responsibilities attributed to a specified unit at a given time. The term deliberately leaves open whether the unit meets any particular philosophical criterion of subjectivity. An account should also distinguish the object of inquiry from the units named by contemporary institutional classifications. A form labeled *beneficiary*, for example, can describe an administrative function while failing to register the person's contribution to planning, opposition, or the communication of need. Historical categories have authors, selection rules, and consequences.

The resulting inquiry is neither a hierarchy of kinds nor a declaration that differing entities bear identical rights. It is a method for reconstructing which distinctions did practical work in a particular history, who maintained them, and how they conditioned participation. Its comparative scope includes human–human, human–animal, human–AI, and AI–AI relations, with claims restricted to the evidence and criteria appropriate to each domain.

20.2 Causal Efficacy, Experience, Recognition, and Normative Standing

Several predicates often become compressed into the word *agency*. Causal efficacy concerns a system’s contribution to an observed change. Task competence concerns performance under specified environmental, temporal, and supervision conditions. Preference expression concerns signals attributable to an entity under an interpretation protocol. Experiential or sentient status concerns the capacity for subjective experience, where such a capacity is scientifically and philosophically at issue. Moral standing concerns the reasons for regarding interests or claims as ethically weighty. Legal personality, legal capacity, authorization, and responsibility concern distinct institutional and legal frameworks. Historical recognition concerns the practices through which a community or organization treats a unit as occupying one or more of these positions.

A scheduling system can have demonstrable causal effects on access to aid without thereby being established as sentient or legally responsible. Conversely, a human recipient whose expressions are difficult for an institution to process does not thereby lose established human rights or moral standing. A nonhuman animal may be unable to satisfy a bureaucratic representation requirement while still having ethically relevant welfare interests. The cases show the analytical importance of making these predicates separately assessable; they do not demonstrate that all predicates are independent in every possible theory.

For an artificial participant, efficacy is attributed to the historically configured system of models, data practices, interfaces, human or nonhuman interlocutors, institutional authorizations, and feedback, with the responsible causal pathway specified for the case. The attribution should not silently become a stable intrinsic property of an isolated model. Repeated AI–AI interactions may exhibit emergent conventions or self-maintaining coordination; identifying such patterns remains a descriptive historical inquiry. Whether those conventions generate legitimate normative authority, or when human intervention would be justified, requires a separate argument about standing, duties, risks, jurisdiction and affected parties.

The normative literature already offers heterogeneous approaches. Nussbaum’s capabilities-oriented treatment of disability, nationality, and species membership challenges restricted assumptions about who can be included in theories of justice [49]. Coeckelbergh develops a provisional social-relational argument for extending degrees of moral consideration to some social robots [19]; this is neither an empirical demonstration of robot sentience nor a claim that current AI systems possess established legal rights. The present GR reconstruction concerns historically conditioned access, causal interaction, and recognition, and is neither identical to these arguments nor a proof of their conclusions. The ethical status of any candidate remains subject to independent justification.

20.3 Three Reality Levels in Heterogeneous Recognition Histories

At the *ontological level*, the present framework suspends judgment about ultimate being and subjecthood. Describing a person, animal, or artificial system as an identifiable relational unit does not settle metaphysical questions about consciousness, personhood, or the nature of existence. The suspension is methodological. It permits inquiry into consequential relations while preserving room for later philosophical and empirical disagreement. In established human-rights contexts, this methodological suspension is not a license to suspend or relativize rights recognized by relevant legal instruments.

At the *relational-being level*, a historically constituted system may exhibit sufficient stability and causal or generative efficacy to be analyzed as a relational participant. Its effects depend upon the configuration: bodies, care, tools, data, norms, habitats, institutional gates, and the actions of other participants. For artificial agents this entails examination of training histories, deployment decisions, data dependencies, interface constraints, infrastructure, and external interventions. For animals it includes

behavioral repertoires, ecological conditions, human control of surroundings, and opportunities for withdrawal. The causal contribution of an entity is accordingly a situated relation, not an isolated property assigned by a label.

At the *manifestation level*, relations become legible through conduct, testimony, bodily indicators, records, interface outputs, classifications, or institutional judgments. Manifestation is selective and mediated. An absence of a legible expression can arise from a defective interpretation route, inaccessible format, unobserved episode, coerced silence, or a genuine absence of the attributed disposition. It follows that the historical record of recognition and the condition supposedly recognized are distinct objects. Manifestations may also feed back into relations: an adopted classification can change eligibility, resource allocation, protective procedures, and subsequent opportunities to express preferences.

20.4 Recognition Trajectories and Institutional Access

A recognition trajectory concerns dated alterations in eligibility, participatory standing, representation, public description, protected interests, or assigned responsibilities. The time of first recorded recognition need not coincide with the first occurrence of the underlying relation or with its first experience by affected participants. An institution may only later begin recording communications that participants had exchanged informally for years. A change in eligibility may widen access for one group while narrowing it for another. A historically precise inquiry must retain the different observation windows and groups affected.

Recognition is often layered. A volunteer may treat a recipient's preference as practically decisive; a coordinator may record that preference without assigning the recipient a voting role; an institutional policy may require a hearing but limit decision authority; applicable law may guarantee rights that institutional practice has failed to realize. The trajectory can be reconstructed at each level of operation rather than represented by a single transition from non-recognition to recognition. This also provides a way to describe partial reversals, symbolic recognition without effective access, or practical inclusion achieved before formal classification catches up.

Historical descriptions should ask who controlled the recognition vocabulary and by what procedures it could be challenged. In situations of unequal voice, archived compliance or silence cannot automatically be taken as agreement. The earlier analysis of power and feasible alternatives remains relevant here, but the present question concerns how a unit becomes recognizable, whether an expression can enter deliberation, and what consequences recognition has for future action.

20.5 Human Rights, Supported Expression, and Institutional Classification

Human heterogeneity includes differences of age, communication modality, disability, language, status, access to records, and opportunities for representation. Such differences must be examined without converting task-performance comparisons into rankings of human worth. Two international treaty provisions offer illustrative normative and legal reference points. Article 12 of the Convention on the Rights of the Child addresses opportunities for children to express views on matters affecting them and for those views to receive due weight [73]. Article 12 of the Convention on the Rights of Persons with Disabilities addresses equal recognition before the law, legal capacity, access to support in its exercise, and safeguards including respect for a person's will and preferences [74]. Their application requires the relevant treaty framework, jurisdiction and specific institutional context to be examined. They are not derived from GR.

These provisions illuminate a methodological danger in historical narratives of aid. A record that describes someone only through the voice of a guardian, official, interpreter, or volunteer may fail to reveal the person's own expressed view, the quality of support enabling expression, or the possibility of rejecting an intervention. Representation can enable participation, but it can also displace or distort it. A responsible account distinguishes the person's communication, the representative's account, the authority of that representation, and the decision actually made. Where those distinctions are unavailable, the record should explicitly preserve uncertainty.

A particularly consequential question arises when a practice appears to improve administrative speed by reducing the time available for an affected person to deliberate or communicate. The resulting throughput may be an observable organizational benefit while leaving autonomy and rights concerns unresolved or adverse. Analysis must therefore retain different evaluative objects and should avoid treating a single efficiency metric as an exhaustive description of supportive value.

20.6 Animal Relations, Sentience Evidence, and Welfare Representation

In human–animal support relations, affected animals may influence the practical course of intervention through avoidance, approach, injury, recovery, stress-related behavior, and other responses. An interpretation of these manifestations requires species- and task-specific knowledge, and can remain uncertain even where behavior is documented. The 2021 review by Birch and colleagues synthesizes evidence concerning sentience in cephalopod molluscs and decapod crustaceans and makes recommendations for a particular animal-welfare policy context [12]. The report evaluates evidence across specified taxa and recommends treatment of cephalopods and decapods as sentient for purposes of United Kingdom animal-welfare law. This recommendation is distinct from a finding about each individual animal or from an independently verified statement of the legal rules currently applying in a given jurisdiction. A finding concerning these taxa is not proof about all possible animals, nor does it settle the moral status of artificial systems.

Historical aid programmes may alter animal welfare through relocation, feeding, medical treatment, habitat disruption, surveillance, or changes in human access. Their descriptions often privilege human intentions and operational success. For example, a programme may report a large number of successful relocations while records of post-release survival, habitat continuity, or subsequent stress remain incomplete. The analysis should distinguish the performed action, the observable animal response, the welfare inference and the applicable rule or ethical standard. The adequacy of a guardian’s or expert’s representation must likewise be investigated rather than inferred from benevolent purpose.

Heterogeneous relations may also involve humans whose livelihoods, safety, and cultural practices depend upon the relevant ecological system. Welfare conflicts are therefore historically coupled: protecting one animal population through an abrupt restriction may redistribute costs to vulnerable humans. The GR analysis maps these relations without assuming that all values can be reduced to a common quantity. Substantive judgments about justified tradeoffs require appropriate empirical knowledge and ethical deliberation.

20.7 Artificial Systems as Historically Conditioned Relational Participants

Artificial systems may generate recommendations, translate messages, coordinate tasks, prioritize requests, or interact with other software within a support infrastructure. Such systems can be causally important even where their designers, deployers, operators and affected users remain the recognized bearers of legal obligations. Their operation is constituted through technical architecture, training and updating processes, computational resources, human instructions, access rights, and institutional histories. A comparison among models alone can miss the historical network in which their effects arise.

The label *agent* often denotes a functional arrangement for action selection and interface control. It carries no automatic conclusion about first-person experience, moral patienthood, legal capacity, or an independent mandate. Performance evidence may support the existence of a bounded capacity under specified conditions. It cannot alone establish rights, liability or the authority to override human choices. Moreover, an AI-generated expression of preference need not be evidence of an experienced preference. Its interpretation should be indexed to architecture, task protocol, data provenance and the possibility of strategic, scripted or stochastic output.

The UNESCO Recommendation on the Ethics of Artificial Intelligence, adopted on 23 November 2021, calls upon Member States to apply its provisions on a voluntary basis and addresses human rights, governance and oversight [72]. It is relevant as a historically situated example of policy-level normative guidance, not as a treaty allocating personhood or as proof of worldwide uniform law. Current and

future systems may raise further questions about status. Those questions merit inquiry precisely because responsible governance cannot be derived from technical efficacy alone.

20.8 Human–AI Mediation, Delegation, and Contested Authority

A support organization may use an AI-mediated interface to interpret requests, assist communication, summarize records, or suggest an allocation. The historical relation includes the original requester, the system’s output, the authorized decision-maker, affected third parties, and the infrastructure shaping all of them. For each episode, the record should identify whether the output served as a suggestion, a binding instruction, an automatic action, or an item of evidence considered by a human. These are materially different intervention routes.

A person may apparently agree with an intervention because the interface offers only a constrained set of choices. A coordinator may rely on a confident summary while lacking access to the original communication. A model update can alter eligibility recommendations without a corresponding change in a formally written rule. Each trajectory illustrates a feedback channel between manifestation and institutional decision. The factual question concerns which actors and systems altered the feasible choices; the normative question concerns whether that arrangement was justified and adequately contestable.

A historical account should resist two symmetrical shortcuts. Treating an AI system as causally irrelevant because it lacks human institutional status conceals mechanisms of harm or assistance. Treating its causal efficacy as self-authorizing conceals the roles of humans and institutions that configure and deploy it. A relational analysis makes those influences separately visible while preserving the possibility of reciprocal conditioning across technical and social histories.

20.9 AI–AI Interaction and Emergent Local Conventions

In multi-agent computational settings, interacting systems can develop stable coordination patterns, message conventions, repeated allocations, or local procedures that are not explicitly represented in a single participant’s initial rule set. Whether a particular pattern is learned, selected, programmed, induced by reward structure, or imposed by an external controller is an empirical question. Historical attribution requires comparison of versions, communication traces, interaction opportunities, environmental parameters, and interventions. The analyst should distinguish an observed regularity from a rule understood or accepted by its participants.

A further open question concerns whether a sufficiently enduring AI–AI relational history could generate an internally consequential normative order and, if so, in what sense *normative* would be justified. Functional sanctions, expectations and conventions may be described without assigning subjective experience or legal personhood. More demanding claims would require criteria for normative bindingness, subjects of obligation, recognition, contestation, and institutional authority. Human oversight and intervention may be legitimate on some grounds and unjustified on others; the legitimacy of intervention cannot be inferred either from human species membership alone as a complete argument or from the mere persistence of a machine-generated convention.

For current inquiries, the method is to preserve a layered question: what interactions occurred, what regularities persisted, whose access was altered, who has the actual power to intervene, what legal or contractual authority applies, and what independent ethical justifications are offered. This leaves open future forms of heterogeneous legal and moral order while avoiding premature claims that AI systems already possess such orders as rights-bearing communities. The issue connects to research on social contracts and heterogeneous mediators but remains an extension within the present historical analysis.

20.10 Representation, Proxy Judgment, and Epistemic Asymmetry

Support relations frequently depend upon proxies. A parent, caregiver, interpreter, veterinarian, AI interface, or institutional delegate may describe another unit’s needs or preferences. Each role involves

distinctive grounds of competence and authorization. An expert's scientific inference, a legal representative's authority, and an assistant's practical interpretation should remain distinguishable even if they inform the same decision. Historical archives that merge these channels risk constructing a fictitious single voice.

A useful reconstruction asks what the represented party expressed, what signals were available, what the proxy reported, how the report was translated into action, and how disagreement could be registered. For humans, direct involvement and communication support should be investigated before treating proxy testimony as exhaustive. For animals, the evidential basis and limitations of welfare inference are central. For AI systems, protocol outputs can be recorded as expressions produced by a process while the status of the purported interests remains undecided.

Epistemic asymmetry often interacts with power. The party controlling a record may decide which expressions are admissible, who can challenge a translation, and which uncertain observations are discarded. Privacy and safety concerns may warrant access restrictions, but restrictions require their own authority and safeguards. A claim of protective representation is therefore a hypothesis about a historically operating arrangement, subject to evidence and, where applicable, independent legal and ethical review.

20.11 Recognition Feedback, Disagreement, and Historical Change

Recognition is not only an outcome of prior relations. Its manifestations can alter the relations they purport to describe. Adding a new category to an aid register may make a previously invisible need actionable. A designation of vulnerability may trigger support while also exposing a person to unwanted surveillance. Recognizing a collective voice may broaden deliberation yet leave resources and implementation authority unchanged. A claim that a system has become a recognized participant requires specification of which of these changes occurred.

Feedback can be traced as an ordered sequence of decisions and exposures rather than assumed from temporal co-occurrence. The sequence may include a classification proposal, adoption by authorized actors, changes in information flow, altered eligibility or resources, a participant response, and later policy revision. Competing explanations might include funding changes, a new legal mandate, an external emergency, staff turnover, or a shift in measurement. These alternatives should accompany any causal proposal about recognition itself.

Disagreement is analytically valuable. Opposing accounts can reveal competing definitions of the same relation, unequal access to the archive, and differences between public symbolism and effective participation. Historical interpretation should preserve the reasons and positions of the disputants. The historian's reconstruction remains an additional manifestation subject to correction, especially where it uses categories that were unavailable to the participants at the time.

Classification effects and standing-sensitive conclusions. Recognition practices may affect how a subject is counted, represented, and enabled to participate, while other changes in infrastructure or law independently modify access. A recorded increase in recognized AI-mediated interactions, for example, may be generated by a new classification scheme rather than new interaction capabilities; similarly, low reported communication by a disabled recipient may reflect inaccessible procedures rather than lack of relevant preferences. Candidate feedback mechanisms should compare the dates and practical effects of changed categories, affected persons' available expression routes, and the independent performance of relevant systems. For artificial participants, observed causal efficacy depends on model behavior, infrastructure, operators, interfaces and historically formed conventions. None of these observations alone determines sentience, moral standing or legal personhood. Human-rights protections are not conditional on a particular recording regime or on a causal-attribution score.

20.12 A Typed Dossier for Heterogeneous Recognition Histories

The following compact formal record is intended to prevent causal, experiential, social and legal predicates from being collapsed into a single status variable. Let u denote a candidate subject or participant unit, q a

bounded task or relation, I an observation interval, and κ the relevant historical and institutional context. Each field is a typed set of descriptions and provenance links, potentially empty or contested. Equation 38 specifies the provisional dossier.

$$\mathcal{S}_{u,q,I}^{\kappa} = (U_{q,I}, H_{q,I}, A_{q,I}, X_{q,I}, V_{q,I}, P_{q,I}, R_{q,I}, L_{q,I}, M_{q,I}, F_{q,I}, \Pi_{q,I}, W_{q,I}). \quad (38)$$

Here U defines the unit and domain of inquiry; H records historical formation, relations and temporal boundaries; A concerns observed action and causal efficacy; X concerns evidence and uncertainty regarding experience, welfare or interests; V records manifestations, expressions and their interpretation routes; P records proxies and their competence and limits; R describes social or institutional recognition practices; L identifies relevant legal provisions and their scope; M records mandates, delegated powers and consent or objection procedures; F concerns feedback into access, opportunities and future relations; Π preserves provenance, missingness and rival explanations; and W registers unresolved claims, disagreements and consequences for affected participants.

The twelve fields are neither a numerical scale nor mutually exchangeable evidence types. A strong entry in A cannot substitute for missing evidence in X or establish a legal position in L . A stated status in R may be important evidence about institutional practice even where L differs. A well-documented mandate in M does not by itself demonstrate ethically adequate use. The dossier can be joined with prior records of network change, power, value circulation and institutional succession only where unit, task, period, context and provenance align. Its scope is descriptive; the legal and normative conclusions require separate arguments.

20.13 Evidence Guards for Bounded Recognition Claims

A candidate claim c should state its predicate and scope. Examples include a bounded claim of causal participation, a documented change of administrative eligibility, the availability of supported communication, or an asserted authority to represent another unit. Seven guards constrain admissibility. Guard g_1 specifies unit, predicate, context and observation period. Guard g_2 checks the evidence of the relevant relation and historical origin. Guard g_3 separates observed manifestations from interpretations of experience or preferences. Guard g_4 records proxy competence and the conditions under which representation is authorized or disputed. Guard g_5 tests the actual practical consequences of recognition and access. Guard g_6 examines contrary evidence, missing participants, alternative mechanisms, and power over classification. Guard g_7 verifies the legal, ethical and causal scope claimed by the conclusion, without assuming that one domain can settle the others.

Equation 39 defines a limited classification for the specified historical predicate. For rights that are legally established independently of the observational record, a lack of documentation cannot be treated as a contradiction of the right itself. The guards classify evidential support for bounded empirical or historical claims; normative and legal validity retain their separate sources.

$$\text{RecState}_{u,q,I}^{\kappa}(c) = \begin{cases} \text{supported candidate,} & \text{if all necessary } g_i(c) \text{ have adequate evidence,} \\ \text{contradicted,} & \text{if decisive evidence defeats a necessary } g_i(c), \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (39)$$

A record showing that a support service added an accessible communication channel can support that procedural claim while leaving the outcome of participation unresolved. A decision trace documenting an AI-assisted recommendation can support causal involvement, but cannot establish AI sentience or legal authority. An animal's repeated avoidance of a handling procedure can support an observed behavioral claim, with welfare significance evaluated under relevant biological evidence. The convention is neither a diagnostic device nor a legal test of capacity or personhood. It can return different states for different claims about the same episode.

Table 20: Evidence audit for heterogeneous participation and recognition histories

Object	Candidate evidence or comparison	Important limitation
Unit and task	Dated boundaries, roles, species or system version	Shifting classifications
Relational efficacy	Performed acts and independently observed effects	Attribution and confounding
Experience or welfare	Task- and species-relevant indicators and expert review	Inference beyond observation
Expression channel	Original statements, behaviors or technical outputs	Encoding and interpretation bias
Representation	Identity, role, authorization and translation route	Proxy conflicts and substitution
Recognition	Eligibility, participation and official categories over time	Symbolic versus operative effects
Legal context	Instrument, jurisdiction, applicable rule and implementation	Treaty versus local law
Authority and dissent	Mandates, safeguards, objections and withdrawal	Hidden coercion or infeasible exit
Feedback and costs	Changed access, resource allocation and burdens	Selective observation
Rival histories	Alternative accounts, missing data and counterevidence	Archive control and retrospective labels

20.14 Evidence Audit for Subject Conditions and Recognition

Table 20 organizes a provisional historical audit. Its rows specify inquiries rather than compulsory data collection. Human-participant histories may require consent, data minimization, confidentiality and protection from coercion; animal studies and computational logs require their own appropriate safeguards and legal review. The table does not itself authorize observation or collection.

Even a detailed archive may contain a systematic gap where a group had no way to submit claims or where an inaccessible communication format concealed dissent. A source that summarizes an animal's interests or an AI system's apparent preferences should retain the inferential chain and uncertainty, rather than being copied as direct first-person testimony. Historical comparison benefits from parallel descriptions made under different classificatory schemes. The records should remain separable so that later scholarly disagreement can be localized and audited.

20.15 Constructed Histories of Heterogeneous Support Relations

Constructed history A: supported communication and evolving institutional recognition. An information-support programme initially records only statements from accompanying adults for service users who communicate through nonstandard methods. A participant repeatedly indicates disagreement using an accessible device, but the intake record has no field for such communication. Following an internal review, the programme introduces direct supported expression and documents disagreements alongside representatives' interpretations. The historical change is visible in communication routes, case records and decision procedures. Whether each decision satisfies the applicable rights framework requires independent evaluation; the programme's aggregate service count cannot answer the question. The case illustrates a classification feedback mechanism and the evidential gap between proxy account, expressed preference and operative participation.

Constructed history B: multispecies assistance and contested welfare evidence. A local volunteer network relocates animals during an environmental emergency. Its initial report counts animals transported; subsequent observations include stress indicators, varying survival outcomes, and changes to habitat access. Volunteers, caregivers, residents and animal-welfare specialists disagree over what success means.

Some animal behaviors are reliably observed but their experiential interpretation remains contested. The historical account therefore separates relocation events, species-specific welfare evidence, permissions to intervene, local human burdens, and the moral justification offered for the choices. The case does not assume a universal ranking across species or between animal and human interests.

Constructed history C: AI-mediated assistance and inter-agent coordination. Two computational systems exchange standardized messages to coordinate translation and appointment allocation for a support organization. A recurring exchange pattern improves scheduling throughput in a controlled test, while a system update later introduces unexpected exclusions. Human operators can inspect some but not all intermediate records. The pattern may be an emergent convention in a limited functional sense; the record does not establish that either system experiences interests or possesses legal capacity. Researchers may study the regularity, the provenance of the update, delegated control, contestation routes and consequences for affected people. Whether any proposed intervention into the systems' interaction is justified remains a further legal and ethical inquiry.

These three histories are invented analytical cases. Their purpose is to isolate distinct historical claims and show where evidence is needed. None reports findings about actual children, disabled people, animal populations, AI agents, institutions or jurisdictions. They should not be treated as empirical support for the causal or normative conclusions that they illustrate.

20.16 Countermodels, Incompatibilities, and Research Limits

Several countermodels constrain easy narratives of recognition. A category can become legally or administratively explicit while participation remains practically inaccessible. A participant can act without being credited, and a credited actor can receive an honorific title without decision authority. An animal behavior can be misread because a human observer projects a familiar emotion across species. A computational regularity can be entirely explained by a common external controller rather than coordination learned through independent interaction. A claimed expansion of voice can coincide with new surveillance or the transfer of uncompensated work to caregivers. Each alternative changes the type of evidence necessary for the historical claim.

Conceptual incompatibilities should be acknowledged rather than erased by notation. Empirical theories of sentience do not directly yield rules of legal capacity. Human-rights guarantees cannot be made contingent upon algorithmic assessment of task performance. A social-relational philosophical defense of moral consideration for robots remains a disputed normative proposal, while current AI governance guidance may prioritize human rights and oversight. GR supplies a vocabulary for the history of relations and their manifestations, but lacks an independently validated theory of consciousness, a universal adjudication of moral status, or authority to determine legal personality.

The available record may also be unequal by design. Organizations can preserve the actions of recognized stakeholders more readily than those of excluded participants. Historical data about marginalized human groups, animal experience, or opaque computational systems may be insufficient for confident attribution. Observational horizons, data access, and the definitions of participation will change what is visible. More detailed empirical and legal work should therefore specify relevant contexts, protections and counterfactual questions before strong conclusions are drawn.

20.17 Historical Implications for Generative Relational Inquiry

A historical account of support gains explanatory precision when it treats subject categories, observable action, interests, representation, authorization, and recognition as related but distinguishable objects. Their relations may be historically co-constituted: changing communication practices can alter recognizable preferences; altered eligibility can change actual opportunities; new technologies can redistribute decision influence; and disputed forms of representation can reshape future institutional categories. These are questions about the formation and transformation of relational systems, not an assertion that one universal criterion decides the status of all participants.

The three-level GR treatment preserves an open ontology, studies historically conditioned relational efficacy, and examines selective manifestations and their feedback. The corresponding evidential dossier can support modest comparisons across heterogeneous contexts while exposing the limits of analogy. Future work requires deeper field- and species-specific evidence, context-specific legal interpretation, philosophical engagement with competing accounts of moral status, and safeguards for those whose own accounts risk exclusion. These obligations lead into the next section's inquiry into collective participation and historical legitimacy: a record of inclusion or coordination alone remains insufficient to justify a normative claim of democratic or ethical legitimacy.

21 Collective Participation, Democratic Practices, and Historical Legitimacy

The historical analysis of voluntary support encounters a specific institutional question when multiple affected participants seek a role in shaping the practices that condition their opportunities. This section investigates the formation, exercise, and transformation of collective participation and democratic practices in volunteer and aid relations. Its objective is to describe how a historically situated arrangement distributes opportunities to initiate issues, communicate judgments, alter decisions, contest implementation, and revise its own membership boundaries. The method combines an interpretive reconstruction of participation histories, an evidence-indexed formal dossier, and comparative constructed cases. The account treats participatory consequences as historical propositions and legitimacy as an additional normative question. Neither a procedure's democratic vocabulary nor its observable effectiveness can settle the validity of its authority without further argument.

21.1 Participation Episodes and Historically Situated Collectives

A participation history requires a specified decision domain and an account of those whose participation is at issue. A hospital-adjacent volunteer group, a neighborhood assistance network, an emergency mutual-aid association, and an international relief coalition may share practices of deliberation while operating under different mandates. Each configuration includes particular tasks, affected people, hosts, coordinating bodies, sources of authority, and constraints on disclosure. Its collective is neither necessarily coextensive with a formal membership register nor adequately represented by the people attending a meeting. A recipient whose eligibility is determined by an absent committee may be affected by its decisions while lacking an authorized speaking position. A volunteer whose availability makes a service feasible may be listed as a member yet lack meaningful influence over its organization.

The unit of reconstruction is therefore a bounded sequence of participation opportunities and decisions rather than an abstract organization's alleged democratic character. For an interval I , a task q , and a decision episode d , investigators should specify who was considered eligible to participate, who was practically able to attend or communicate, what information was available, which options were admissible, and whether the outcome changed subsequent action. A procedure might be participatory for the allocation of shifts while remaining centralized for safeguarding standards, financial commitments, or eligibility determinations. Different judgments may be warranted for distinct decision domains within the same organization.

Historical formation also matters. A volunteer group may begin with a small circle of trusted founders and acquire broader representation as affected constituencies become visible. Alternatively, a once-open arrangement may professionalize, narrow its access conditions, and preserve the language of community ownership after participation has declined. A longitudinal study must therefore avoid treating present categories of membership or entitlement as if they had always governed earlier episodes.

21.2 Entry, Speech, Deliberation, Decision, and Implementation

Participation comprises several analytically separable positions. Entry concerns the conditions for being recognized as an eligible contributor. Expression concerns the ability to communicate concerns, reasons, refusals, and proposals in a usable form. Deliberation concerns reciprocal uptake and the opportunity to challenge or revise reasons. Decision concerns recognized standing to influence an authorized selection. Implementation concerns the ability to affect what is actually done, including the practical resources and permissions required for enactment. Review concerns later access to a record, grounds for complaint, and procedures for revision. A historical claim about one position should identify the evidence for that position and refrain from silently assigning the others.

Arnstein's influential participation ladder is an explicitly provocative typology organized around the degree of citizen power in particular public programs [7]. The present analysis takes from it the need to examine the distribution of consequential power, while retaining the possibility that volunteer settings have different task-specific distributions and legitimate limits. Fung's institutional-design framework distinguishes who participates, how participants communicate and decide, and how deliberation connects to policy or public action [33]. These are dimensions of participatory design, not empirical proof that participation in a given arrangement produces democracy, inclusion, or legitimate decisions. That framework helps avoid compressing multiple institutional questions into a single participation count. The GR reconstruction adds histories of access, recognition, resource dependence, and feedback without claiming that these authors proposed its ontology or notation.

One participant may report being heard because a suggestion was acknowledged; another may report exclusion because the suggested alternatives never entered the decision agenda. Both accounts can be important manifestations of a participation episode. The historian should preserve the reasons underlying their differences and examine subsequent decisions, rather than impose one omnibus indicator of participation upon them.

21.3 Three GR Reality Levels in Participatory Histories

At the ontological level, generative relational inquiry suspends claims that the collective has an ultimate, context-independent essence or that democracy names a substance present whenever a procedural template is adopted. Categories such as participant, community, institution, and constituency are necessary analytical instruments whose domain, history, and practical conditions require specification. Ontological suspension leaves open independent normative accounts of equal standing, public justification, collective authority, and the good of political self-government.

At the level of relational beings, participation arrangements can acquire stability and causal efficacy through repeated interactions among roles, habits, resources, expectations, authorizations, and sanctions. An agenda committee may become an effective gatekeeper; an interpreter network may create otherwise unavailable expressive capacity; a feedback forum may alter resource allocations through recognized pathways. These historically conditioned configurations may persist across personnel changes while also being modified by new entrants, conflicts, technologies, or outside institutions. Their causal properties are proposed objects of inquiry, subject to process evidence and rival explanations.

At the manifestation level, attendance lists, public consultations, meeting minutes, vote tallies, signed agreements, testimonial accounts, interfaces, and annual reports present selected aspects of these relations. A high reported turnout may reflect compulsory attendance or a narrow eligible population. A published consensus statement may omit unresolved dissent. Such records can also feed back into recruitment, resource authorization, and reputational standing. The historian must examine both their selection mechanisms and any documented consequences. Manifestations may become consequential without becoming exhaustive evidence of the underlying relational order.

21.4 Constituency Formation and Boundary Disputes

Collective participation begins with a boundary problem: who is invited, represented, entitled to contribute, and affected by the decision? An institution's designation of a stakeholder category may draw upon legal roles, service use, geographic residence, volunteer affiliation, professional expertise, or patterns of exposure to a prospective change. These grounds are not interchangeable. A volunteer council elected by active volunteers may represent its roster on scheduling practices while lacking authority to speak for patients, service users, employees, or neighboring communities. Similarly, a recipient group may have strong experiential knowledge of access barriers while lacking a mandate to determine professional or safety standards.

Boundary formation can be studied historically through recruitment rules, changing eligibility criteria, notice practices, accessibility measures, and contested accounts of representation. Rejected applications and invitations never received may be as relevant as a successful membership list. The analyst should examine the practical opportunity to learn of an invitation, the cost of entering, the availability of translation or accommodation, and the consequences of declining participation. For vulnerable participants, public exposure may create its own risks. Protecting privacy can legitimately narrow a disclosure channel without justifying the elimination of every avenue of voice.

A boundary may expand one group's influence while imposing costs on another. The resulting distribution should be evaluated by affected positions and decision domains rather than described as a simple progression toward inclusion. Formal equal invitations can reproduce disparities where transport, digital access, literacy, meeting times, or prior trust differ. Conversely, selective participation may sometimes be warranted to protect confidential information or avoid inappropriate delegation. Whether a particular boundary is justified requires a separately specified normative and, when relevant, legal basis.

21.5 Agenda Formation and the Visibility of Alternatives

Participation concerns the formation of the feasible and discussable agenda as well as the final choice among recorded options. A meeting may permit open voting among alternatives determined in advance by a funder, host institution, software platform, or small coordination committee. The vote is an observable participation event, but the historical control of alternatives lies partly outside it. Earlier work on the control of nondecisions provides a useful antecedent for investigating agenda setting [8]; its account should be distinguished from any newly proposed GR causal classification.

A historical reconstruction can trace proposals from the moment of articulation through screening, revision, authorization, decision, and implementation. Records should identify reasons for excluding an option, available avenues of appeal, and the means through which participants could challenge the agenda itself. A proposal's absence from formal minutes is weak evidence that it was never voiced; informal negotiations, private objections, language barriers, or anticipatory self-censorship may have shaped its visibility. The strength of an exclusion hypothesis depends on contemporaneous records, corroboration, and competing explanations such as limited resources, inapplicable mandates, or genuine safety constraints.

Agenda control need not reside permanently with one participant. Technical experts, interpreters, recipients, volunteers, professional managers, and external authorities may influence different stages of issue formation. Their powers can be mutually conditioning: technical categories affect what seems feasible, while social contestation changes which technical alternatives are investigated. Such relations belong in the historical explanation without being collapsed into one actor's intentions.

21.6 Expressive Accessibility and Deliberative Uptake

Participation requires attention to the forms in which judgments become communicable and recognizable. Spoken argument is one important mode, but accessible expression may also involve writing, assisted communication, narrative, testimony, visual media, interpretation, anonymous submission, or dissent expressed through withdrawal. Young's analysis of inclusive democracy emphasizes how norms of

political discussion may marginalize speakers and communicative forms, and considers narrative, rhetoric, acknowledgement, and protest within democratic communication [78]. This normative intervention has its own intellectual provenance. The present historical analysis considers the more restricted question of what channels were available, whose expressions received uptake, and what followed from that uptake.

An institution may provide a multilingual online form but never explain how submissions affect a decision. Another may host a small meeting that offers substantial dialogue, yet remain inaccessible to people whose schedules or support needs preclude attendance. The investigator should distinguish nominal channels, usable channels, recorded receipt, substantive response, and altered action. Silence has several possible meanings: informed acceptance, fatigue, distrust, fear of retaliation, inability to access the channel, or a decision to refrain. It cannot be assigned a unique significance without supporting evidence.

Deliberative uptake can be approached through traceable changes in reasons, agendas, procedures, and decisions. A participant's argument need not prevail to count as considered. Equally, a courteous acknowledgment may coexist with systematic exclusion from decision-relevant evaluation. These differences require a temporal record connecting expression, response, and institutional consequence, with explicit uncertainty where private reasoning is inaccessible.

21.7 Representation, Delegation, and Recall

Collective participation frequently operates through delegates and representatives. Their selection, mandate, accountability, and relationship to represented constituencies are historically variable. A volunteer representative chosen by senior coordinators differs from a representative elected by an open roster. A professional trustee with fiduciary duties differs from an informal spokesperson authorized to transmit concerns. The historical analyst should distinguish descriptive similarity, experiential knowledge, formal authorization, responsiveness, and the capacity to be challenged or replaced.

Mansbridge argues for context-sensitive benefits of descriptive representation, particularly in settings involving mistrust, unsettled interests, historical political subordination, or low de facto legitimacy, while recognizing competing values and limits [44]. The argument concerns specific functions of descriptive political representation and does not confer a representative mandate merely because a volunteer or coordinator shares a social identity with an affected group. The present analysis borrows the importance of historical conditions rather than treating descriptive identity as a universal proxy for authorization or substantive representation. Representatives may share an affected group's experience yet disagree among themselves; mandates may expire, fragment, or fail to cover a new issue. A recorded consultation with one spokesperson establishes the occurrence of contact, leaving broader claims of authorization and constituency agreement for separate inquiry.

A practical record includes the route of selection, represented population, decision scope, information duties, channels for dissent, opportunities for recall, and consequences when representatives diverge from their stated mandate. In support settings, privacy and safeguarding constraints can limit what a representative may disclose. Those limits should be recorded as constraints on the mechanism rather than silently converted into evidence that the constituency consented.

21.8 Collective Decisions and the Distribution of Implementation Authority

A collectively endorsed proposal may be advisory, operationally binding within a narrow domain, or subject to another institution's authorization. These differences matter especially where volunteer networks depend upon host facilities, professionals, funders, or public authorities. An aid committee may collectively choose priorities but require licensed personnel to decide clinical questions. A community forum may recommend changing an entry rule while the legally responsible institution retains the final decision. A historical account should map each competence and any documented veto rather than call the whole arrangement either democratic or undemocratic in a single unqualified sense.

Implementation changes the meaning of a decision. An approved accessibility measure may remain ineffective if no budget is allocated, qualified staff are unavailable, or the necessary information never

reaches the people who need it. Conversely, a coordinator may adapt implementation in response to recipients' suggestions without any new formal resolution. The sequence should identify which revision was authorized, which action occurred, and whether the outcome altered future opportunities to participate.

Decision outcomes need not be reduced to a binary of acceptance and rejection. A proposal may be referred, narrowed, deferred, partially funded, trialed, or implemented by another organization. Each disposition has a distinct historical trajectory. Where a collective decision is subsequently reversed, the record should examine changed evidence, altered membership, power asymmetries, and the availability of appeal. The resulting explanation remains empirical and interpretive even when the analyst later offers a normative evaluation.

21.9 Voluntariness, Dependence, and the Costs of Voice

The voluntariness of a support action and the voluntariness of participation in governance are related but distinct questions. A volunteer may freely enter an organization while facing informal penalties for criticizing its coordinators. A recipient may be permitted to submit complaints but fear losing access to essential assistance. A volunteer representative may formally have voting rights yet lack the time or resources to read the material placed before the committee. These cases show how formally available voice can coexist with practical dependence.

Historical inquiry should examine the expected and experienced costs of objection, refusal, exit, and sustained participation. Hirschman's distinction between exit and voice provides a conceptual point of departure [38]; the capacity actually to exercise either option depends on actor-relative conditions, and the framework itself is not a proof of particular harms. Reliance on a scarce service, language mediation, immigration uncertainty, or reputational dependence can change the practical costs of dissent. Adequately investigating these claims requires safeguards for the persons whose experiences would be documented, and may require independent authorization for sensitive research.

An equitable participation arrangement may need compensation for time, protection against retaliation, accessible information, and a credible review mechanism. These are potential design considerations whose necessity and form depend on setting, roles, and norms. Their presence in written policy is evidence of an intention or formal commitment; their effective operation requires an additional inquiry into access and consequences.

21.10 Differentiated Subjects and Supported Political Expression

The question of affected constituencies becomes more complex where participants have heterogeneous abilities, communication modes, or contested statuses. Children's rights to express views in matters affecting them are addressed within the Convention on the Rights of the Child, including its Article 12 [73]. Article 12 of the Convention on the Rights of Persons with Disabilities concerns legal capacity, access to support, and safeguards respecting will and preferences [74]. Their distinct treaty scopes should be preserved. They do not automatically assign governance authority in a volunteer association, and domestic obligations depend on applicable legal conditions.

For animals affected by assistance practices, welfare evidence, proxy representation, and possible conflicts among human interpreters may be relevant; the grounds of welfare consideration and political voice are separate questions. For AI-mediated participation, a system may summarize submissions, facilitate translation, or filter proposals. These interventions can alter the effective agenda and the manifestation record. Their causal efficacy should be traced through design, deployment, users, feedback, and oversight rather than attributed to an isolated algorithm. Whether an artificial participant could be a bearer of claims or a member of a normative order remains a contested theoretical and legal question.

A programme can nevertheless be studied for how it treats claims made on behalf of heterogeneous affected parties. The analyst should distinguish expressed preferences, inferred interests, proxy authority, technical representation, and independently justified protections. A single aggregated stakeholder score would obscure these differences and risk converting epistemic uncertainty into a false authorization.

21.11 Historical Feedback between Participation and Collective Capacity

Participatory arrangements may affect their own future operating conditions. Successful resolution of a dispute can increase willingness to contribute, improve the accuracy of needs information, or change patterns of trust. A public meeting that produces little change may discourage further engagement. A contentious review may expose previously hidden dependencies and lead to institutional reorganization. These are plausible mechanisms rather than consequences to be expected in every case. Historical evaluation requires temporally ordered evidence and attention to concurrent changes in staffing, funding, legal constraints, or external demand.

Feedback also operates through categories. An institution's classification of a meeting as "community-led" may attract funding or authorize new recruitment, thereby influencing subsequent composition. Recognition may enable participation while simultaneously rewarding the performances most legible to funders or auditors. A group can become more visible but less able to control the matters affecting it. The historical trajectory of participation thus intersects with prior analyses of value circulation, power, institutional memory, and manifestation feedback.

A further question concerns the relation between participation and generative capacity. Better information or mutual recognition might make a cooperative pathway feasible, yet additional procedures can impose time costs or displace urgent action. Participants may reasonably disagree about acceptable trade-offs. The analyst should investigate changes in actionable capacity, burdens, and access, preserving these multiple outcomes rather than inferring that more consultation necessarily increases generativity.

Voice, prior influence, and selection into participation. Better collective outcomes following consultation can reflect genuine uptake of a proposal, selection of already influential participants, simultaneous changes in resources, or an agenda narrowed before the meeting. A stronger historical participation claim traces who could enter, the accessibility and cost of speaking, the proposal's recorded movement through deliberation, the actor with decision authority, and evidence of subsequent implementation. The absence of opposition at a meeting is weak evidence of voluntary assent where rights, employment or assistance were at risk. Participation may also create capacities that expand later influence, so the process can be reciprocal rather than a one-way intervention. Discriminating cases include accessible proposals that were considered but rejected, and formally inclusive procedures in which affected people lacked effective access. Democratic legitimacy is then evaluated under an explicit normative standard; it is not the causal effect of recorded attendance.

21.12 Participation Records and a Typed Historical Dossier

The present framework proposes a partial record for a specific participation episode. Let d identify a decision domain or proposal, I a bounded historical interval, C a set of candidate affected and participating constituencies, and κ the evidential standpoint under which sources are interpreted. The institutional and material setting belongs to the bounded case description and its linked provenance rather than being silently encoded as a different meaning of κ . Each component is an evidence-linked, typed field that can contain divergent accounts or an explicit absence of accessible evidence. Equation 40 defines the dossier as a bookkeeping representation rather than a scalar democracy measure.

$$\mathcal{P}_{d,I}^{C,\kappa} = (B_{d,I}, N_{d,I}, E_{d,I}, A_{d,I}, X_{d,I}, D_{d,I}, M_{d,I}, J_{d,I}, R_{d,I}, K_{d,I}, \Pi_{d,I}, U_{d,I}). \quad (40)$$

Here B records constituency boundaries and affected positions; N contains notification and entry conditions; E concerns practically available modes of expression; A records agenda construction and proposal exclusions; X captures communicative uptake and exchange; D contains decision procedures and domain-specific authority; M tracks implementation and its mediating constraints; J records avenues and events of challenge or review; R identifies representation routes, mandates and possible recall; K captures

dependence, risks and participation costs; Π stores provenance, disagreement and missing-record annotations; and U records observed changes in later participation opportunities and collective capacity. These fields need not be complete or commensurable. Their contents remain tied to historical sources, and a stated mandate may have a different evidential type from a reported practice.

The evidential envelope in Appendix A allows the record to be compared with other histories only after question, standpoint and permissions have been declared. Participant influence, statutory authority and normative legitimacy remain separate claim types, with independent guards.

The dossier does not assert that democratic legitimacy can be computed by counting favorable entries. Its immediate use is to prevent a named collective or a well-attended meeting from substituting for evidence about agenda control, practical participation, decision authority, implementation, and contestability. Ethical and legal evaluations can refer to the dossier, but they require their own concepts and warrants.

21.13 Evidential Admission and the Scope of Participation Claims

A guarded classification is useful for historical propositions such as “a specified constituency had a consequential opportunity to influence decision d during interval I .” The claim should be narrowly stated, with its decision scope and affected population explicit. Let G_1 identify the relevant constituency and decision; G_2 document notice and practically accessible entry; G_3 document a usable opportunity to express or propose; G_4 identify the agenda and the body competent to decide; G_5 trace uptake, disposition and any authorized action; G_6 assess dependence, dissent and the accessibility of challenge; and G_7 consider source gaps and rival historical explanations. A guard is recorded as supported, contradicted or unresolved, with provenance for that judgment.

Equation 41 defines a conservative evidential convention, not a voting rule or theorem of democratic legitimacy.

$$\text{State}(h \mid \mathcal{P}) = \begin{cases} \text{SupportedCandidate,} & \text{if } G_i(h) \text{ is supported for every } i \in \{1, \dots, 7\}, \\ \text{Contradicted,} & \text{if a necessary } G_i(h) \text{ is contradicted for some } i, \\ \text{Unresolved,} & \text{otherwise.} \end{cases} \quad (41)$$

The logical convention presumes that each guard is specified as necessary for the particular bounded proposition, so a negative guard warrants only rejection of that proposition’s evidential support. A record may support a narrower claim, for example that a person was invited or that a proposal was entered into minutes, when the broader consequential-influence claim remains unresolved. It would be inappropriate to treat lack of documentation as affirmative evidence of exclusion or to treat procedural performance as evidence of legitimacy. The state labels also do not estimate causal effects or probabilities; competing mechanisms must be investigated separately.

21.14 Audit Objects for Participation and Legitimacy Inquiries

Table 21 identifies records that can discipline a bounded historical inquiry. It distinguishes the kind of trace that might be available from the proposition that the trace can support. The objects listed are illustrative, not a standardized checklist applicable with equal weight to each organization.

Data governance is part of the evidential problem. Participation records may contain sensitive information about recipients, children, disabilities, immigration status, conflict, or personal criticism. Consent to take part in a meeting is separate from consent to become a research subject or to have one’s statements publicly archived. Case-specific authorization, minimization, confidentiality, and applicable legal and research-ethics safeguards are necessary for any empirical extension. The present section reports no fieldwork and makes no claim to have accessed such material.

21.15 Constructed Histories of Participation and Institutional Response

A support council with a narrow decision domain. Consider an entirely hypothetical community care programme with a volunteer council that votes on outreach schedules. The council is elected

Table 21: Evidence objects and limitations in collective-participation histories

Evidence object	Candidate historical inference	Interpretive limitation
Constituency and roster records	Stated boundaries and registered positions	A roster may omit affected non-members
Invitations and access records	Notice, location, translation and entry routes	Sending an invitation does not show its receipt
Agenda versions and submissions	Proposed and screened decision alternatives	Informal or deterred proposals may be absent
Meeting records and communications	Expression, uptake, dissent and changes in reasons	Minutes can compress conflict and silence
Mandates and delegation instruments	Documented competence and representative scope	Formal delegation does not prove consent
Vote or decision records	Stated dispositions within a particular procedure	Recorded outcome may lack implementation power
Budget and task-allocation traces	Resources mobilized for an endorsed action	Expenditure may have multiple causal sources
Complaints and review registers	Contested decisions and available appeal routes	Unreported harms remain unobserved
Participant accounts and withdrawals	Experienced costs, perceived efficacy and exit	Testimony needs context and ethical safeguards
Later policy and capacity records	Potential feedback into access or practice	Temporal succession alone is not causation

by the active volunteer roster and maintains detailed minutes. Service users may submit anonymous requests but cannot amend its agenda. The host organization retains authority over eligibility, staffing, safeguarding and finance. The council's votes are regularly implemented within the scheduling domain, while its suggestions on eligibility are recorded and declined. The bounded evidence could support a conclusion about consequential volunteer influence over scheduling. A stronger assertion that the service is democratically controlled by everyone it affects would require different constituency, agenda and authority evidence. The case shows how meaningful participation in one domain coexists with exclusion from another without resolving whether the division is justified.

A multilingual consultation with selective uptake. Consider a fictional relief coalition that introduces open consultations in several languages. Participants submit proposals about transport routes, distribution priorities and public communication. Independent translation makes submissions accessible, but a donor-defined budget category prevents discussion of some transport alternatives. Several suggestions result in revised schedules, while others disappear from public reports. Some users report improved access; others decline further participation because public attendance might expose their personal circumstances. An investigator could document improved expressive access and some implemented feedback, while claims about equal influence, representativeness and the effects of consultation would require additional evidence. The donor's budget constraints, participants' vulnerabilities, and a changing operational environment supply plausible rival mechanisms.

An AI-mediated forum with contested summaries. Consider a hypothetical transnational volunteer network whose deliberations pass through a multilingual AI summary tool. The tool clusters messages into issue categories and generates an agenda for a coordinating committee. The committee implements several recommendations, but later participants discover that qualified refusals were summarized as support and some minority-language objections were omitted. A revision introduces an appeals channel, versioned summaries, independent human review and more direct access to original statements where lawful and appropriate. Participation statistics may remain unchanged even as the effective agenda changes. A historical reconstruction would examine model versions, interface conditions, authorization,

accessibility, correction routes and the relation of summaries to decisions. Nothing in this constructed narrative establishes subjective status for the AI tool, collective consent by absent participants, or the democratic legitimacy of the network. It illustrates the causal importance of mediation and manifestation feedback.

The three cases are analytic constructions and deliberately exclude names or observations of real institutions. Their role is to stress-test the categories, expose incomplete inferences, and generate competing hypotheses for possible future evidence-based research.

21.16 Countermodels, Normative Pluralism, and Historical Limitations

Participation can improve deliberation and information without necessarily being the appropriate decision procedure for every task. Emergency response may require prompt action under a bounded professional or legal mandate; later participatory review can remain important while authorization for the immediate intervention rests elsewhere. A consultation process may draw on extensive participation yet reproduce domination through the agenda, financing, intimidation, or inaccessible formats. A decision rule may be procedurally impeccable according to a group's constitution while resting upon unjustified exclusions. Historical evidence of effective influence, procedural compliance, and moral legitimacy therefore answer distinct questions.

The present framework cannot settle competing theories of democratic legitimacy. Relevant disagreements concern the identity of the demos, equal standing, rights, deliberative quality, accountability, fair influence, protection of minorities, legitimate expertise, emergency exceptions, and the political status of non-state organizations. Some theories give priority to inclusive deliberation; others emphasize authorization, participation, contestation, rights, or public justification. Their differences are substantive and should be represented on their own terms. The GR dossier can inform these debates by specifying conditions and consequences but does not replace normative justification with relational description.

Causal interpretation is also limited. Expanded participation might coincide with improved services because of greater funding, staff experience, a change in user needs, or external legal requirements. Documentary absence may reflect archival loss rather than suppression. Disagreement may reveal exclusion, legitimate dissent, divergent interests, or incompatible evaluation horizons. General claims about participation effects require suitable comparisons, access to relevant process records, and designs that account for selection into participation. The section's formal apparatus is preliminary and unvalidated.

21.17 Historical Implications for Generative Relational Inquiry

Collective participation can be approached as a historically generated configuration of entry paths, communicative relations, agenda authority, decision competence, implementation resources, and contestation mechanisms. Its outcomes may include changes in knowledge, trust, cooperative capacity, recognition, and the distribution of alternatives. These changes are heterogeneous and sometimes mutually conditioning; effects in one domain may accompany burdens or exclusions in another. The three GR reality levels help maintain the distinction between provisional ontological description, efficacious relational configurations, and context-dependent institutional manifestations.

The strongest warranted contribution of the present section is methodological. A claim that collective governance is participatory becomes more precise when the analyst specifies who could act, in relation to which matter, by what route, with what consequence, and under whose authority. A claim of democratic legitimacy requires the additional work of normative argument and, when applicable, legal interpretation. The evidence-indexed dossier and constructed comparisons provide a vocabulary for that work while preserving disputed categories, missing records, historical alternatives, and the possibility that legitimate arrangements differ across tasks and affected constituencies.

Subsequent inquiry into finite historical configurations and comparative trajectory grammars can use these participation records as typed components rather than flattening governance, voice, authority and legitimacy into an undifferentiated measure. Historical comparison will then remain open to both partial correspondences and consequential differences in context.

22 Finite Historical Configurations and Comparative Trajectory Grammar

Comparative historical inquiry into volunteer and aid relations requires a method for placing differently documented trajectories in relation without treating their participants, institutions, or outcomes as interchangeable. This section develops a preliminary *finite historical configuration* and an evidence-indexed *comparative trajectory grammar*. Its purpose is to specify bounded records, admissible correspondences, partial joins, and conditions under which a comparison remains informative despite omissions, contradictory accounts, or changing relational boundaries. The method is reconstructive and formal-interpretive. It integrates event-sequence analysis with comparisons of roles, access paths, mandates, subject positions, and manifestations, then examines three constructed histories and countermodels. The grammar is a proposed descriptive instrument within generative relational (GR) inquiry; it is neither a universal syntax of social history nor an estimator of causal effects or normative legitimacy.

22.1 Comparative Objects and the Selection of Historical Windows

A historical comparison begins with an explicitly posed question, a population of potentially relevant cases, and the temporal and practical boundaries within which its answer is meaningful. Two volunteer associations can have the same founding date and volunteer count yet differ sharply in their tasks, access rules, host mandates, beneficiaries, and relations to public services. Conversely, a dissolved organization and a successor group may have different names and legal forms while retaining some of the same trained participants, accessible service paths, or relations of trust. Comparison should therefore attach to a specified configuration and property rather than to the unqualified identity of organizations.

Let an inquiry concern a task q over observation intervals I_a and I_b . The investigator first identifies which participants and affected nonparticipants enter the scope, which relevant actions count as records, which institutional domains govern those actions, and what questions about continuity, transformation, or difference are being asked. A short crisis interval may reveal rapid changes in response capacity while concealing the slower formation of skills and authority. A decade-long interval may clarify personnel succession yet obscure the mechanisms of particular encounters. The chosen window, resolution, and event segmentation are thus part of the comparison itself, to be reported with their consequences.

A case may contain nested units: one response episode within a programme, a programme within a federation, or a participant's trajectory across several institutional positions. Those units are connected, yet evidence about one scale may fail to characterize another. Investigators should describe the nesting and the changes of scale explicitly. The resulting finite object is a bounded research representation, not a claim that the social history itself was finite or fully observed.

22.2 Three GR Reality Levels and the Status of Comparison

At the ontological level, the ultimate character of persons, institutions, collective subjectivity, value, or artificial agency remains suspended within the present GR approach. A comparative grammar can organize attributed objects without deciding whether its categories reveal fundamental entities. A volunteer, an affected child, a recipient collective, a coordinating AI service, and an animal subject may appear in the same record because their relations are at issue. Such co-appearance establishes neither equivalent moral standing nor a shared legal status.

At the level of relational beings, historically constituted role structures, authorization paths, recurrent actions, competencies, dependencies, and patterns of recognition can acquire practical efficacy. Comparing these configurations requires attention to the circumstances in which they were sustained and revised. Two nominally similar volunteer coordinator roles may differ because one carries an actual power to authorize patient contact and another provides only informal advice. The relevant correspondence may be narrow: comparable communication work with different institutional competences.

At the manifestation level, archives, rosters, charts, interviews, translated documents, interfaces, and statistical classifications provide context-dependent access to relational histories. They also select

what becomes visible. A historical comparison based solely on annual reports may reproduce a common reporting format while missing divergent underlying practices. Furthermore, a classification used by investigators can affect subsequent recognition if the research is publicly circulated or incorporated into management decisions. The manifest record and any later feedback require their own evidential histories; comparability in a spreadsheet is not equivalent to comparability of relations.

22.3 Finite Configurations as Typed and Evidence-Indexed Records

A finite historical configuration is a selected set of records concerning events, participant positions, relations, conditions of access, and their changing descriptions. Finiteness is an explicit restriction on the material selected for inquiry. A record may designate an interval, an uncertain order relation, or a range of possible dates rather than an exact timestamp. The same event may have several mutually inconsistent descriptions; the representation retains the descriptions and their provenances instead of resolving disagreement by silently choosing a preferred one.

For a bounded history h and inquiry scope (q, I) , the proposed typed dossier is introduced in Equation 42. Each component denotes a set of admissible descriptions indexed by sources and uncertainty rather than a scalar measurement.

$$\mathfrak{G}_h^{q,I} = (E, \preceq, P, R, A, K, M, B, V, S, \Xi, \Pi)_h^{q,I}. \quad (42)$$

Here E records events and observation windows, $\preceq$ a partial and evidence-qualified temporal order, P participant and affected positions, R relational ties and dependencies, A actions and available alternatives, K task-relative capabilities, M mandates and authorization routes, B participation and institutional boundaries, V heterogeneous value and burden descriptions, S subject-status and representation claims, Ξ manifestations and their feedback histories, and Π provenance, missingness, and contestation information. The tuple is a research schema. Its fields can remain sparse or internally contested, and their contents may refer to several institutional scales.

A proposed description qualifies for inclusion when its source, event scope, claimed referent, and uncertainty can be recorded without overriding another participant's account. Missing evidence should be represented through a specific missingness code, such as unobserved, inaccessible, withheld for ethical reasons, destroyed, or irrelevant to the current scope. Each code has different consequences. Treating an inaccessible clinical record as an event that did not occur would introduce a false absence; treating protected testimony as public data would introduce an ethical and possibly legal violation. Such distinctions condition which comparisons are admissible.

22.4 Trajectory Grammar and Domain-Specific Transformation Rules

The proposed grammar represents a trajectory through typed historical configurations, event descriptions, and admissibility-constrained transformations. An operation may add an observed interaction, change a role occupant, narrow a mandate, redistribute an access path, record an interrupted service, or relate a successor practice to a predecessor. The operation requires documentation of its source and scope. It does not claim that historical actors followed a formal rule system. The grammar describes analytic transformations of records, some of which may correspond to actual historical changes under independently warranted evidence.

A minimal vocabulary distinguishes *constitution* of a position or relation, *enactment* of a task, *recognition* through a category or authorization, *transmission* of knowledge or competence, *redistribution* of options and burdens, *interruption*, and *succession*. These terms are intentionally broad, but each application carries a task-specific typed argument. Constitution of a volunteer role is an historical claim about stabilized expectations or mandates; constitution of legal personhood involves different grounds and cannot be inferred from the same operator. Likewise, transmission of a written protocol is weaker than reproduction of the task competence it once mediated.

Transformation descriptions may be ordered only partially. A reported training event may occur before or overlap a change of supervisor; the record may be insufficient to order the events precisely.

Parallel processes can share a common source without being causally linked. A grammar that permits unresolved temporal relations better preserves historical possibilities than one forcing all events into a total chronology. Operations are also reversible as *descriptions*: an analyst may withdraw an earlier classification after new evidence appears. Historical consequences themselves need not be reversible.

22.5 Temporal Alignments and Non-Equivalent Event Sequences

Sequence methods offer a family of ways to compare event orderings, stages, and overall trajectories. Abbott's review surveys stepwise and whole-sequence approaches, together with the assumptions that accompany them [1]. The present grammar draws methodological motivation from that plurality. It does not assign a universal distance between volunteer histories or regard an automatically aligned timeline as evidence of common meaning. Abbott's further work on time and causal assumptions supports explicit scrutiny of the segmentation and timing choices made by the analyst [2].

For example, two programmes may each report a recruitment event, an orientation phase, and a service interruption. The recurrence of those labels supplies an initial candidate alignment. The processes may nonetheless differ if one programme recruits participants into supervised professional work and the other mobilizes autonomous neighborhood assistance. Their interruptions may reflect a deliberate safety moratorium, a loss of funding, or the justified completion of an emergency task. Ordering alone cannot determine whether the trajectories instantiate the same mechanism.

Temporal correspondence should consequently be indexed by the question being compared, the admissible tolerance for uncertain dates, and the dependence on event classification. Investigators may identify a *partial temporal match* when supported events have compatible orders even if other events have no counterpart. Where an interval is censored, a purported absence of a transition should be recorded as unresolved. Different alignments may be warranted for studying resource renewal, democratic participation, and the effects of a withdrawal, even when the observed cases remain the same.

22.6 Partial Joins, Correspondence Types, and Unmatched Positions

A historical join identifies proposed correspondences between elements of two configurations. The proposed correspondence can be between tasks, action forms, roles, dependencies, rights-bearing positions, recording practices, or transformation episodes. A joined pair retains separate source identities and the basis for their comparison. Some correspondences concern formal office labels; others concern the availability of a specific action under a particular mandate and resource environment. These are different types of relations and should receive different names.

A *partial join* permits several outcomes. One event can have a credible counterpart; another can be matched only at a broader type; a third may be excluded because its apparent resemblance conceals incompatible authorization; and a fourth may remain unmatched because the evidence is insufficient. Many-to-one and one-to-many correspondences may be allowed when their historical interpretation is justified, such as a former coordinator position divided among several successors. A transformation from one volunteer post into three specialized offices cannot be assumed to have conserved every responsibility, even if the total recorded work hours remain similar.

The unmatched remainder has positive analytical importance. A recipient's refusal, an animal welfare constraint, an inaccessible language, a confidential appeal route, or a rights claim may exist in only one configuration. Removing it to make the two histories align can obscure the most significant historical difference. Accordingly, each join should preserve a remainder register describing unmatched positions, alternative classifications, disputed equivalences, and evidential reasons for nonalignment. This remainder is part of the comparative result, rather than a cleaning error.

22.7 Configurational Comparison, Case Diversity, and Equifinality

A case-oriented comparison can investigate how combinations of conditions differ, recur, or lead to superficially similar outcomes through distinct mechanisms. Ragin's comparative method is a well-

established predecessor that combines case-oriented reasoning with formal configurational strategies, including Boolean analysis [56]. Within the present study, such work motivates making combinations and scope conditions explicit; it does not warrant reducing partly unknown relational histories to complete binary vectors.

Consider two successful service renewals. In one programme, the continuation may depend on a stable funding arrangement, formal succession planning, and authorization by a host institution. In another, it may depend on neighborhood reciprocity, flexible participant substitutions, and redistributed knowledge. The shared outcome of continued service therefore permits multiple histories of its generation. Conversely, the same training protocol may be followed by reliable coordination in one context and service interruption in another because consent routes, gatekeeping practices, and access conditions differ.

Cross-case inference has to account for which cases entered the sample. A collection of surviving organizations may overrepresent visible continuity and underrepresent terminated but influential practices. A corpus drawn from administrative archives may omit informal solidarity networks. Comparisons across jurisdictions may conflate differences in legal authority with differences in volunteering itself. A valid research design needs an explicit selection rationale, possibly including cases with negative or indeterminate outcomes, and attention to the situations in which candidate conditions could be observed.

22.8 Cross-Level Relations, Manifestation Differences, and Feedback

The three GR levels constrain the interpretation of cross-case resemblances. Ontological suspension precludes drawing a metaphysical equivalence between two social entities from similarity of recorded structures. At the relational level, a comparison can examine whether a particular configuration of skills, expectations, and permissions sustains similar capacities under specified conditions. At the manifestation level, the analyst can compare the forms of disclosure, measurement, or narration used to make a history visible, and investigate how those forms may shape later action.

Institutional reporting templates exemplify a cross-level ambiguity. Two organizations may record an identical number of volunteer contacts because they use the same definitions, while the contacts differ in intensity, voluntariness, recipient access, or professional oversight. A change in the template may cause a measured discontinuity without a corresponding transformation of practical relations. Alternatively, a new reporting category may condition funding, reputation, or permission and thereby eventually alter the relational configuration. The analyst should document the chronology of categorization, measurement, and subsequent decisions before proposing a feedback mechanism.

The comparative grammar can also accommodate mediating technologies. A machine translation or AI classification system may structure the observations that enter a record and the interpretations that follow. Its situated causal influence is analyzable through deployment, human reliance, organizational policy, available corrections, and historical revisions. A shared algorithmic label across institutions does not establish equivalent experiences of affected persons, normative legitimacy, or subjective status for the system itself. Similar tools may participate in sharply different relational arrangements.

22.9 Subject Heterogeneity, Translation, and Non-Substitutable Claims

Historical configurations may include children, disabled participants, older persons, animals, professional decision-makers, autonomous volunteer collectives, and artificial systems. Their statuses are constituted or recognized through different empirical, ethical, political, and legal practices. Comparison must carry these differences into the typed fields rather than assign all positions an identical agency or authorization parameter. Expressions of preference, representations by another person, decisions under a legal mandate, welfare indicators, and machine-generated recommendations have different evidential implications.

A recipient-centered support history may preserve a child's reported wishes through accessible communication and representation; another may only preserve a caregiver's interpretation. The first record and the second can be compared concerning the opportunities available for communicating preferences, but the comparison cannot attribute identical consent or agency. In animal-related aid, signs of distress and species-sensitive welfare assessment call for distinct evidence; the same institutional label

of beneficiary is inadequate. An AI-to-AI coordination record may describe emergent conventions in communication without implying that those conventions possess human legal authority or conclusively establish moral standing.

Translation between categories should therefore be explicit and contestable. If two institutions use different terms for a role, the investigator describes why a narrow functional correspondence is plausible and what normative or institutional distinctions remain. Where categories embed incompatible judgments of personhood, disability, welfare, or legal capacity, forcing a single cross-case classification can damage the inquiry. The grammar makes room for plural, unresolved translations, supported by disaggregated source evidence.

22.10 Power, Feasible Alternatives, and Comparison-Induced Erasure

A comparative design can reproduce power asymmetries at the stage of deciding what counts as a case or a relevant event. Administrative archives privilege authorized activity; donor accounts privilege reportable outputs; professional records privilege institutional risk categories; volunteer testimony may privilege experiences of care or burden. Some affected persons have limited capacity to create or preserve records. The analyst should examine who controlled the source materials, what alternatives were excluded from discussion, and which histories could become part of an official account.

The feasible alternatives available to participants also differ. Identical recorded choices may result from freedom to choose in one case and constrained or coerced options in another. A recorded decision to remain with an organization may reflect trust, lack of access to a replacement service, financial dependence, or concern about reprisals. These explanations demand distinct evidence. When comparing institutional arrangements, the object of comparison is thus the actor-relative feasible option set, including the cost and practical credibility of refusal, complaint, and exit, rather than the mere number of formally listed alternatives.

Protecting the unmatched remainder is an elementary counterweight against analytic erasure. If a standard coding system cannot represent a vulnerable group's alternative or a disputed account, the investigator should record this limitation and assess whether the design needs revision. A comparison that makes data sets tidier by suppressing differences may increase formal uniformity while weakening historical validity. The value of the grammar depends in part on documenting the costs of its own abstractions.

22.11 A Guarded Convention for Bounded Comparative Claims

The dossier in Equation 42 makes the record components available for examination. A separate rule is needed for the narrower assertion that two histories support a particular comparative proposition. Let π denote a typed correspondence proposal for a specified question q and intervals I_a, I_b . Seven evidential guards are proposed: G_1 requires explicit tasks and observation boundaries; G_2 requires traceable source identities and handling of missingness; G_3 requires valid typed correspondences and the preservation of unmatched positions; G_4 requires interval-compatible event relations; G_5 requires separate tests of practical access, competence, and mandate where they bear on the claim; G_6 requires examination of rival classifications, selection, and feedback; and G_7 requires privacy, consent, and relevant data-use safeguards. Each guard is question-specific, and a guard with inadequate evidence remains unresolved.

Equation 43 defines a conservative three-state record convention. The designation *supported candidate* means only that the bounded correspondence proposition is supported according to the specified guards and available material.

$$\text{Comp}_q(h_a, h_b; \pi) = \begin{cases} \text{supported candidate,} & \text{if } \bigwedge_{j=1}^7 G_j \text{ is supported,} \\ \text{contradicted,} & \text{if an admissible record refutes the stated } \pi, \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (43)$$

The ordering of the cases is deliberate. An admissible, specific contradiction prevents a supported-candidate classification even if most other guards appear satisfied. Missingness alone does not constitute

Table 22: Evidence objects and interpretive limitations in comparative historical configurations

Evidence object	Potential comparative contribution	Principal limitation
Dated event logs and chronologies	Candidate event order and scope	Incomplete timing and changed segmentation
Task records and practice descriptions	Identifiable action types and outputs	Identical labels may conceal different practices
Role and participant records	Positions, succession, access and occupancy	Formal membership may differ from practical access
Mandates and authorization documents	Decision competence and boundary changes	Nominal mandates may not be exercised
Training and competence records	Potential knowledge transfer and task readiness	Certificates do not establish enacted competence
Resource and service records	Feasibility constraints and task reproduction	Aggregates can hide unavailable resources
Testimony, dissent and withdrawal accounts	Actor-relative alternatives and experienced costs	Safety, consent, selection and recall limitations
Institutional reports and coding schemas	Manifestation changes and reporting comparability	Standardized metrics can manufacture similarity
Revisions, appeals and successor agreements	Feedback, disputes and partial lineages	Later narratives may reconstruct earlier motives
Archival gaps and access restrictions	Bounds on what a join can support	Missingness cannot be treated as a negative case

contradiction. A revised question, narrower scope, or new source can change the classification without changing the historical events. This record convention is a proposed audit practice rather than a theorem of equivalence, a probabilistic confidence scale, or proof that the same causal mechanism operated in both histories.

An investigator may propose several competing π relations at once: a correspondence of office labels, a stronger correspondence of authorized action paths, and a still stronger correspondence of task-reproducible capacities. The records may support the first, contradict the second, and leave the third unresolved. A defensible report displays this pattern rather than collapsing it into an overall similarity percentage. Independent normative assessment is required if a comparison is used to recommend transfer of practice or allocate institutional responsibility.

A partial trajectory correspondence remains a comparison proposal even when each internal record has passed source-compatibility checks. The join convention of Equation 3 and the common interface in Appendix A cannot by themselves establish equivalence, transferred legal competence, or continuity of one collective subject. Unmatched features remain part of the record.

22.12 Traceable Evidence and an Audit of Comparative Joins

Table 22 summarizes possible source objects and interpretive risks in comparisons of finite historical configurations. Its rows are prompts for evidence appraisal, not an assumption that each type of record exists in every jurisdiction or organization.

The provenance of a record matters independently of its apparent informational content. A list of people receiving support may be accurate for a specified administrative purpose but unsafe, incomplete, or unauthorized for research reuse. Comparing cross-border programmes may bring different privacy, medical confidentiality, humanitarian protection, and institutional obligations into view. The relevant binding rules require jurisdiction- and institution-specific examination; the present grammar imposes none as universal law. Where record access is restricted, a valid comparison may have to remain at an aggregate or de-identified level, or may be impossible without unacceptable risks.

Process-tracing research emphasizes within-case evidential questions about sequences and causal explanations [10]. Comparative matches can help specify candidate mechanisms, but an observed

sequence correspondence does not identify a mechanism by itself. Stronger causal interpretation would require evidence about each proposed causal link, counterfactual alternatives where defensible, competing explanations, and the effects of case selection. Section 23 will develop those research designs separately. The formal grammar here supplies a transparent organization for claims rather than replacing the inquiry that could test them.

22.13 Constructed Histories of Partial Comparison

Two volunteer programmes with similar activity records. Consider two fictional community-support programmes whose annual reports each list thirty newly trained volunteers and a stable number of assisted visits. Programme A operates through a formal host institution: volunteers may enter recipient spaces only after supervisor approval, and contact histories are logged under a safeguarded consent process. Programme B consists of a neighborhood mutual-aid network whose trained members coordinate visits with recipients directly; its numerical categories were later adapted from the first programme for funding applications. A comparison of training events and reported visits is possible at a narrow documentary level. The programmes have different access paths, duty allocations, review procedures, and routes for refusal. If the question concerns time spent on outreach, a limited measure may be constructed with suitable definitions. If it concerns an institutionally authorized safeguarding practice, the nominal match is inadequate. An investigator must retain the unmatched mandates and consent arrangements rather than convert both cases into a single transferable operational model.

One predecessor with several partial successors. Consider a fictional aid collective that closes after its emergency task has ended. Former participants form a new group that retains the translation network and some contact practices; a public agency takes over the storage and transport service; and a separate association maintains a confidential complaints channel. Three successor bodies thus reproduce different aspects of the predecessor's activity. A one-to-one organizational alignment would miss the distribution of knowledge, legal responsibility, accessible services, and burdens. The proposed partial join relates each successor to the bounded function it may have retained, with a remainder recording lost capacities, newly created exclusions, and unresolved records of consent. Continuity of one channel cannot establish the continuity of the entire prior system. Neither dissolution nor residual memory suffices to classify the original project as a failure.

A multilingual coordination history with algorithmic recoding. Consider two hypothetical transnational assistance coalitions that use the same AI-mediated translation and issue-clustering service. One coalition permits independent review of original multilingual submissions by authorized staff, preserves objections, and publishes a versioned appeal history. Another relies on compressed machine summaries to form meeting agendas and retains only the latest category labels. Both show an apparently similar number of suggestions reviewed and implemented. In the second case, records needed to reconstruct earlier refusals and minority-language disagreements may be unavailable. The shared technology offers a documentary correspondence; the differences in access, correction, and institutional uptake produce a substantial unmatched remainder. The analyst may classify the effect of certain categories as unresolved pending process records. The example asserts neither personhood for the AI system nor automatic legitimacy of the coalitions' decisions.

These three histories are analytic constructions. They are designed to test the discriminatory capacity of the proposed categories, make incomparability visible, and identify hypotheses that would require independent historical investigation. They are not evidence about actual organizations, participants, or technologies.

22.14 Countermodels, Sensitivity, and Limits of Comparison

A plausible correspondence can result from reporting conventions rather than common history. A similarity in the temporal order of events can arise from mandated administrative cycles rather than shared causes.

Two institutions with similar apparent decision outcomes may differ in the freedom with which affected people could participate or withdraw. A recovered archive can reverse a previously supported classification, and the same records may support a different comparison after the research question changes. These are ordinary possibilities of historical inquiry, not pathological exceptions to the grammar.

Sensitivity should be explored across plausible event segmentations, observation windows, source exclusions, levels of institutional aggregation, and definitions of task completion. The analyst should report which matches persist under these changes. Comparisons with sparse evidence deserve narrower claims. Where a source is ethically unavailable, an unresolved relation may be the most defensible conclusion. An imposed similarity score could conceal this information, particularly if it assigns arbitrary numerical penalties to events whose legal, relational, or moral significance differs. Numerical methods may be useful after their admissible event types, loss assumptions, and research purpose have been justified; they are not required by the present formulation.

Comparative research also risks importing a normative ranking through its coding system. A trajectory labeled advanced or successful may privilege efficiency or formalization over recipient autonomy, privacy, cultural continuity, mutual care, or legitimate withdrawal. The schema permits plural value assessments, including incompatible ones. It does not resolve whether different communities should adopt the same institutional form. The relative efficacy and legitimacy of arrangements require distinct empirical, ethical, political, and legal inquiries. The proposed grammar provides a way to state exactly which historical comparison has been made and which judgments remain outside it.

22.15 Methodological Implications for Historical Research Design

Finite historical configurations make several parts of comparison explicit: the unit and window of observation, the type and provenance of events, the positions and rights at issue, the task-specific action paths, the proposed correspondence, and the remainder that resists alignment. The grammar supplies a common analytical interface between descriptions of nucleation, trust, reproduction, institutionalization, power, participation, transformation, and succession without treating those processes as mutually reducible. A partial join can connect them where the evidence supports it and leave heterogeneous relations separate when the evidence does not.

The most defensible output of a preliminary comparison is a transparent, revisable account of supported correspondences, contradicted matches, unresolved links, and competing explanations. This may assist the formulation of process hypotheses, comparative case selection, and ethical questions about the reuse of institutional practices. It cannot establish the essential identity of organizations, universal stages of volunteering, causal effects, democratic legitimacy, or a shared measure of generative value. The explicit remainder and provenance register are therefore substantive outputs of the research design rather than residual housekeeping.

A subsequent historical research programme can implement the dossier as a versioned data structure with role- and event-specific access controls, record linkage, traceable evidence grades, and reproducible changes to coding judgments. Such implementation would need a data-protection protocol and case-specific permissions before handling actual participant material. Section 23 considers verification, sampling, process evidence, rival causes, and the limits of available archives. The proposed comparative grammar offers a disciplined starting vocabulary for those investigations while keeping its formal, empirical, and normative obligations visible.

23 Verification, Process Evidence, and Historical Research Designs

The historical study of volunteer and aid relations requires procedures that connect a relational description to records capable of supporting, qualifying, or challenging it. This section develops a preliminary research design for evaluating proposed mechanisms of cooperation, trust, institutionalization, succession, and power. Its objective is to distinguish reliable chronology, diagnostic process evidence, causal interpretation, and ethical or legal evaluation while retaining uncertainty about actors and events that

are poorly documented. The discussion combines case-selection reasoning, within-case process tracing, bounded comparative analysis, and explicit data-governance constraints. A typed evidence dossier and a claim-audit convention organize the inquiry; they do not replace substantive examination of records. The final parts specify rival explanations, constructed counterexamples, and reporting obligations for empirical work under the generative relational (GR) framework.

23.1 Research Questions, Outcomes, and Mechanism Claims

A research design begins by stating precisely which historical proposition is open to examination. An inquiry about whether training improved a volunteer team's response capacity differs from an inquiry about whether it increased the number of officially recorded visits, and both differ from an inquiry about whether recipients experienced greater autonomy. The first calls for evidence of task-specific competence and its enacted use, the second for stable counting rules and exposure denominators, and the third for appropriate accounts of recipient experience and available alternatives. Each question selects a different outcome, observational unit, and relevant time horizon.

A historical mechanism claim should specify intervening conditions as well as its proposed starting event and consequence. A claim that a coordinator's action initiated a self-sustaining practice, for example, could involve authorization, repeated participation, knowledge transmission, an accessible handover route, and an institutional commitment to maintenance. The mechanism may fail at several links. A chronology in which each item occurred offers a starting account, whereas evidence that the items operated through the proposed dependencies requires additional examination. Investigators should distinguish the existence of an event, its location in a sequence, the attribution of an effect, and an explanation of how the effect was generated.

The scope of a proposition includes the tasks and affected population, feasible alternatives, institutional setting, and period to which it applies. An effect identified during an acute emergency may depend on exceptional permissions or attention that were withdrawn later. A successful handover between named participants cannot alone support a general claim about reproducibility across organizations. Within the present framework, the relevant empirical question is a bounded one: which relational conditions were operative in a specified historical configuration, with what evidence and with which credible rivals?

23.2 Ontological Suspension, Relational Efficacy, and Recorded Manifestations

At the first GR level, the ultimate ontology of persons, collective entities, norms, values, or artificial agents is suspended. Research may investigate their roles and effects without claiming to establish their metaphysical status. Consequently, a reliable record of AI-assisted coordination could support a claim about causal participation in a workflow while leaving questions of AI consciousness, moral standing, and legal personhood open. Equally, a record of an institution's formal dissolution neither proves the disappearance of its relational capacities nor identifies a metaphysical boundary of the collective.

At the relational level, inquiry concerns historically constituted, sufficiently stable and causally efficacious arrangements: expectations, competencies, mandates, dependencies, channels of complaint, reciprocal work, and capabilities. Their existence for a given research purpose is supported through patterns of action and conditions of persistence, rather than assumed from an organizational label. Tests should examine whether a supposed capability was accessible to particular participants under actual constraints. A training certificate, an available telephone line, or an organizational chart can each contribute evidence; none is a direct measurement of the entire capability.

At the manifestation level, the available record is created by situated practices of transcription, reporting, categorization, interviewing, translation, and archival retention. These practices may distort a relational history and may themselves influence later decisions. A donor's new reporting category could increase what counts as assistance while leaving actual interactions unchanged. It could also alter future funding or staff assignments, eventually changing assistance itself. These are distinct possibilities with different chronological evidential requirements. The three-level distinction therefore helps locate the inferential step at which a manifestation is mistakenly elevated into a relational explanation.

23.3 Units of Analysis and Nested Historical Populations

Potential units include a recipient encounter, a volunteer episode, a project, an organizational division, a network, and a succession spanning several legal entities. An event may be nested within several units simultaneously, and a participant may belong to overlapping networks. The investigator should state the unit used for each inference and record the relations between levels. Aggregated organizational statistics can describe changes in reported activity without explaining how individual interactions or authority arrangements operated. Conversely, a detailed encounter can show a mechanism's local plausibility without establishing its prevalence across the programme.

The target population also requires a historical boundary. A study that begins from a current registry of active organizations omits groups that dissolved, operated informally, lacked authorization, or never acquired the status necessary to enter the registry. Survivorship becomes especially consequential when the proposed outcome is organizational continuity. If entry into an archive depends on official recognition, analyses using only recognized cases may select on a variable that the hypothesized mechanism itself influences. The existence of an accessible list therefore does not identify the full population of relevant historical relations.

Selection should be transparent about which entities were in principle eligible, which were observable, and which could ethically be studied. A legal restriction on access to private health records may create a narrower empirical frame than the phenomenon of interest. This difference should appear in the design and subsequent interpretation rather than disappear beneath a general term such as *participants*. Affected nonparticipants, refused applicants, and people whose complaints were unrecorded can matter for the proposed mechanism even when they cannot be individually identified.

23.4 Case Selection and Selection-Induced Explanations

Case-selection strategies should follow the purpose of the inquiry. A typical case may assist description of an already delimited practice; a deviant case may expose a missing mechanism; diverse cases may reveal variation in mandates and access; and paired cases may make competing interpretations more discriminating. Seawright and Gerring discuss purposive case-selection strategies, including typical, diverse, extreme, deviant, influential, most-similar and most-different cases, with different inferential aims [61]. The source motivates transparent selection rather than establishing that any particular sampling choice identifies a causal effect. Their framework is a methodological precedent, not an algorithm determining an ideal sample for volunteer organizations.

A sample selected only for conspicuous success creates a fragile basis for identifying what generated that success. High observed activity may be associated with training, unusually stable resources, favorable recipient selection, relaxed reporting requirements, or multiple causes acting together. A design should include cases in which a proposed antecedent is present but the predicted result does not appear, when such cases are available and ethically admissible. Cases with similar recorded outcomes but different processes are also informative. Failure to record potential counterinstances weakens a mechanism test even when a vivid positive history is well documented.

Case selection can be adaptive during exploratory research, but the record should distinguish an initial sampling plan from later expansions motivated by emerging findings. Investigators should report searches that found no eligible cases, criteria that excluded difficult cases, and alternative frames that were considered. Variation in archive quality is itself part of the sampling problem. A well-documented unusual programme may receive disproportionate evidential weight because it is easy to narrate; archival abundance is not a measure of causal centrality or social significance.

23.5 Chronology, Exposure, and the Construction of Events

Causal assessment relies on an adequate temporal description, including uncertainties about observation windows and event boundaries. Investigators should distinguish the date on which a document was written, the date of an event it describes, the interval of a repeated practice, and the date on which the

record became available to decision-makers. These timestamps may differ substantially. The known order of two reports need not determine the order of the actions described in them. A contemporaneous log can supply a narrower interval than a retrospective interview, although logs may contain systematic omissions.

Exposure definitions are equally important. If a volunteer coordination change is assessed against the number of completed encounters, the analyst should identify the population eligible for those encounters and the period during which opportunities could occur. A rise in completed cases alongside an even larger rise in requests may signal a declining response rate. A change in operating hours may increase annual activity without improving effectiveness per accessible hour. Where data do not support an appropriate denominator, descriptive counts should remain counts rather than causal measures of capability.

Event segmentation is partly interpretive. An intervention described as a single successful transfer in a public report may encompass several failed attempts, conflict over permission, and recipient refusal. Alternative segmentations should be retained as possible coding choices when they materially change a conclusion. Partial orders are preferable to invented exact dates when the historical record cannot determine sequencing. The construction of a chronology should expose, rather than hide, the decisions by which continuous practice becomes a finite set of observations.

23.6 Source Provenance, Independence, and Triangulation

Source evaluation begins with provenance: authorship, purpose, institutional position, date, custody, transformations, and restrictions on use. A contemporaneous supervisor note may contain precise information about authorization while offering a limited account of recipient autonomy. An interview may provide insight into expectations and experienced burdens while being vulnerable to memory reconstruction or retrospective rationalization. A public annual report may reliably state an official classification but leave the operational definition of its categories unknown. These differences are relevant to source suitability, not a simple ranking in which one form of evidence is always superior.

Triangulation can strengthen a claim when independent routes of observation converge on a precisely stated proposition. Three documents derived from the same database or prepared from a single press release remain dependent evidence even if they appear in separate archives. An interview conducted after a participant has read an official narrative may also reflect that narrative. A design should therefore trace dependencies among sources and ask whether the supposed convergence adds independent information. Disagreement may reveal different observational positions, incompatible time frames, unequal access, or genuine contestation; it deserves explanation before reconciliation.

The original form of a record should be preserved where permissions permit, with transformations documented separately. Translation, OCR, summarization, de-identification, and algorithmic classification are not neutral transport operations. Each may lose distinctions consequential for an interpretation. Where an original is inaccessible to a researcher, the provenance register should mark the evidential limit rather than treating a derivative text as an exact substitute. Ethical non-disclosure and evidential deficiency have different meanings and should be reported separately.

23.7 Diagnostic Process Evidence and Causal Mechanisms

Process tracing examines diagnostic pieces of evidence within a case in relation to hypotheses and sequences. Collier emphasizes the contribution of careful description and causal-process observations to disciplined inference [21]. The approach has a special role in histories of aid because the same final activity count can arise from different routes of coordination, sanction, trust, and capacity. A mechanism inquiry should specify what traces would be expected if a proposed link operated and what traces would be plausible under rival accounts.

Consider a hypothesis that mentorship enabled volunteer role succession. Useful evidence might include dated mentorship encounters, documented task demonstration, opportunities for independent practice, subsequent authorization, and successful performance under conditions where the mentor was absent. Yet even this sequence does not isolate mentorship automatically. Prior experience, concurrent

supervision, selection of unusually prepared newcomers, or changes in task difficulty may be relevant alternatives. A negative training record may also mean that informal mentorship occurred without registration. The investigator should seek evidence bearing on the rival routes rather than treating the presence of the official training programme as a sufficient explanation.

Mahoney develops a logic for differentiating process-tracing tests, including evidence that is especially useful for excluding a hypothesis and evidence that particularly supports one under specified expectations [42]. Such tests are meaningful only in relation to what a given hypothesis predicts and what its competitors predict. A revealing document for one claim may be routine under several rivals. Test labels do not substitute for an account of their assumptions, the potential dependence of observations, and the possibility that the expected trace was never recorded.

23.8 Rival Explanations and Mechanism-Specific Countermodels

A causal narrative should set out plausible alternatives before selectively assembling confirming evidence. A reported increase in cooperative capacity might arise from new training, higher-quality applicants, more accessible transport, changes in recipient need, donated equipment, or administrative relabeling. Some causes may operate together; the existence of one need not eliminate the others. An inquiry that treats training and equipment as mutually exclusive explanations may conceal their complementarity. Rival mechanisms should therefore be specified as possible causal processes with distinct observable implications rather than as rhetorical objections.

Historical countermodels can be constructed to test how well a proposed account distinguishes otherwise similar observations. For example, a sudden fall in reported service refusals could result from successful mediation, exclusion of hard-to-serve cases from the register, reduced demand, or suppressed complaints. The observations needed to discriminate among these histories concern eligibility, enrollment, decision records, routes for contestation, and changes to the reporting process. If such evidence is absent, a confident causal explanation would exceed the record.

Counterfactual claims are particularly demanding. A statement that an intervention prevented a breakdown requires some warrant for what could plausibly have happened without the intervention, not merely a later absence of breakdown. Process evidence, comparable settings, documented contingency plans, and knowledge of resource conditions may bound a counterfactual argument. They seldom yield a unique alternative history. The study should report the space of credible alternatives and which conclusions depend on restrictive counterfactual assumptions.

Causal graph as a revisable question map. For a historical claim that a volunteer initiative *A* changed access *Y*, a working diagram may include pre-existing capacity *C* affecting both initiative uptake and access, changing demand *D* affecting uptake and recorded outcomes, a mediating cooperative process *M*, and the documentation regime *L* affecting whether relevant events are observed. Such a diagram organizes rival temporal pathways, but it does not establish that all confounders are measured or that intervention effects can be identified. Selection on continued participation or an archived “successful” project may open a misleading association between *A* and other causes of *Y*. Researchers should report which arrows are stipulated, directly documented, inferred, or contested, and test conclusions under at least one alternative placement of the most consequential uncertain relationship. Where relational interference spreads across organizations, potential-outcome contrasts must specify relevant exposure neighborhoods rather than treating each volunteer episode as isolated. The mechanism-specific audit in Appendix B supplies a transparent record for these choices.

23.9 Missing Archives, Selective Silence, and Evidential Asymmetry

Missing material should be classified by its reason for absence where known. Records may have been lost through technical failure, never produced because a practice was informal, withheld to protect personal information, removed through an institutional retention schedule, or inaccessible because of jurisdictional restrictions. These conditions produce different implications for causal inference. A destroyed activity

log can undermine event chronology; withheld testimony can constrain reproducibility while reflecting appropriate protection; a silent administrative record may reflect an excluded group rather than an absence of dissent.

Evidence of absence requires an expectation of observability. If a complaint channel was reliably maintained and its complete register is available, the lack of a recorded complaint may have some bearing on a narrowly defined proposition about formal submissions. It remains weaker evidence about experienced harms or unexpressed objections. Where access to the channel was limited, a zero count may signal institutional exclusion. The investigator should specify the institutional conditions that would have made a relevant action recordable and preservable before inferring that the action did not occur.

Archival survival can also be a manifestation of power. Senior officials may retain meeting minutes while affected persons' accounts exist only through informal channels. The resulting record may amplify the explanations of those who authorized an intervention and weaken reconstruction of those who were refused assistance. Research design can partly address such asymmetries through purposive recruitment, alternate archival collections, accessible interviews, or explicit acknowledgement of unavailable voices. It cannot recover ethically restricted evidence merely by declaring the need for methodological completeness.

23.10 Typed Evidence Dossier and Design Versioning

A formal record can help keep the relation between questions and evidence reviewable. For a bounded historical inquiry q on case h and interval I , Equation 44 proposes a twelve-component dossier. The components are typed descriptions with provenance, missingness and revision histories; they are not assumed to admit conversion into a common numerical scale.

$$\mathfrak{D}_h^{q,I} = (U, W, H, O, E, T, M, R, A, X, S, \Pi)_h^{q,I}. \quad (44)$$

Here U identifies the target population, observational unit and nesting; W the research window and exposure conditions; H the candidate hypotheses and their scope; O outcomes and operational definitions; E the source-indexed observations; T event ordering and chronological uncertainty; M proposed causal links and their expected traces; R rival accounts; A actor-relative alternatives and accessibility; X potential recording or classification feedback; S subject positions, rights-related restrictions and protections; and Π provenance, missingness and revision decisions. Equation 44 makes source selection and the investigator's classifications visible, but it is not an estimator, causal graph, or theorem of historical truth.

A versioned dossier should retain the distinction between an event record and its later interpretation. New evidence can change an interpretation without rewriting what the earlier investigators had available. An amendment should identify the prior claim, new source, reason for revision, and consequences for rival hypotheses. Records about legal or ethical permissions require periodic rechecking, since consent, retention authorization, and institutional jurisdiction can change over time. An external research archive, if justified, should expose only what permission and risk assessment permit, while keeping an internal audit trail accessible to the appropriate authorized reviewers.

The proposed fields are reusable across sections of the present paper, but the research question determines which are indispensable. A claim about a short-term encounter may require precise consent and task-performance traces; a claim about multi-decade institutional reproduction may require evidence of succession and changing legal competence. A sparse but accurate dossier is preferable to fields filled by conjecture. The formal language supports disciplined incompleteness rather than a false impression of total historical visibility.

23.11 Evidential Status of Bounded Mechanism Claims

A reproducible analysis can state the conditions under which a mechanism interpretation is provisionally admissible. For a hypothesis H and source-indexed dossier $\mathfrak{D}$, the investigators should check whether the unit and event window are defined, the proposed mechanism has discriminating traces, the records permit relevant chronology, major rival explanations have been examined, the source dependencies and

missingness have been considered, the outcome definition is stable enough for the claim, and access and subject safeguards are satisfied. These are research-design obligations, not a substitute for the detailed judgment each field requires.

The earlier three-state conventions apply only to claims that have already passed a domain and research-permission check. Within that restricted domain, a failed guard can indicate a defeated admission condition without falsifying the wider historical mechanism. This section makes the prior domain check explicit through a fourth state, *out of scope*. Evidence inaccessible for ethical reasons, evidence not yet collected, and evidence affirmatively inconsistent with a hypothesis must be recorded separately. A supported candidate remains a qualified inference under its own local claim type; status labels across different dossiers are not directly comparable measurements.

Equation 45 records four distinct outcomes of this bounded appraisal. Here K_j denotes an explicitly documented appraisal of the j th condition, and $C(H)$ denotes a sufficiently diagnostic contradiction under the stated assumptions. The order of its cases gives scope checking priority, then an admissible contradiction of a necessary claim condition priority over an apparent accumulation of supporting traces. If the claim is inside scope but a key rival remains empirically indistinguishable, the status may support a narrow occurrence claim while leaving the causal attribution unresolved; the function is evaluated for each precisely typed claim rather than applied once to an undifferentiated narrative.

$$\text{Eval}_q(H \mid \mathfrak{D}) = \begin{cases} \text{out of scope,} & \text{if the claim falls outside the defined } (U, W, O), \\ \text{contradicted,} & \text{if } C(H) \text{ is warranted,} \\ \text{supported candidate,} & \text{if all applicable } K_j \text{ are supported,} \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (45)$$

A *supported candidate* is a provisional interpretation relative to a bounded question and existing evidence. It establishes neither certainty nor a numerical probability of causal efficacy. An *out-of-scope* outcome differs from an unresolved claim: the former requires reformulation of the unit, time horizon or outcome, while the latter identifies insufficient discrimination within an otherwise coherent question. The investigator should preserve several competing supported candidates when existing records cannot distinguish them. Independent appraisal is still required for normative legitimacy, the legal authority of actors, and the acceptability of interventions affecting protected subjects.

Appendix A reconciles the evidence-state vocabularies without converting the section-specific admission guards into a single causal identification test. Accordingly, the review under Equation 45 records the result of a *declared* historical warrant and rival-account examination. It does not inherit causal validity from a positive classification in an earlier descriptive dossier.

23.12 Auditable Evidence Sources and Limits of Inference

Table 23 outlines evidence types that may discriminate among historical process accounts and the limits attached to their interpretation. The table is an audit instrument for designing and reporting inquiry rather than a claim that every organization produces these sources or that they can all be accessed ethically.

The evidential value of a row depends on the proposed claim. A funding ledger may be highly diagnostic for a mechanism involving delayed reimbursements and largely irrelevant to a claim about informed recipient agreement. Similarly, a recorded complaint may challenge an assertion that an accessible remedy was functioning only if the alleged complaint was within its mandate and the relevant response process can be reconstructed. The table encourages investigators to report these conditional relations rather than combine heterogeneous documents into an unqualified score of evidence quality.

23.13 Research Ethics, Access Governance, and Reproducibility

Volunteer and aid histories can contain health information, names of vulnerable people, family relations, details of humanitarian protection, political risk, or correspondence created under expectations of confidentiality. Ethical and lawful use requires context-specific review of permissions, data minimization,

Table 23: Historical process evidence, potential uses, and interpretive limitations

Evidence object	Contribution to a mechanism inquiry	Principal limitation
Dated task logs	Sequence, exposure and actual activity	Changes in logging and incomplete opportunity sets
Mandates and access approvals	Authorized action paths and amendments	Formal permission may differ from enacted access
Training and handover records	Expected competence-transfer traces	Attendance does not establish practical mastery
Contemporaneous correspondence	Decisions, objections and rejected options	Selective archiving and asymmetric authorship
Recipient and participant accounts	Experienced consequences, refusal and burden	Unequal voice, recall effects and ethical restrictions
Complaint and appeal histories	Contestation and institutional response	Silence may reflect inaccessible channels
Funding and resource ledgers	Timing of external constraints and renewal	Funding totals conceal usable resource distribution
Classification and interface versions	Changes in what becomes recordable	Later summaries may erase original categories
Departures and successor records	Continuity, loss and alternative trajectories	Surviving organizations dominate accessible archives
Independent observations	Triangulation of mechanisms and performance	Apparent independence may share one upstream source

consent or other applicable legal bases, retention periods, and consequences of disclosure. The present paper offers methodological principles; it does not purport to specify the legal rules of every jurisdiction or the mandates of particular institutions. Institutional review, professional duties and local law may require restrictions that prevent public reconstruction of an individual-level event sequence.

Reproducibility can operate at several levels. A public release might contain schemas, synthetic examples, codebooks, decision rules and aggregate checks while individual-level records remain under controlled access or are not retained. Authorized auditors may examine a fuller provenance trail under protective arrangements. Where disclosure would expose recipients or affect institutional safety, transparent documentation of unavailable data and analytic decisions can be more responsible than maximal publication. Methods for anonymization need their own risk evaluation because unique trajectories and small populations may permit re-identification despite removed names.

The research protocol should also account for participants whose position makes refusal difficult. A volunteer relying on an institution for references, a child represented by adults, a person seeking urgent services, or a worker with precarious employment may face pressures when asked for testimony. Accessibility, the possibility of declining participation, and channels for correction matter both ethically and epistemically. AI-generated transcripts or summaries require assessment of their fidelity, deployment circumstances and correction rights; the presence of computational mediation does not confer consent or justify a broader inference of subject status.

23.14 Constructed Histories of Evidential Ambiguity

Training uptake and apparent improvement. Consider a fictional volunteer programme that reports a marked rise in completed visits after introducing intensive training. A celebratory narrative attributes the improvement to instruction. In the same period, however, a new recruitment channel brought in experienced volunteers, transport support expanded, and reporting switched from completed recipient encounters to scheduled contact attempts. Under the present design, the narrative must be decomposed into claims about exposure, competence, recorded outputs, and recipient access. Training rosters, practice observations, source-defined counts, travel records and contemporaneous decisions may help discriminate among candidate mechanisms. If only annual totals survive, increased training and increased reported

activity can be established without an identified training effect. A later interview asserting success is relevant testimony but cannot resolve the missing denominator or the changed reporting category.

An interrupted response network. Consider a fictional emergency-aid coalition that ceased distributing supplies after a regional alert ended. Its members continued an informal referral network, while the host institution closed the central coordination account. One archival source classifies the event as organizational failure; another calls it a planned completion. Research must distinguish the initial task from subsequent relational capacities and from legal responsibilities that ended or were transferred. Traces of later referrals may support the persistence of particular ties but do not establish that the previous transport system remained available. A claim that the coalition would have survived under an alternative funding arrangement needs additional warrant concerning policy options, member willingness, and feasible mandates. The record may support several descriptions whose evaluative meanings remain contested.

AI-mediated consultation and archival consensus. Consider a fictional multilingual assistance network that introduced an AI-based clustering system for consultation submissions. A later dashboard reports near-unanimous support for a procedural reform. Original-language records are partially retained, and earlier objections from a minority-language group were compressed under a neutral issue label. The causal questions concern how records entered the system, which translation and clustering versions were used, who relied on the dashboard, and whether correction or appeal could affect the decision. Agreement among three reports derived from the same dashboard is dependent evidence. The available history could support a claim that a specific interface shaped the decision agenda while leaving unresolved whether participants consented, whether the classification altered underlying preferences, and whether any AI system acquired independent normative authority. A protective research design may publish the coding protocol and synthetic traces while withholding identifiable submissions.

These histories are analytic constructions rather than observations of real programmes. They test the proposed protocol's ability to separate description, process inference and normative attribution under sparse or conflicting evidence. No factual claim concerning actual recipients, organizations or AI deployments follows from them.

23.15 Sensitivity, Negative Cases, and Mixed-Method Extensions

A robust inquiry should report whether conclusions survive reasonable changes to case boundaries, event segmentation, observation windows, outcome definitions, and source inclusion. A succession claim might persist when evidence is organized by participant but disappear when task authorization is the unit of analysis. A reported gain in access might disappear when contact attempts are excluded from completed services. Such instability identifies a substantive dependency of the claim, not merely a coding inconvenience. Researchers should explain which specifications are defensible and which variants are included solely as stress tests.

Negative and deviant cases should be interpreted in relation to an explicitly specified mechanism. The absence of an expected handover may challenge a theory that treats mentoring as sufficient for succession, yet shortages of access permission or lack of eligible successors may indicate that necessary background conditions were missing. Conversely, a successful handover without recorded mentoring may suggest an alternative mechanism or missing documentation. The analysis should preserve these possibilities and avoid converting a single discordant observation automatically into a universal refutation.

Quantitative or computational extensions may become useful when data quality, comparability and the research question justify them. Event-history models, longitudinal network descriptions, sequence alignment or simulation can reveal distributions and conditional patterns. They inherit assumptions about risk sets, censoring, measurement, dependence and selection, and their outputs must be interpreted alongside process evidence. An exploratory GR representation may help construct these assumptions explicitly, but it does not authorize arbitrary causal identification or transfer estimates from one setting to

another. Mixed-method work should connect its component inferences at declared interfaces and retain unresolved disagreements among them.

23.16 Research Reports, Revision Rights, and Historical Claims

A defensible historical report should specify its research question, eligible population, actual sample, observation windows, event rules, ethical restrictions, versioned sources, hypothesized mechanisms, rival accounts, and classifications of unresolved evidence. It should distinguish claims about event occurrence from claims about causal contribution, and both from judgments about welfare, justice and legality. Where accounts are disputed, the report can present attributed testimony without converting disagreement into a fictitious common statement. The status vocabulary in Equation 45 is intended to support this practice of revisable attribution.

A historical claim can remain useful while limited. A carefully documented local mechanism may show how an authorized volunteer practice became reproducible under specified conditions, even if it does not demonstrate a general causal effect. A well-described failed comparison may reveal why two organizations' nominally identical programmes were institutionally incomparable. The inability to observe protected testimony may be an important part of a study's epistemic boundary. Such outputs contribute to scholarship because they make the relations between evidence, interpretation and residual uncertainty intelligible to other investigators.

The proposed research design closes a methodological gap left by the finite comparative grammar: it states how empirical work might challenge or corroborate the interpretations that the grammar makes expressible. It remains a proposal requiring piloting, specialist methodological scrutiny, institution-specific ethical and legal review, and case-dependent revision. Later analysis should examine interfaces between the historical descriptions and theories of ethics, justice, political economy and jurisprudence without silently resolving their independent normative disagreements. The empirical design can inform those debates by specifying what occurred, under what relational conditions, with which uncertainties; it cannot decide their standards of justification on its own.

24 Interfaces with Ethics, Justice, Political Economy, and Jurisprudence

The historical account of volunteer action developed in this paper requires a disciplined interface with normative and institutional inquiry. A record of how a practice emerged, reproduced itself, distributed capacities, or disappeared can inform questions of ethical responsibility, justice, political economy, and law. Each field nevertheless poses additional questions, uses partially independent standards of justification, and may reach conclusions that remain incompatible with those reached elsewhere. The purpose of this section is to specify the conditions of responsible translation between a generative relational (GR) historical description and these four fields. The argument proceeds through the distinction between descriptive and evaluative claims, the three GR reality levels, the respective disciplinary interfaces, a typed and provenance-sensitive comparison protocol, and constructed cases illustrating conflicting appraisals. Its method is conceptual reconstruction informed by established disciplinary works; it supplies neither a universal ethics nor a jurisdiction-independent legal opinion.

24.1 Historical Description and the Plurality of Evaluative Questions

Consider a volunteer coordination system in which support requests are increasingly routed through one institutional office. Historical evidence may show that requests became easier to document, that fewer tasks were duplicated, and that some volunteers lost the ability to respond outside the office's timetable. Each statement concerns an aspect of the relational history, provided that the observation window, task definitions, comparative baseline, and evidential provenance are specified. The subsequent judgments concern different objects. An ethical inquiry may ask whether participants' consent and recipients' confidentiality were respected. A theory of justice may ask whose claims were heard and whether the

distribution of opportunities or burdens was acceptable. A political-economic inquiry may ask which resources sustained the new office and whether its operating costs displaced other capacities. A legal inquiry may ask whether data processing, delegation, professional boundaries, and decision procedures satisfied applicable rules.

These inquiries are mutually informative. A normative criticism of inaccessible procedures often depends on facts about opportunity sets and institutional practice. A history that reconstructs burden transfers may identify participants whose ethical claims were omitted from the initial evaluation. A legal classification may shape the historical record itself by determining what institutions are obliged to document. Yet the inquiries answer distinguishable questions. Increased recorded activity establishes an output pattern under a specified measurement scheme; whether that pattern constitutes improvement depends on further assumptions and evaluative reasons. Evidence of procedural authorization can establish an institutional fact within a jurisdiction, while leaving distributive justification disputed. An investigator should retain these interfaces explicitly rather than allowing one question's answer to stand in for the others.

The vocabulary of *interface* is employed in a limited analytical sense. It designates an accountable passage between differently typed questions, claims, and evidentiary requirements. It does not suggest that disciplines are mutually reducible or that their existing theories can be reconstructed exhaustively in GR notation. The historical analysis supplies candidate relational mechanisms and the circumstances of their manifestation. A normative account supplies reasons by which some of those relations may be evaluated; a jurisprudential account further requires identification of relevant legal sources, institutions, and procedures. The resulting comparison can be informative precisely where its conclusions diverge.

24.2 Ontological Suspension and Cross-Level Attribution

The three-level GR distinction remains applicable to normative interfaces. At the first level, ultimate ontological status is suspended. The use of a relational description does not establish whether persons, institutions, value, obligation, or legal personality reduce to the proposed formal entities. The second level concerns historically constituted relational beings and structures whose causal and generative efficacy can be investigated. Examples include a delegated decision route, a dependency on a particular translator, a maintained skill network, or a rule-governed review forum. The third level concerns manifestation: the categories, reports, interactions, testimony, decisions, and public representations through which the second level becomes accessible and through which further action may be conditioned.

Normative predicates should retain their own grounds within this distinction. A participant's documented recognition in an institutional register is a manifestation with possible causal consequences; it is not, by itself, a complete account of the person's moral status. A stable practice of recording a person as unable to consent can shape access and dependence without establishing that the classification is ethically or legally justified. Likewise, an AI-based system may exercise consequential influence within a relational network while its welfare status, moral standing, legal status, and assignable responsibility remain distinct questions. The current framework neither resolves these debates by ontological declaration nor suspends existing human legal protections while they are debated.

Cross-level analysis must also allow feedback. Normative vocabulary can become an actor in the history under study. When an organization describes a programme as *empowering*, that term may affect funding, recruitment, status hierarchies, and the future visibility of recipients. When a court, regulator, or authorized professional classifies an activity under an operative legal category, the classification may modify which actions are permitted and recorded. The analyst should distinguish the validity and justification of these classifications from evidence of their actual historical consequences. A purported right that is widely invoked but not legally recognized may still affect behavior; a binding right may remain poorly implemented. Both distinctions matter to reconstruction.

24.3 Ethical Appraisal of Supportive Practices

Ethical evaluation concerns the responsibilities, permissions, vulnerabilities, and reasons involved in acting with or upon others. In volunteer settings, relevant questions frequently arise at the level of ordinary encounters: whether an offer was genuinely voluntary; whether its recipient could refuse without unacceptable penalty; whether the volunteer was competent to undertake the task; whether confidentiality was protected; and whether a form of assistance displaced the recipient's own agency. Historical evidence may clarify how these conditions changed through repeated interaction. Normative conclusions additionally require a defensible ethical account and sensitivity to the particular relationship.

Several ethical orientations may generate different appraisals of one event. A consequences-focused assessment can attend to changes in access, safety, and well-being over an appropriate time horizon. Duties and rights may set restrictions on otherwise desirable outcomes. Care-oriented reasoning may illuminate histories of dependency, attentiveness, unequal exposure, and the practical labor required to respond well to particular needs. Virtue-oriented approaches may examine dispositions and the cultivation of practical judgment. The present paper uses these as distinctions among recognizable styles of normative inquiry, without treating their named categories as interchangeable or proposing that one automatically prevails. Each requires further development where a concrete case demands a substantive verdict.

The history of a practice can reveal conditions that a snapshot obscures. A volunteer may initially agree to cover a temporary translation gap; as the organization comes to rely on that person, declining subsequent requests may become increasingly costly. The resulting relation can remain described administratively as voluntary while the participant's effective alternatives contract. An adequate ethical analysis should therefore consider consent as an ongoing, context-sensitive relation involving information, credible exit, and consequences of refusal. Conversely, enduring dependence is not always evidence of coercion: a relationship may be freely maintained and mutually valued. Testimony, corroborating behavior, institutional constraints, and affected parties' own accounts are needed to discriminate between candidate interpretations.

An ethical finding should identify the particular practice, affected subjects, temporal and institutional scope, theoretical reasons, and unresolved objections. GR supplies useful descriptions of how such conditions arose. Its typed records do not establish the rightness of acts or the authority of ethical standards.

24.4 Justice, Recognition, and Normative Disagreement

Justice inquiry extends beyond evaluating individual acts. It can concern institutional arrangements, patterned access, allocation of burdens, recognition, voice, and justified relations among participants. The existing literature contains different and sometimes competing approaches. Sen's comparative treatment of justice emphasizes the appraisal of realizations, capabilities, agency, and public reasoning, rather than assuming that one fully specified ideal institutional design settles comparative questions [63]. Young's social-connection account associates responsibility for addressing structural injustice with contribution to social processes that generate unjust outcomes, while distinguishing primarily forward-looking political responsibility from direct attribution of guilt or fault [79]. These are independently developed accounts, with their own normative commitments and limits of application.

A more specific example is Emanuela Ceva's theory of *interactive justice*. It addresses the just management of political value conflict, giving normative significance to fair hearing and procedural equality among parties whose value claims remain in disagreement [18]. The term and its proceduralist theory belong to Ceva; the book addresses the morally acceptable management of political value conflict and should not be treated as a source of generic institutional performance criteria for aid programmes. In the present analysis, the relevant interface is narrower: historical records can help establish whether parties were able to present and contest claims, whether their submissions were transformed by mediation, and whether institutional procedures changed accordingly. Such records do not themselves establish that the conditions of interactive justice have been satisfied, and the GR framework makes no claim to originate or replace that normative theory.

These approaches can be used together as questions without fusing their standards. Suppose a reorganized volunteer network widens overall access while eliminating minority-language deliberation. One account may emphasize the changed distribution of practical opportunities; another may focus on structurally situated responsibility; a proceduralist account may locate an independent defect in hearing and equality. A historian may document each change without deriving a unique ordering of the competing justice claims. Where a research paper advances its own normative ordering, it should identify the reasons and theoretical commitments that support it. Explicit non-agreement is a substantive outcome when the premises differ, not a failure of the historical grammar.

The history of recognition is especially susceptible to circularity. A committee may count participants as represented because their names appear on a roster; the roster may have been defined to exclude those unable to attend, dissenters, or persons represented without consultation. The historically situated constituency, feasible forms of expression, conditions of delegation, and mechanisms of correction must be reconstructed before claims of adequate representation can be examined. Disagreement about the appropriate standard of representation remains a separate normative question, informed but not settled by these observations.

24.5 Political-Economic Conditions of Generativity and Extraction

A political-economic interface investigates how capacities are made possible, maintained, distributed, exchanged, and depleted under historically constituted power relations. Resource dependence, financing, paid and unpaid labor, infrastructure, time, access to knowledge, and the authority to define successful output condition volunteer work. The analysis is therefore broader than the movement of funds. An unpaid interpreter's availability, a recipient's trust, a clinic's authorization, and a community's accumulated knowledge can contribute to a service, although their different forms of significance cannot automatically be entered into one commensurable asset account.

The concept of generative justice has substantive intellectual precedents. Eglash's 2016 introduction concerns the generation and circulation of unalienated forms of labor, ecological and expressive value, with examples of bottom-up production and reciprocal circulation [26]. This source does not itself provide the evidence-indexed, volunteer-aid historical dossier or the case-specific tests proposed in the present paper. The present GR analysis proposes its own historical questions about capacity, conditions of generativity, circuits of recognition and return, and the ways power may close or redirect circulation. This reconstruction is neither an assertion of priority over Eglash's contribution nor an empirical validation of the proposed framework. The distinction between value domains remains important: Anderson's account of plural valuation cautions against evaluating differently valued goods and relations as if one market-like measure exhausted their significance [5].

For a task-specific history, the investigator may trace where resources originate, who can authorize their use, whose participation reproduces them, which actors capture recognition, and whether benefits and burdens return to those sustaining the circuit. An organization might improve throughput by adding volunteer hours while progressively reducing paid staffing or external social support. The apparent production of value can then coexist with a redistribution of costs to volunteers, households, recipients, or other institutions. An ethical or political-economic conclusion about exploitation needs articulated standards and evidence of the relevant mechanisms; financial savings or volunteer participation alone do not prove extraction. Similarly, every unequal return need not amount to injustice where voluntary gifts, mutual aid, public obligations, and plural values are involved.

Historically extended circuits matter because costs and benefits may occur at different times. Emergency action can produce immediate protection and delayed fatigue; investment in training may demand present resources while enabling future competence; a grant may strengthen public reporting while making local practice dependent on externally defined metrics. A GR historical record can separate these trajectories without claiming that one net scalar value captures them. Political-economic arguments should disclose their accounting boundary, labor assumptions, opportunity costs, and normative account of a fair or sustainable circulation.

24.6 Jurisprudence, Legal Sources, and Bounded Authority

Jurisprudential inquiry addresses the nature, interpretation, sources, and institutional operation of law. Particular legal questions also require attention to the relevant jurisdiction, legally competent decision makers, hierarchy of norms, effective dates, and facts of an individual case. Hart's account of legal rules and legal systems is a distinct jurisprudential precedent for analyzing the institutional recognition and use of rules [37]. GR historical records can help establish how a purported rule circulated, which authority invoked it, how it shaped action, and how participants contested or relied upon it. They do not decide the validity of that rule simply because it was frequently followed or written into a document.

Normative source categories require care. A statute, binding regulation, court order, professional duty, contract, customary practice, organizational policy, and non-binding recommendation may constrain or guide action in different ways. The same text may function as an aspiration in one setting and as a binding rule in another when law or authorized arrangements confer that effect. A statement that a volunteer *may* act on behalf of an institution must therefore be scoped to the activity, authorized person, relevant date, conditions, and sources of competence. Institutional delegation alone does not automatically transfer regulated professional authority. Likewise, historical acceptance by a recipient is not a universal legal substitute for required consent, safeguarding, or confidentiality procedures.

The law of volunteer and aid activities is heterogeneous. For instance, assistance occurring in health care, education, humanitarian response, or a transnational digital platform may engage materially different duties and regulatory regimes. A historical case study can identify the legal issues requiring verification, record the rules actually invoked by participants, and analyze the consequences of their use. A specialist legal analysis must then determine which norms apply, how they interact, and which remedies or constraints follow. The present section states no jurisdiction-wide conclusions concerning professional scopes, liability, immigration, humanitarian obligations, data protection, AI status, or the validity of particular institutional decisions.

The difference between effectiveness, legitimacy, and legality remains salient. An informal volunteer network may support vulnerable people efficiently while operating beyond an institution's authorized task scope. A legally compliant procedure may generate exclusion, unequal burdens, or other ethically contestable consequences. An ethically motivated intervention may encounter valid legal restrictions. Where these judgments conflict, the researcher should record the conflict and the standards producing it; the historical model offers neither a general permission to disregard law nor a presumption that legality resolves morality.

24.7 Typed Translation and Normative Independence

A responsible interface requires a record of which claims can travel between domains and which require additional premises. A descriptive statement that an authorization document was issued is transferable to a legal inquiry as possible evidence, subject to authentication and jurisdictional relevance. The legal conclusion that the document conferred competence requires additional legal interpretation. A trace that volunteers repeatedly bore travel expenses can inform political-economic cost analysis; an exploitation claim additionally requires a normative characterization of the relation and appropriate comparison. A record of publicly accessible consultation meetings can inform justice inquiry, while the normative adequacy of participation depends on the constituency and the applicable theory of democratic or procedural justification.

Four distinguishable operations are useful. *Reference* points from one inquiry to observations relevant to another without asserting an inferential bridge. *Reconstruction* uses the second field's concepts to interpret the observations, with stated premises. *Evaluation* applies independently defended standards to an explicitly delimited practice. *Institutional uptake* occurs when interpretations or evaluations are actually adopted into rules, budgets, training, adjudication, or public recognition, thereby changing subsequent historical conditions. An inquiry may perform one operation without the others. In particular, publication of a normative argument is not evidence that it was implemented.

The interface also runs in the opposite direction. New legal recognition may affect recordable subject

positions, and a changed professional duty may alter the costs of a volunteer task. Ethical criticism may lead to revisions of consent practices. A justice-oriented reform can change the membership of a deciding forum. Political-economic changes may shift which forms of care are sustainable. Such feedback can be investigated historically while the warrant for the reform remains subject to its original normative or legal domain.

24.8 Heterogeneous Subjects and Protective Asymmetries

The interfaces are especially important where subjects have heterogeneous capacities and disputed forms of recognition. Children, persons requiring communication or decision-making support, nonhuman animals, and AI-mediated participants cannot be assigned uniform procedural roles from a single abstraction of agency. Existing human legal rights remain operative where applicable, independently of theoretical uncertainty about ultimate ontology. The relevant questions for a case concern expression, accessible consent or support, welfare interests, legally competent representatives, risk and privacy protections, and the authority to decide on behalf of others. The previously considered rights instruments and non-binding AI governance guidance have differing scope and force [73, 74, 72].

Relational causal efficacy can be observed in a system that schedules care, negotiates with other systems, or changes institutional decisions. Whether the system itself should be regarded as a moral patient, moral agent, legal person, tool, delegated representative, or bearer of responsibility requires arguments that cannot be inferred solely from network effects. An AI–AI interaction may historically establish local expectations, regularities, or internally maintained conventions. The existence of such conventions is a candidate empirical claim. Their normative standing and the grounds on which humans may authorize, restrict, or intervene in those interactions are further contested questions. Applicable existing law and rights protections should be identified before proposing novel forms of recognition.

Where a represented person’s view is unavailable, the historical record should retain the difference between documented consultation and an intermediary’s assertion about that person’s preference. Where an animal’s welfare is involved, behavioral and species-sensitive evidence may be relevant without entailing a complete theory of personhood. Where AI participates in translation or recommendation, the researcher should document model version, deployment constraints, review arrangements, and correction routes before interpreting reports of consensus or independent judgment. A shared GR schema is useful for asking comparable questions of historically situated relations; it does not confer equivalent legal capacities or ethical statuses across subject categories.

24.9 Historical Interface Dossier and Provenance

For a task-bounded historical configuration h , a stated question q , observation interval I , and jurisdictional or institutional context j where relevant, the proposed interface dossier in Equation 46 separates descriptive and disciplinary objects. The tuple is typed and source-indexed. Its entries are records and bounded judgments, not commensurable scalar magnitudes.

$$\mathfrak{J}_h^{q,I,j} = (H, U, P, O, C, E, J, V, L, D, X, \Pi)_h^{q,I,j}. \quad (46)$$

Here H is the evidence-indexed history and candidate relational mechanisms; U identifies subjects, positions, boundaries and standing; P the practices and their task-specific mandates; O observed outcomes, opportunity sets and losses; C the capacity and resource conditions, transfers and dependence; E the ethical standards or claims supplied by specified accounts; J the justice standards and the affected claims to recognition, distribution and participation; V political-economic valuations, labor and regenerative or extractive circuits; L relevant putative legal sources, competence, interpretation and uncertainty; D attributed disagreements and rival accounts; X manifestation feedback, including administrative categories and subsequent institutional uptake; and Π documentary provenance, temporal validity, jurisdiction, access restrictions, and versioned research decisions. Some components may be explicitly unavailable or genuinely inapplicable.

An interface dossier should carry separate provenance for observations and for standards. The sources of H may include logs, testimony or correspondence, while the source of J may be a particular account of justice and the source of L may be an identified enacted or adjudicated norm. Where a research author proposes an original GR interpretation, the dossier identifies that proposal as such. A similarity between the language of GR generativity and another scholar's normative theory provides no presumption of common authorship, conceptual equivalence, or mutual endorsement. Documentation of a genuine intellectual disagreement is preferable to a purportedly seamless translation.

Equation 46 has limited formal significance. It is a protocol for preserving distinctions, requesting missing premises, and tracing the origin of a proposed evaluative claim. It is neither an axiomatization of ethics and law nor an empirically fitted causal model. Its usefulness must be tested against cases where apparently similar historical facts produce importantly different judgments. When the dossier is too sparse to discriminate between narratives, the correct scholarly output may be a bounded, unresolved account.

24.10 Domain-Specific Assessment and Claim States

A normative interface requires more than checking whether some historical evidence exists. Before a domain-specific evaluation is provisionally advanced, investigators should identify the actual practice and affected persons; specify the normative or legal theory being invoked; examine source validity and scope; trace relevant evidence and its independence; review feasible alternatives and asymmetric burdens; address material counterarguments and affected perspectives; and disclose outstanding uncertainty, access restrictions and potential revisions. The obligations operate differently across domains. A legal validity question requires source hierarchy and competence analysis; an ethical question may turn on consent and vulnerability; a distributive justice claim may require specified principles of comparison; a political-economic judgment may require a declared accounting and labor boundary.

For a claim c considered in domain $d \in \{\text{ethics, justice, political economy, law}\}$ under an explicitly identified standard S_d , Equation 47 supplies four review states. Let $K_1, \dots, K_7$ denote documented appraisals of the foregoing requirements and $Q_d(c)$ an unresolved material conflict among applicable warrants or affected claims. The classification concerns the quality of the stated argument, not the truth of every moral or legal proposition.

$$\text{Review}_d(c \mid \mathcal{I}, S_d) = \begin{cases} \text{out of scope,} & \text{if } c \text{ lacks a defined domain, subject or context,} \\ \text{contested,} & \text{if } Q_d(c) \text{ remains materially live,} \\ \text{provisionally argued,} & \text{if each applicable } K_1, \dots, K_7 \text{ is supported,} \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (47)$$

The ordering treats documented material disagreement as visible even where an investigator can assemble a defensible positive argument. *Contested* is not a euphemism for refuted; it records active, relevant disagreement that the current study cannot properly settle. *Provisionally argued* indicates a well-scoped argument under an identified standard rather than an objective certificate of justice, legal validity or institutional authorization. A judicial determination may have a legally binding effect within its jurisdiction regardless of the historian's classification; the historian must account for that effect separately.

The same historical practice can receive different and simultaneous classifications across domains. An ethics analysis may remain contested while the applicability of a legal duty is provisionally argued. A political-economic account may identify resource dependence while distributive responsibility remains unresolved. A historical study can report such a vector of assessments without converting it into a score or majority vote across fields. Choosing what to do under conflict requires further practical, political, professional or judicial reasoning by actors with an appropriate role and authority.

24.11 Plural Value Conflicts and Institutionally Bounded Deliberation

Value conflicts in volunteer systems may arise among welfare, agency, privacy, equality of access, institutional competence, and continuity of support. Some can be reduced through factual clarification or

better design. Others persist because the parties reasonably weigh obligations differently, occupy distinct positions, or face asymmetric costs. An account that declares one value dominant without presenting an argument for its priority risks hiding an unresolved normative dispute behind a descriptive label. At the same time, pluralism does not imply that all options are legally available or that every asserted preference is ethically decisive. Relevant rights, protections and mandates can create constraints independent of a negotiated compromise.

One feasible approach is to organize the dispute around questions whose evidential and normative status are distinct: who was affected, what options were actually available, which constraints were operative, whose reasons were heard, what burdens were allocated, how the decision was authorized, and what forms of appeal or correction existed. Different traditions may agree about some of these questions and disagree about their weight. Procedural equality, comparative capabilities, structural responsibility, and legal validity may illuminate different defects in an arrangement. The analyst should attribute these criteria to the theoretical accounts that develop them and identify any additional GR interpretation as a proposal.

Historically durable disagreement can itself change a system. Repeated objections may create a new consultation forum; an appeal may alter the documentation of eligibility; a public controversy may redistribute attention and funding; legal challenges may suspend a practice or clarify institutional competence. Such responses become part of the relational history and can later be studied for consequences. Their occurrence does not prove that the initial disagreement was resolved or that all parties accepted the new order. A theory of just conflict management and a historical description of conflict management remain related yet distinct activities.

24.12 Institutional Uptake, Public Records, and Responsibility

The institutional uptake of ethical, economic or legal discourse can create new relational capacities and new vulnerabilities. A public commitment to transparency may improve scrutiny while increasing the exposure of sensitive recipients. An impact metric may alter budget priorities while excluding forms of care that lack standardized measures. A safeguarding policy may reduce certain risks while introducing access restrictions that require accommodation. The relevant historical questions include who proposed the vocabulary, who acquired authority to use it, what routines changed, and which parties could challenge the resulting classifications.

Responsibility likewise has several distinct temporal meanings. Historical attribution may identify who made a decision, who implemented it, who enabled the relevant system, and who inherited a role or resource. Moral or political responsibility can extend beyond direct causal contribution under explicitly stated theories, as Young's social-connection model illustrates [79]. Legal liability or public-law competence requires a different and context-specific analysis. A responsibility claim therefore needs an identified bearer, grounds, scope, timeframe, and relevant response or remedy. The existence of a causal relation among actors does not authorize indiscriminate assignment of guilt.

The boundary between volunteer and formal professional activity is particularly significant. Support may require referral to qualified personnel, and a historical record can show whether such referral paths existed and functioned. Whether an actor held the legally required qualifications or whether a duty of care was breached depends on valid sources and the circumstances of the case. An organizational title or a voluntary declaration of intent cannot substitute for these determinations. Analytic humility protects both recipients and participants by avoiding confident claims beyond the available evidence and expertise.

24.13 Cross-Disciplinary Evidence and Appraisal Audit

Table 24 identifies evidence and arguments relevant to different interface claims. Its rows are deliberately not ranked on one scale. The table is an audit guide for specifying what remains to be learned, including situations in which access to underlying records is ethically or legally restricted. An investigator should use Table 24 to identify separate evidence requests and domain-specific arguments, not to add entries into a single institutional performance index. The absence of a protected record may need to remain an

Table 24: Evidence and justificatory requirements at the disciplinary interfaces

Interface object	Potentially relevant traces or warrants	Principal interpretive boundary
Action and outcome history	Dated logs, participant accounts, stable denominators	Observed sequence does not identify a cause
Voluntariness and consent	Renewed agreements, refusal routes, consequences of exit	Formal assent may coexist with constrained choice
Vulnerability and safeguards	Access needs, protections, documented risk review	A category is not a complete moral status
Justice and inclusion	Constituency rules, hearing records, burden allocation	Historical participation does not settle fairness
Recognition and representation	Mandates, corrections, accounts of affected subjects	Named representation need not convey actual voice
Resources and labor	Budgets, unpaid work, opportunity costs, support circuits	Monetary totals omit heterogeneous values
Regenerative and extractive relations	Capacity renewal, dependency and return traces	Unequal circulation alone does not prove exploitation
Legal validity and competence	Dated applicable sources, authorized decisions, jurisdiction	Institutional custom need not create legal power
Remedy and review	Appeal rules, outcomes, enforceability and access	Availability on paper may differ from practical access
Normative disagreement and uptake	Competing reasons, revision histories, policy changes	Institutional adoption does not establish moral truth

acknowledged limit. The audit's success lies in making such limits visible while retaining the possibility of warranted partial conclusions.

24.14 Constructed Cases of Divergent Appraisal

Clinical navigation and the boundary of volunteer competence. Consider a fictional hospital navigation service in which experienced volunteers begin helping patients complete complex clinical intake forms. Recorded waiting times fall, and administrators describe improved access. A historical reconstruction might support evidence of a genuine reduction in a specified queue, but the mechanism also depends on changed reporting and staffing. Volunteers report occasional requests to interpret clinical advice; some patients assume the volunteers possess professional authority. Ethical evaluation concerns clear roles, informed understanding, confidentiality, and possible pressure on patients or volunteers. Justice evaluation concerns unequal linguistic access and the exclusion of those unable to use the new forms. Political-economic evaluation concerns whether the initiative reallocates costs from paid services to unpaid labor. Legal evaluation requires verification of jurisdiction-specific professional, privacy and institutional rules. The historical gain in documented throughput is compatible with several unresolved or adverse judgments. The example is constructed and makes no claim about any real hospital.

Community distribution and contested value circulation. Consider a fictional community-aid cooperative that links local food surplus to households through volunteers. Waste falls and households receive regular supplies. A donor-funded dashboard celebrates an increased number of parcels. Participants later explain that unpaid delivery obligations have become concentrated in a few families and that a new eligibility rule excludes those without stable addresses. Political-economic analysis can describe the circulation and regeneration of materials, labor, knowledge, and recognition, while distinguishing the different domains of value. Ethical evaluation considers autonomy, fatigue, dignity and privacy. Justice evaluation examines eligibility, voice and the distribution of burdens; participants may invoke divergent principles of priority. Legal analysis requires context-specific examination of food safety, labor, charitable status and data rules. One might provisionally establish the physical delivery gains while leaving exploitation, just allocation, and legal compliance as different claims requiring additional warrant.

The question of whether the cooperative should continue in its current form cannot be answered by its parcel count.

AI-mediated claims and institutional recognition. Consider a fictional aid consortium using an AI system to translate and classify consultation submissions. Staff report that most participants support a uniform eligibility procedure. Some minority-language submissions, however, have been coded as logistical concerns rather than objections about recognition. Two AI agents also exchange internal procedures for prioritizing requests. Historical inquiry can reconstruct the versions, classification paths, decision authority, and practical consequences of the translated outputs. Ethical questions concern transparency, confidentiality, foreseeable harms and meaningful correction. Justice questions concern fair hearing, exclusion and the status of contesting voices. Political-economic questions concern concentration of informational resources, costs of review and the beneficiaries of automation. Jurisprudence asks which humans or institutions are competent and responsible under applicable law and whether the resulting decisions meet operative requirements. AI–AI conventions may be causally consequential without automatically constituting independent legal orders; grounds for human intervention require separate institutional and normative argument. The case is fictional and does not imply that any actual AI has been assigned legal subjecthood or institutional decision authority.

The three constructed cases expose limits of cross-disciplinary synthesis. They show that evidence of a historically produced capacity can coexist with ethically disputed practices, uneven returns, and unsettled legal questions. They also show that a strong objection in one domain may be causally relevant to institutional change without demonstrating agreement across the others. None is an empirical finding, and none authorizes a verdict concerning an identified organization.

The interface described in Appendix A transmits typed records and explicitly limited evidential statuses. It has no operation that converts a descriptive supported candidate into moral justification, democratic legitimacy, legal personality, or binding legal validity. Those conclusions retain the discipline-specific premises and authorities stated in the present section.

24.15 Research Obligations for Normative and Legal Interfaces

Future interdisciplinary research should specify a manageable historical unit and select normative questions before gathering or recoding sensitive records. Investigators should state the ethical or justice theory used; establish the original author’s formulation and provenance; identify relevant dates, places and legal jurisdictions; distinguish legal sources from policy guidance; obtain necessary permissions and specialist review; and preserve accessible routes through which affected participants can dispute the researcher’s categories. Archival omissions should remain visible where ethical protection, legal restriction or institutional power has made observation incomplete. Constructed cases may be used to test a grammar, but empirical applicability requires independent records and research safeguards.

The proposed interface framework further requires a countermodel discipline. An empirical history in which outcomes improve while procedural participation declines should challenge any claim that outcome improvement entails procedural justice. A legally authorized procedure with displaced labor costs should challenge the presumption that legal compliance proves a regenerative political economy. A participant’s voluntary withdrawal should challenge a purported theory of unlimited moral obligation to sustain a service. A case where an AI system’s outputs shape decisions while legal and moral standing remain unsettled should challenge the attribution of subject status solely from causal efficacy. Such comparisons can reveal overextended interpretations without presupposing one final theory of ethics or law.

The section’s contribution is therefore methodological and conceptual: a provenance-sensitive interface through which historical GR accounts can inform normative disciplines while leaving those disciplines’ independent standards and disagreements legible. Its formal dossier and review vocabulary are preliminary research aids. The concluding section will integrate these interfaces with the preceding historical mechanisms, identify the strongest scoped propositions the paper can defend, and specify which claims remain dependent on future empirical, conceptual, legal and ethical inquiry.

25 Foundational Historical Synthesis and Open Research Obligations

The historical analysis of volunteer action developed in this paper has a limited but integrative objective: to make the formation, maintenance, transformation, and possible dissolution of relational capacities available for systematic investigation. The concluding section identifies the paper's substantive propositions, clarifies the kinds of explanations supported by its formal constructions, and sets out a programme for historical, empirical, normative, and interdisciplinary testing. It proceeds by synthesizing the mechanisms examined across the preceding sections, distinguishing the three levels of generative relational (GR) reality, identifying competing interpretations and limits of comparative inference, and specifying research obligations that could alter or defeat the proposed account. The synthesis is a conceptual and methodological result. It does not report original observations, prove a universal dynamics of volunteering, or assign legal or moral status independently of the relevant disciplines.

25.1 The Historical Object and the Scope of the Account

Volunteer action is historically consequential under conditions that can be described more precisely than a simple count of acts, participants, or hours. An undertaking occurs within inherited relations among people, institutions, material supports, languages, techniques, permissions, and expectations. Its consequences may be localized to one encounter, reproduced through repeated cooperation, transferred into a different setting, or attenuated when maintenance and access disappear. A defensible history therefore specifies the undertaking, the affected participants and nonparticipants, the observation window, and the mechanism through which earlier relations condition later possibilities.

The object proposed here is the *historically changing relational configuration of support*. This expression denotes a research object rather than an ultimate ontological assertion. A configuration can contain sufficiently persistent coordination patterns, institutional positions, dependencies, artefacts, recognized roles, and channels through which actors affect one another's options. Particular acts are observable manifestations of that configuration, but neither the configuration nor an actor's capacities can be reconstructed completely from one observable act. Historical descriptions should account for what was feasible, who could access or decline a pathway, and which conditions made action possible at a specified time.

This framing draws on relational and temporal approaches to social inquiry without claiming ownership of those traditions [28, 2]. Its contribution is a bounded translation of selected insights into the particular domain of volunteer and aid relationships. The resulting theory deliberately retains differences between interpersonal assistance, institutional volunteering, distributed mutual aid, and legally regulated support services. A single vocabulary can organize inquiry across these settings, provided that their different institutional conditions remain identifiable.

25.2 Historical Generation and the Formation of Cooperative Capacity

The initial portions of the paper distinguish inherited relational possibilities, event segmentation, local nucleation, trust, cooperation, and the emergence of roles. A new connection or a first supportive act may open a pathway that did not previously exist, yet its reproduction depends on further conditions: a participant capable of performing a task, accessible resources, an acceptable allocation of burdens, an authorized route where authorization is required, and sufficient coordination across time. These conditions may be complementary. In some settings the absence of one condition prevents the realization of others; in others a substitute practice remains available, though perhaps at greater cost or with different consequences.

The strongest claim defended at this level is explanatory rather than predictive. A later capacity can sometimes be reconstructed by tracing how a sequence of encounters changes what participants can jointly undertake. A first request may create information about a need; repeated response may provide a basis for reliance; a role may emerge through recognized expectations and maintained skill; and an institution may codify some of those expectations. The sequence is a candidate mechanism with distinct, testable

steps. Its occurrence cannot be inferred simply from a later description that an organization has become established. Histories may also show cooperative capacity without extensive interpersonal trust, or stable institutional positions without adequate practical competence [23, 16].

The account consequently treats origin stories as claims requiring evidence of intermediate relations. Narratives of a single founder or turning point may obscure pre-existing support systems, early contributors, conflicts, and excluded groups. Attention to the conditions of nucleation broadens the history without granting equal causal weight to everything that preceded an event. Historical relevance remains tied to an articulated mechanism and an appropriately chosen window.

25.3 Reproduction, Memory, and the Temporal Costs of Continuity

Relational capacities can outlast their initiating episodes through training, practical memory, maintained equipment, routinized cooperation, recognized positions, and arrangements for replacing or supporting participants. A description of continuity, however, should state which dimension persists. The same organization may retain its name and legal identity while losing essential expertise; a dissolved organization may leave behind skills and relationships subsequently used elsewhere. Reproduction may also require work that is poorly recognized by formal evaluation: translation, scheduling, mentoring, repair, mediation, records correction, emotional labour, and ordinary maintenance.

This distinction changes the interpretation of sustainability. Persistence of outputs over a short reporting period is evidence about those outputs under a particular measurement practice. Historical reproduction of a capacity requires inquiry into the means of renewal, the vulnerability of those means, the ability to respond to changing circumstances, and the distribution of the costs of maintaining them. An organization dependent on unpaid personal sacrifices may appear stable in administrative data while exposing participants to cumulative exhaustion. A practice maintained by coercion or by denial of exit may be historically persistent while remaining ethically objectionable. Questions of capability renewal, institutional survival, and normative acceptability should consequently be recorded separately.

Temporal relations are similarly task-relative. Immediate support and slow training may be coupled, but their causal relation depends on evidence concerning intervals, institutional decision cycles, maintenance, and actual feedback. A long delay alone does not establish a dynamical slow variable; a sudden institutional change does not establish a critical transition. The historical analyst can identify candidate time-scale interactions and the records needed to test them, while remaining cautious about importing diagnostic results from ecological or physical systems into social settings [75, 47].

25.4 Recognition, Power, and Historically Feasible Alternatives

The reproduction of an activity is partly conditioned by who can identify a need, speak in an institutional forum, choose a response, obtain resources, and challenge an imposed category. These conditions are both relational and historical. Recognition may increase access for some participants while narrowing the possible roles of others. An evaluation metric, eligibility rule, professional boundary, or training credential can stabilize useful coordination and simultaneously create a new dependence on those who control its interpretation. The documentary manifestation of a rule may in turn alter recruitment, funding, deference, and available alternatives.

Power enters this history through differentiated feasible options and control over their selection. Dependency on a donor, administrator, intermediary, or technical system is not equivalent to the exercise of domination. A power claim requires an account of the relevant resource or position, the actor-specific alternatives, the operation of a decision or agenda process, and the effects of that operation. Where only an asymmetry is observed, alternative explanations should remain available. Historical analysis can trace changes in access to exit, voice, appeal, and independent review without treating the existence of a nominal procedure as evidence of effective protection [27, 8, 38].

A related issue concerns the difference between an institution's available options and the options of the people subject to it. An alternative regarded by administrators as technically feasible may be inaccessible to participants lacking time, language support, transportation, documentation, or permission. Conversely,

practices dismissed as institutionally inconvenient may be sustained through relationships outside formal organizational boundaries. An historical claim of lock-in thus requires more than a story of continued use: plausible self-reinforcing processes, switching constraints, actors' situated alternatives, and comparison with selection, external constraint, and ordinary adaptation [54, 43].

25.5 Transformations, Endings, and Plural Historical Successions

Historical change can occur through incremental adjustment, deliberate reform, reallocation of decision competence, transfer of routines, addition or removal of relational boundaries, and dissolution of an established organizational form. These changes differ in degree and type. A new institutional name may preserve the practical service and its participants; an unchanged name may conceal major changes in the resources, permissions, or expertise on which service depends. The analyst should specify which relations and capacities constitute a claimed continuity rather than assign an indivisible identity to a complex system.

Transfer is especially sensitive to receiving conditions. Records, manuals, software, and task descriptions can travel between organizations without carrying embodied knowledge, relationships of trust, usable resources, professional competence, or a legitimate mandate. Transfer histories should examine the receiving setting, the people who bear transition costs, and the possibility of multiple partial successors. Formal correspondence between source and receiving practices is useful as a descriptive aid, but does not establish that their participants experience the same service or that all obligations have been inherited.

The ending of an organization also resists a uniform verdict. Termination may signify exhaustion, imposed closure, a completed time-limited undertaking, a protective discontinuation, or reconfiguration into new relations. Residual memory may survive while an accessible capacity disappears. Participants may retain skills but be unable or unwilling to redeploy them, while affected people face gaps in service or newly shifted burdens. Claims of failure, success, succession, and justified closure therefore involve distinguishable descriptive and normative questions. The proposed GR account makes their conditions more explicit; it cannot settle the value of an ending solely from an institutional chronology.

25.6 Three Reality Levels and Historical Attribution

The preceding mechanisms can be situated across the three levels of GR analysis without treating those levels as an empirically demonstrated metaphysical hierarchy. At the first level, the ultimate ontology of persons, capacities, institutions, values, and subjectivities remains suspended. Relational language is used as a disciplined mode of inquiry rather than evidence of a final description of being. At the second level, the analyst reconstructs relatively stable yet historically revisable relational beings and structures with demonstrable or hypothesized causal and generative efficacy. At the third level, those structures become available through situated manifestations such as actions, testimony, records, classifications, forms, legal decisions, statistics, and public accounts.

Historical inference moves among the second and third levels under explicit evidential and interpretive constraints. A stable data category can be an instrument for observing a relational change and also a source of change when it affects access, recognition, or resources. Its later effects require their own evidence. A category's appearance in a registry does not prove the existence of every capacity attributed to its holders. Similarly, an absence in administrative records does not establish the absence of a participant, relation, harm, or capability. Changes in recording systems may themselves explain apparent discontinuities or rapid growth.

For heterogeneous subjects, the same restraint applies to recognition and responsibility. Human legal protections have specified sources and scopes; animal welfare assessment depends on relevant evidence and ethical argument; and consequential AI-mediated relations raise separate questions about causal efficacy, experience, moral status, legal personality, authority, and liability. Even where AI-AI conventions become historically identifiable, an internally sustained procedure does not automatically acquire legal validity or immunity from justified human oversight. The research task is to identify the

relevant relations and standing questions without transferring a conclusion from one level or normative field to another.

25.7 A Typed Boundary for Explanatory Claims

An economical synthesis should distinguish the object of a claim from the evidence and warrant claimed for it. The formal device in Equation 48 records this difference using a typed, inquiry-relative bundle.

$$\mathcal{H}_{q,W} = (\mathcal{C}_{q,W}, \mathcal{E}_{q,W}, \mathcal{M}_{q,W}, \mathcal{A}_{q,W}, \mathcal{J}_{q,W}). \quad (48)$$

Here q denotes a specified research question and W the historical observation window. $\mathcal{C}_{q,W}$ is the set of typed historical claims and the relational configurations to which they refer; $\mathcal{E}_{q,W}$ is an indexed inventory of accessible, inaccessible, disputed, and dependent evidence; $\mathcal{M}_{q,W}$ contains proposed generative mechanisms and their countermodels; $\mathcal{A}_{q,W}$ records actor-relative feasible alternatives, permissions, and limits of access; and $\mathcal{J}_{q,W}$ identifies normative or legal questions and their independently sourced justifications. The tuple is a product of five heterogeneous record types, not a vector of five commensurable numbers. Neither coordinatewise arithmetic nor an ordering of entire bundles is defined without a separate typed map and justification. The bundle is an organizational representation, not a claim that the historical world has precisely five components. A claim concerning a single episode need not populate each component to the same detail, but its omissions must be acknowledged where they affect the inference.

The bundle provides a modest check on premature synthesis. A finding that a volunteer network increased the number of completed referrals belongs initially to an outcome history in $\mathcal{C}_{q,W}$ supported by specific records in $\mathcal{E}_{q,W}$. The inference that training created the improvement requires an additional mechanism and defensible alternatives in $\mathcal{M}_{q,W}$. A conclusion that participants were treated fairly requires a normative standard and the relevant evidence in $\mathcal{J}_{q,W}$. The consequences for excluded participants and their historically feasible options are retained in $\mathcal{A}_{q,W}$. A single narrative may relate these claims, while their grounds remain separately auditable.

This representation also clarifies the relation of Paper IX to earlier volunteer and aid formalisms. Dyadic and tripartite encounters, aid-related political economy, trust, ethical support, and institutional governance supply analytically useful mechanisms at particular scales. The historical inquiry concerns their ordering, co-development, inheritance, interaction, and transformation. It can investigate, for example, how a reliance relation contributes to a rule or how an aid circuit changes the options of recipients, without asserting that all such processes share a single mathematical law. Cross-paper inheritance is therefore a controlled translation with retained domain-specific remainders.

Bounded causal synthesis. The resulting historical synthesis treats reciprocal causation as an empirical possibility, not as a license for unbounded explanatory attribution. Trust can condition cooperation and be revised by it; institutional recognition can change resource access while being selectively conferred on already capable participants; power can restrict alternatives while counterweights arise in response. Each hypothesized direction requires a specified interval, feasible comparison, and distinguishing traces under rival pathways. A positive dossier review admits a bounded descriptive or process claim at its declared level but cannot, by itself, estimate a net effect or establish normative justification. Appendix B records the minimum mechanism and sensitivity distinctions for future historical studies; the remaining obligations include falsifiable predictions, negative cases, protected data governance, and the option to simplify the theory if formal notation adds no empirically useful discrimination.

25.8 An Evidence-Sensitive Procedure for Provisional Conclusions

The paper's successive evidence conventions have employed three- and four-state classifications for different local purposes. The concluding synthesis offers a common audit procedure while retaining the distinction between a descriptive claim, a causal explanation, and a normative conclusion. Equation 49 defines a provisional evidence-state assignment for a specified historical claim c , a stated warrant w , and

the relevant admissible record E . The four-state review is an envelope for local evidential appraisals, not a retrospective assertion that each earlier three-state gate used identical tests. Comparisons must preserve the claim type, provenance, time window, subject categories and access restrictions; only then can apparent disagreements between local conventions be diagnosed.

$$\text{Status}(c \mid E, w) = \begin{cases} \text{out of scope,} & \text{if } c \text{ exceeds the declared domain of } w, \\ \text{contradicted,} & \text{if admissible evidence defeats } c \text{ within } w, \\ \text{supported candidate,} & \text{if the specified tests under } w \text{ are satisfied,} \\ \text{unresolved,} & \text{otherwise.} \end{cases} \quad (49)$$

The order is procedural and scoped: an out-of-domain assertion is not rescued by supportive-looking evidence, and a supported candidate remains open to later revision or rival explanations. The assignment presupposes that the relevant source access, claim type, evidential dependency, and test criteria have been declared. It is neither a statistical estimator nor a proof system for historical truth. A legal finding, for example, requires a jurisdiction-specific legal warrant, and the status of a descriptive claim cannot substitute for it. The convention also admits that a record may be ethically inaccessible. Such inaccessibility may appropriately limit what a researcher can conclude rather than justify coercive data collection.

Several propositions follow only under explicit scope conditions. Within a documented task and window, the joint feasibility of volunteer work may be affected by access, competence, resources, permission, and coordination. A historically reproduced practice may depend on maintenance and succession beyond the visibility of routine outputs. An observed administrative classification may condition future relationships. A network's apparent connectivity may exceed practically available, consent-respecting pathways. Each statement is a candidate explanatory proposition supported by the formal distinctions developed here. None establishes a universal prevalence, magnitude, or sign of a causal effect; those questions require empirical inquiry.

25.9 Comparative Histories and Unmatched Reminders

A comparative historical account benefits from the ability to put distinct processes into relation while preserving the ways in which they differ. The finite grammar developed in Section 22 provides one provisional way to record bounded event histories, typed positions, partial temporal orders, and qualified alignments. Its usefulness arises in cases where a new organization resembles an older one in some roles but not in participants, authority, welfare effects, or access; or where two initiatives share observable outputs but differ in the means of attaining them.

Comparability must be argued at the level of each matched object. Similar names and aggregate outcomes do not guarantee comparable subjects, forms of consent, legal duties, or periods of observation. A transfer may preserve a task while changing who bears unpaid labour. A programme may appear to improve its performance after an eligibility reform because the population counted as eligible has changed. A technology-mediated consultation may generate detailed records while filtering objections at translation and classification stages. These differences are analytically consequential unmatched reminders rather than noise to be removed in pursuit of a common similarity score.

The relationship between sequences and mechanisms deserves special caution. A temporally prior event can be a plausible condition of a later event without being a necessary or sufficient cause. An investigator needs evidence capable of discriminating rival explanations, including institutional selection, contemporaneous resources, policy changes, measurement revision, and consequences of power. The programme of process tracing and case selection described in Section 23 identifies relevant research techniques, drawing on existing comparative-methodological scholarship [21, 61, 42]. Those techniques become part of GR historical inquiry through explicit design choices, not by virtue of the terminology employed.

25.10 Constructed Countermodels for the Historical Framework

The concluding argument can be challenged using constructed countermodels that force distinctions among competing explanations. These examples are analytic devices and report no facts concerning real organizations.

Stable service without emergent trust. A fictional rotating volunteer service continues for several years through detailed scheduling, transparent handoffs, professional oversight, and a credible complaint route. Participants report little durable interpersonal trust, and replacement volunteers frequently do not know one another. Continuity nevertheless rests on institutional competence and standardized safeguards. This countermodel defeats an unqualified claim that increasing trust is necessary for sustained cooperation. The GR account remains useful only if it allows institutionally mediated cooperation, the distribution of reliance among roles, and variation in the kinds of trust relevant to a task.

Expanded reporting with diminished accessible capacity. A fictional aid organization introduces a registration system that increases the number of recorded referrals. People lacking documents or digital literacy are newly excluded; experienced volunteers spend more time repairing administrative errors and less time supporting direct access. A visible output improvement may coexist with reduced capability for a relevant constituency. The countermodel challenges unqualified inference from manifestation counts to improved relational capacity or ethical success. A satisfactory history must specify denominators, affected populations, shifted burdens, alternative paths, and the category changes that produced the reported result.

Institutional closure with distributed successors. A fictional community-support office ceases operation after completing a time-limited grant. Some mentors establish independent training relationships, a neighboring service adopts part of the referral process, and a group of former recipients starts mutual aid outside the original organization. Other needs remain unmet. A narrative of simple organizational failure would ignore residual and newly formed capacities; a narrative of seamless succession would ignore losses and unequal access. The account must permit partial lineage, discontinuity, justified ending, and multiple possible judgments about the same closure.

The countermodels also indicate what further evidence would matter. Longitudinal observations of actual coordination could discriminate reliance on rules from reliance on personal ties. Population-based access records and accounts from excluded participants could reveal limits of referral metrics. Successor skill and mandate histories could test the persistence or transformation of an ending institution's effects. If an empirical record defeats the proposed mechanism, a revised GR account should register the defeat rather than reinterpret the discrepancy as confirmation of hidden relational complexity.

25.11 Research Audit Across the Historical Claims

Table 25 consolidates research obligations arising across the paper. Its rows describe distinguishable claims and methodological checks. Their purpose is to prevent the cumulative vocabulary of GR from conferring unwarranted evidential authority on a reconstruction. The table can guide research design, peer review, and the reassessment of individual sections; it is not an institutional certification checklist.

The audit in Table 25 emphasizes that research obligations arise from claims, rather than from the ambition to build a comprehensive archive. A careful inquiry may justifiably be narrow. For a particular question, complete reconstruction of all institutional relations is neither feasible nor required. What matters is whether the available evidence and reasons support the claim being made, whether key exclusions and countermodels are visible, and whether protections for participants place legitimate limits on further inquiry.

Table 25: Historical research obligations for the preliminary GR account

Claim domain	Evidence or argument required	Principal limit or rival consideration
Initial coordination	Dated episodes, available alternatives, task and actor boundaries	Prior relations and selection of observed cases
Trust and reliance	Undertaking-specific expectations, discretion, responses to failure	Coordination may arise through rules without personal trust
Capability and reproduction	Accessible skills, resources, consent, succession and maintenance	Output stability can conceal deteriorating capacity
Recognition and classification	Changes in categories, access, uptake and institutional decisions	Reporting change may masquerade as relational change
Rules and institutional authority	Sources of mandate, issuing and review processes, practical implementation	Operative convention, legal power and legitimacy differ
Temporal and critical dynamics	Valid observation windows, feedback mechanism and uncertainty checks	Abrupt events need not be critical transitions
Resources and heterogeneous values	Burden incidence, replenishment, multiple valuations and return pathways	Aggregates can hide extraction or incompatible values
Network power and alternatives	Feasible task-specific options, gatekeepers, exit and voice records	Structural centrality alone does not establish control
Transfer and dissolution	Receiving-side competence, residual capability, successor access	Documentary or legal lineage may overstate continuity
Heterogeneous subjects and participation	Context-specific status, accessibility, representation and influence	Causal effect does not settle moral or legal standing
Comparative and causal inference	Rival explanations, negative cases, evidence dependency and sensitivity	Alignment and chronological order do not identify causes
Normative and legal interface	Stated ethical reasons, justice frameworks, dated legal sources and competence	Descriptive success does not entail justified action

25.12 Empirical Designs and Conditions of Responsible Data Collection

A practical empirical programme could begin with a bounded longitudinal comparison of a few supportive undertakings, chosen for variation in organizational age, task, decision structure, and resource dependency. The unit of comparison should be declared before outcome-driven archival selection. A study could combine dated process records, appropriately consented accounts of participants and recipients, observations of training and maintenance, accessible mandate documents, and information about referral bottlenecks. Such evidence could address whether a hypothesized mechanism occurred and how its effects differed across positions and time. Source dependence and measurement changes should be documented alongside the substantive history.

Longitudinal and comparative strategies remain partially complementary. A close process history may identify plausible links among learning, trust, mandate and capability; comparison may test whether similar results can occur through different mechanisms or whether allegedly important conditions vary independently of the outcome. A negative case, such as stable service without a presumed driver, can be particularly valuable. Quantitative modelling may improve the precision of some questions concerning delays, accessibility, network paths, or task completion. Such models require defensible operationalizations and checks on missingness, selection, reporting change, measurement error, and dependence among observations. Mathematical resemblance to feedback or network formalisms does not itself supply identification.

Research on aid and volunteering also raises substantial ethical constraints. A hospital or humanitarian setting may involve health information, migration status, disability-related communication, vulnerable minors, institutional hierarchy, and dependence on services. Observing an activity or collecting a sensitive record can change the relationships under study. Investigators should assess consent, privacy, data minimization, foreseeable harms, institutional approval where applicable, and the risk of making participation or service receipt contingent on research cooperation. De-identification alone may be inadequate for small,

recognizable networks. Protected evidence may need to remain inaccessible; the analytic consequence should be an honestly bounded conclusion.

The same standard applies to the use of AI in transcription, translation, coding, and analysis. Model-generated classifications and summaries should retain provenance, versioning, possible language-specific error, human review paths, and opportunities to correct consequential misrepresentation. AI systems may be causal participants in an institutional history, yet their generated text does not automatically become independent evidence of events, authority, or normative status. Cross-agent agreement may reflect shared training, incentives, prompts, or copied records. Where AI-mediated classifications determine access to aid, the history should examine who authorized the use, who can contest an output, and who is responsible under the applicable institutions and law.

25.13 Formal Consolidation and Tests of Nontriviality

The paper employs typed dossiers, partial temporal orders, bounded classifications, and limited analogies with networks and dynamics. Their immediate merit is organizational: they require researchers to state what is being compared and which inferential steps remain unlicensed. A stronger formal contribution would require evidence that a particular construction adds discriminative or explanatory power beyond ordinary careful prose and existing methodological frameworks. That burden remains open.

A formal audit should therefore address consistency among section-specific fields and status vocabularies, stability of labels and types, relations between local and aggregate records, and edge cases involving missing observations or incompatible normative statuses. Some formal objects may turn out to be redundant. Appendix A now specifies a limited common record interface, the relation of the three- and four-state reviews, and the distinctive obligations that remain attached to local mechanisms. The whole-manuscript review should identify those repetitions and consolidate them where the analytical distinctions survive, without imposing an artificial unified schema on different research questions. Any theorem-like claim introduced later would need explicit definitions and proof; an empirically parameterized model would additionally need data and identification assumptions.

At the conceptual level, a useful countermodel test asks whether two histories receive the same formal description despite differing in a feature the researcher regards as causally or normatively consequential. If so, the chosen representation may be too coarse. Conversely, if a framework must add an unrestricted field for every newly observed difference, its comparative value may be too weak. Productive revision lies between these extremes: preserve the distinctions relevant to specified questions, and report the situations in which the grammar breaks down. The formal work remains part of an open programme rather than a completed axiomatization of social history.

25.14 Interdisciplinary Provenance and Distinct Normative Conclusions

The historical account is informed by scholarship in sociology, organization studies, political science, economics, ethics, and jurisprudence. Its methodological contributions should be identified as reconstructions or extensions, not as the original discovery of trust, collective action, path dependence, participation, value circulation, or justice. Theories of power and voice, routines and institutional change, causal process tracing, and situated valuation retain their distinct intellectual genealogies. Where GR uses an established concept, its source and disciplinary meaning should remain recoverable in the citation and argument.

The interfaces analyzed in Section 24 are consequently substantive constraints on the conclusion. A historically effective undertaking can be ethically impermissible; a legally authorized procedure can produce unequal burdens; a participatory process can formally record consultation while restricting actual influence. In each case the domain-specific evaluation requires its own reasons. Emanuela Ceva's procedural account of interactive justice, for example, has an independent normative argument [18]. The present research may examine historically how opportunities for interaction and contestation are realized or obstructed without reclassifying that normative account as a GR result. Comparable restraint applies to Sen's work on justice and Young's account of structural responsibility [63, 79].

The question of political economy is similarly open to different evaluative standards. Value generated in a service may circulate through material support, capabilities, recognition, information, and reciprocal assistance, while care burdens or symbolic status accumulate unequally. Whether such relations constitute an attractive outcome, exploitation, or a justified distribution depends on evidence and normative argument beyond the existence of circulation. A research programme attentive to heterogeneous value can make incompatible assessments visible without forcing an artificial conversion into one metric. It should also allow refusal, interruption, and the withdrawal of voluntary labour to be positive elements of a just historical development in appropriate circumstances.

25.15 Publication, Replication, and Collaborative Research Obligations

The availability of a public preliminary manuscript does not convert its formal descriptions into independently validated conclusions. The completed internal revision passes addressed cross-section definitions, formal architecture, causal alternatives, source-scoping and basic typesetting, but specialist evaluation and independent access to primary passages remain important research obligations. Any further use of references verified only at bibliographic-record or publisher-description level to support stronger passage-specific arguments requires direct source checking. Domain-specific review is especially important for law, clinical practice, animal welfare, AI ethics and causal inference; neither publication nor a citation implies a scholar's or institution's endorsement.

A separate research-design review should test the chosen units, observable indicators, plausible rivals, evidence-access conditions, and the consequences of withholding protected information. Publicly shareable constructed cases, coding schemas, and reproducible scripts can support critique without exposing sensitive people or institutions. Empirical replication will require appropriate permissions, de-identification and disclosure control, source licenses, versioned transformations, and transparent documentation of which materials cannot be released. Data restrictions are limits of reproducibility that deserve explanation, not reasons to circumvent safeguards.

The programme should also remain corrigible through criticism from those whose relationships it studies. Volunteers, recipients, professional workers, and affected nonparticipants may identify misplaced categories, overlooked costs, and assumptions about participation or reciprocity. The value of such criticism is epistemic and often normative: it can reveal that an apparent cooperative gain depended on inaccessible procedures or displaced burdens. Their participation in interpretation should be appropriately supported and voluntary. Neither the researcher nor a model's classification should claim exclusive authority over how an affected person's interests are understood.

25.16 Historical Synthesis and Evidential Limits of the Present Account

The preliminary result of Paper IX is an integrated vocabulary for describing and investigating how supportive actions and relations acquire historical significance. Local coordination may develop into shared capability; maintained knowledge and roles may sustain that capability; categories, institutions, resources, and power may redirect its circulation; institutional reform or dissolution may preserve some relations while ending others; and comparative inquiry may reveal multiple trajectories, competing explanations, and unmatched historical remainders. These connections give the paper an analytical object larger than isolated instances of volunteering while retaining attention to the particular encounters through which historical change becomes manifest.

Its warrant remains deliberately bounded. The account shows how historically situated relational claims *could* be organized, compared, challenged, and tested. It has not established which proposed mechanisms occur frequently, which effects dominate in real support systems, or whether a specified institution's practice is ethically or legally justified. The three levels of GR reality preserve ontological restraint; the evidence conventions preserve uncertainty; the interdisciplinary interfaces preserve independent sources of judgment. These commitments are meaningful only if subsequent work permits the programme's preferred reconstructions to fail under contrary evidence and better arguments.

The next substantive stage is independent specialist review and, if appropriate, ethically and methodologically justified historical inquiry. Such research may yield stronger accounts of continuity, transformation, and collective capacity, or may show that some formal distinctions require replacement. The foundational contribution offered here is the research architecture itself: an explicitly revisable, provenance-sensitive approach to historical relations in volunteering and aid, with obligations to evidence, affected participants, other disciplines, and the continuing possibility of conceptual correction.

A Typed Dossier Interfaces and Evidential Classifications

The formal constructions in Paper IX serve several distinct analytical tasks. They describe events, capacities, roles, resources, evaluations, institutional arrangements, and claims about those objects. A dossier used to investigate reliance has different fields and decision conditions from one used to investigate procedural participation or legal status. The present appendix states a limited interface for comparing their use of evidence. It retains the local definitions and their question-relative scopes. Its purpose is to make the types of permissible comparison and the reasons for withholding an inference visible; it does not introduce a new universal measurement instrument.

A.1 A Common Evidential Envelope and Local Extensions

For each historical question q , an inquiry should identify the case boundary B , an observation window I , a declared evidential standpoint κ , an explicitly typed population or set of relevant positions P , and a collection E of observations with traceable provenance and permissible uses Π . A *common evidential envelope* records these obligations as a schema. Equation 50 is a schema for reporting, not an assertion that the already-defined local tuples have the same arity, field order, or admissible observations.

$$\text{Env}(q, B, I, \kappa) := \langle q, B, I, \kappa, P, E, \Pi \rangle. \quad (50)$$

An envelope is *well specified* only relative to a particular question and authorized research setting. The symbols P and E denote typed positions and admissible observations in the envelope, not a universal identity with similarly named fields in other equations. The temporal bounds of a historical undertaking may differ from the observation window. An uncertain participant identity, conflicting testimony, confidential record, and unobserved event are separate metadata states; none should be collapsed into a blank field. A recorded position and the person occupying it are distinct entities, and a documented administrative mandate is distinguishable from its exercised authority or legal force.

Each section-specific dossier D_j can be *reported with* an envelope when its case boundary, evidence, positions, and permissions can be traced. This is an interface relation rather than an operation that automatically extracts identical coordinates from every tuple. A local dossier may have more restrictive admissibility requirements. For example, the trust dossier in Equation 8 retains prospective vulnerability and discretionary entrustment, while the cooperation dossier in Equation 10 retains composite feasibility and actionable access. A typed interface does not license a claim about trust from a dossier of completed service, or a claim about capacity from a record of institutional intentions.

A.2 Joins, Comparison, and Unmatched Historical Reminders

The already defined join rule in Equation 3 checks type, identity, time, provenance, and permission for a proposed correspondence of two historical records. Those are *minimum compatibility questions*, not sufficient tests for each substantive claim. A join of two descriptions of an intervention may be admissible even when the evidence does not warrant a proposed explanation of its outcome. Conversely, two records may concern the same institution but remain incomparable for a particular claim because their time windows, affected populations, consent conditions, or categories of success differ.

Three operations therefore retain separate scopes. *Record linkage* concerns admissible correspondence of represented entities or events. *Comparative alignment* concerns a bounded correspondence between

Table 26: Interpretation of the common evidence-review vocabulary and its limits.

Review state	Minimum reportable basis	Prohibited inference
Out of scope	Claim, subjects, warrant, or permitted observation falls outside the declared inquiry	Treating inaccessible or ill-typed material as a negative finding
Contradicted	Specified admissible evidence defeats the claim under its declared narrow warrant	Treating defeat of one claim as proof of every alternative
Supported candidate	All applicable local admission guards are supported; scope and relevant rivals are reported	Treating an audit classification as probability, causal proof, moral approval, or legal finding
Unresolved	Otherwise admissible question lacks evidence sufficient to discriminate its warranted alternatives	Treating source silence or disagreement as proof of absence

features of distinct trajectories, including unmatched remainders as developed in Equation 42. *Explanatory inference* concerns a stated mechanism and its rivals, using the research design in Section 23. No result of one operation is automatically a positive result of the others. A correspondence may be partial or asymmetric. For example, a practice can pass between organisations without transferring legal authority; a recognised volunteer role can continue while practical competence disappears; and a surviving record can name a closed organisation while former volunteers retain capacities that were never entered in its archives.

The same separation applies across the three GR reality levels. A manifestation such as a recorded referral supplies evidence of a dated representation or action, subject to provenance checks. A proposed relational mechanism requires evidence that the arrangement conditioned subsequent opportunities. Neither kind of record determines an ultimate ontology of social actors or structures. The historian should state the mapping being proposed, the observations bearing on it, and the residue for which the mapping provides no warrant.

A.3 Evidential Statuses and Local Decision Conditions

The paper uses several guarded conventions. Earlier sections often report one of three in-domain outcomes: *supported candidate*, *contradicted*, or *unresolved*. The general review in Equation 49 additionally distinguishes *out of scope*; the research-design review in Equation 45 makes the scope test explicit. The relation among these vocabularies is limited. The three-state vocabulary is a valid shorthand only *after* the boundary, claim type, permission and relevant guards have been declared and the claim has passed the particular domain test. Table 26 records this interpretation.

A local negative guard and a missing guard require distinct reporting. The former can defeat a particular narrowly defined claim; the latter generally withholds its admission without negating it. The order of tests must also be stated: a prohibited source cannot be made admissible by otherwise favorable indicators; a claim outside the stated population is not converted into a supported claim by adding records from a different population. Source duplication should not be counted as independent corroboration. Permission to use a source is not historical authority to intervene, and either may change across the interval under study.

The number of substantive guards belongs to the object of the local claim. Five guards may be suitable for a narrowly defined discretionary-trust claim, whereas a historical claim about operative institutional rules has other necessary conditions, and an argument about legal competence additionally requires jurisdiction-specific sources. Thus neither a shared seven-condition checklist nor the mere form of a conjunction can determine whether an explanation, a justice claim, or a legal characterization is warranted. The labels in Table 26 are an audit vocabulary with explicitly restricted transfer between disciplines.

Table 27: Selected formal families and their non-transferable inferential requirements.

Relevant sections	Main local object	Distinctive requirement retained
1–3: historical descriptions	Typed entities, joins, event and window records	Individuation, partial event order, provenance and permission
4–6: initial coordination	Nucleation, trust and composite capability	Task-specific discretion, exposure, feasible joint undertaking and action
7–9: reproduction	Roles, memory, practice and feedback	Succession, uptake, maintenance and documentary influence
10–14: historical institutions	Rules, thresholds, timing, renewal and path dependence	Actual authority, rival mechanisms, replenishment and feasible historical alternatives
15–17: value and power	Heterogeneous value, networks and alternative control	Incommensurable assessments, authorised pathways, burdens and counterweights
18–21: transformation and standing	Transfer, closure, heterogeneous recognition and participation	Continuity criteria, representation, rights, effective influence and contestability
22–23: historical comparison	Partial grammar and process evidence	Unmatched remainders, case selection, independent traces and rivals
24–25: disciplinary interfaces	Normative warrants and synthetic claim reviews	Independent ethical, democratic, political-economic and legal validity tests

A.4 Local Formal Objects and Distinctive Research Burdens

Table 27 identifies representative formal families and the evidential or interpretive requirement that gives each a reason to remain distinct. The mapping addresses the main recurrent constructions, rather than paraphrasing all fields or replacing their definitions. An investigator should enter only those dossiers that bear on the declared research problem.

The table does not assign one object per section, and several objects are causally coupled. Trust may change practical willingness to coordinate; formalised governance may reduce dependence on trust; administrative recognition can alter a resource pathway; and a transferred practice may acquire new meaning in a successor institution. A relational account can investigate such joint consequences without combining all dossiers into one tuple. Joining sections is a research decision supported by a particular question and evidence, not a purely typographical consolidation.

A.5 Practical Reporting and Formal Nontriviality

A prospective comparative study can report an envelope, select relevant local dossiers, enumerate the proposed cross-record links, and record for each substantive claim its warrant, supporting and contrary sources, competing mechanisms, unresolved fields, and admissible review status. When two researchers disagree, the report should indicate whether the disagreement concerns observations, event identity, guard interpretation, causal explanation, population boundaries, or normative premises. A compact cross-case matrix may then describe what is comparable and what remains unmatched, including affected people absent from official categories. Such a matrix should preserve data-access restrictions and avoid revealing sensitive network identities through small-cell combinations.

The current framework provides a disciplined vocabulary for these tasks; it has not demonstrated that the additional notation outperforms transparent prose, established process tracing, or existing comparative designs. The positive research obligation is therefore an explicit test of *nontriviality*: identify a bounded decision or inference for which the typed interface prevents a consequential error, resolves an actual ambiguity, or improves reproducible comparison. A useful failure case would show that a seemingly compatible pair of records leads to a false attribution when provenance, consent, temporal semantics, or local claim type is ignored. A negative finding that the formalism adds no reliable discrimination would justify simplification. No result of the present appendix settles this empirical and methodological

question.

B Mechanism Attribution, Rival Histories, and Causal Research Obligations

B.1 The Explanatory Object and Its Historical Domain

The historical claims developed in Sections 5–23 need a disciplined distinction between describing a process, making a mechanism attribution, and identifying an intervention effect. The purpose of this appendix is to make the relevant tests explicit without treating a general evidence-status label as a causal estimator. It supplements the typed evidential interface in Appendix A. The unit may be a participant, an encounter, a task pathway, a network position, or an institution over a specified interval. The explanatory claim must name an outcome at the same level or state the cross-level relation under investigation.

A *descriptive occurrence claim* records what happened under an explicitly specified evidence regime. A *mechanism-contribution claim* proposes that a historical process conditioned the occurrence, timing or availability of an outcome and identifies intermediate steps and relevant rivals. An *effect-identification claim* specifies a comparison between realizable interventions or exposures, a population and time horizon, and assumptions under which a contrast could be learned from data. The third claim is stronger in a different way: historical process evidence can be richly diagnostic without delivering an average effect estimate, while a population-level effect estimate may be informative yet leave the operative mechanisms only partly known. Neither replaces normative or legal appraisal. No original data in this paper identify effects of volunteer programs.

For mechanism research, the analyst should state the proposition in actor- and task-relative terms. “Volunteering strengthened the institution” is underspecified until the relevant undertaking, accessible capability, period, and proposed mediating interaction are identified. A more tractable hypothesis is that a particular accessible translation pathway enabled an otherwise unserved referral to be completed under a valid mandate during a bounded interval. Even there, the evidence may be equally consistent with a new professional staff member, an updated referral rule, or selective intake. Mechanism attribution therefore demands both process records and explicit alternative explanations.

B.2 Mechanism Sequences, Feedback, and Reverse Causation

A historical mechanism account can be expressed in a finite set of propositions indexed by actor, event window and source, while retaining uncertain or partially ordered events. In Equation 51, $\mathcal{U}$ records the relevant units and opportunity set; $\mathcal{X}$ denotes antecedent conditions and candidate exposures; $\mathcal{M}$ proposed intermediate interactions; $\mathcal{Y}$ the task-specific outcome; $\mathcal{T}$ the evidentially admissible temporal order; $\mathcal{R}$ rival processes; and Π provenance, access restrictions and missingness. The expression is a *reporting structure*, not a dynamical law or a causal functional form.

$$\Omega_{q,B,I}^{\kappa} := (\mathcal{U}, \mathcal{X}, \mathcal{M}, \mathcal{Y}, \mathcal{T}, \mathcal{R}, \Pi)_{q,B,I}^{\kappa}. \quad (51)$$

The interpretation of Equation 51 depends on discriminating observations. A directed account of X preceding M and Y requires evidence that the putative cause could operate before the downstream event and that the intermediate steps are not inferred solely from the final outcome. Reciprocal relations can be represented as temporally indexed sequences: a first experience of successful coordination may increase discretionary reliance, which then changes subsequent coordination, which in turn affects institutional recognition. This temporal unfolding is compatible with relational mutual conditioning; it does not justify inferring a timeless closed causal loop from two cross-sectional associations. Where archives contain only before/after totals, several causal directions may be observationally equivalent.

Conceptual relations should not be disguised as empirical mechanisms. If “shared capability” is defined partly in terms of feasible joint action, the statement that sharing a feasible capability accompanies joint feasibility is partly definitional. An independent explanation of why capacity expanded requires

Table 28: Illustrative mechanism propositions, rival accounts, and potentially discriminating historical traces.

Claim family	Principal rival	Potential discriminating trace
Trust and reliance	No practical alternatives; training or enforcement	Dated discretionary delegation with accessible outside options and stable task demands
Cooperative capacity	Equipment, staffing or selective intake changes	Task-adjusted feasible configurations; substitution successes and failures
Rules and recognition	Codification of earlier practices; reporting incentives	Pre-adoption activity, actual circulation of rules, authorization and subsequent uptake
Critical transitions	Exogenous shocks, aggregation or metric changes	Stable measurement, recovery traces, feedback sequence and non-transition cases
Resource renewal	Selection of already capable programs; shifted costs	Provenance and usability of new capacity, other-resource withdrawal and workload transfer
Path dependence	Continuing superiority or external mandate	Earlier adoption altering later switching possibilities under documented actor-relative options
Power and participation	Legal constraint, selection into voice, genuine scarcity	Agenda-access record, rejected alternatives, effective implementation and credible appeal routes
Institutional transfer	Selection of capable recipients; simultaneous reform	Independent skill uptake, task performance, permissions, and partial-adoption comparisons
Closure and succession	Task completion; replacement unrelated to predecessor	Separate traces of closure, residual capacity, lawful lineage and successor task coverage

observations of actual changes in permissions, accessible pathways, knowledge, resources or coordination. Similarly, an institution's classification of a practice as legitimate cannot establish the moral justification of the classification. Three-level GR analysis differentiates the efficacy of historically organized relations from the specific manifestations through which the researcher learns about them, without deciding an ultimate ontology.

B.3 Rival Accounts and Diagnostic Traces

A rival explanation is informative when it predicts a different sequence, population distribution, or intermediate trace under conditions in which the focal mechanism and rival can be distinguished. Naming an alternative explanation in the discussion is insufficient. A design should specify the observations that would be expected if each account operated, the relevant observation opportunity, and the implications of records that are unavailable or selectively preserved. Table 28 identifies common rival families in the paper. The entries are research-design prompts, not verified historical findings. They also allow several mechanisms to contribute to the same outcome.

The historical investigator should consider negative cases in which a focal mechanism is present without the anticipated outcome, and cases in which the outcome occurs through another pathway. Such cases may show a mechanism is insufficient or context-dependent; they need not refute its contribution in the original case. Conversely, a lack of a surviving record should count as evidence against a narrowly specified process only when there was a defensible reason to expect the record's production, preservation, accessibility and correct classification. The case-selection problem is especially acute where published histories favor successful organizations and include no records of failed initial coordination or excluded persons. Process-tracing tests and case-selection decisions need to be reported under their original

methodological assumptions [21, 61, 42].

B.4 Selection, Shared Causes, and Relational Interference

Apparent success can arise through selection into programs, assignment to easier tasks, prior institutional strength, changing eligibility or differential survival of initiatives. Recruitment and retention are themselves relational processes; conditioning a comparison on active volunteers after several years may discard the trajectories most informative about trust loss, excessive costs, or exit. Restricting comparison to archived success cases can also create associations between institutional support and personal skill that do not hold in the population of attempted programs. Where data permit, the inquiry should reconstruct the sampling frame, eligibility criteria, entry and exit times, and relevant denominators. A complete account may require sampling aborted or unsuccessful attempts as well as ongoing initiatives.

The outcome for one participant may depend on what others do. A volunteer's availability changes the tasks of professionals, the waiting time of recipients, and the opportunities of other volunteers. Different assignments can also displace assistance across institutions or transfer costs to people outside the observed unit. Therefore a hypothetical contrast between "intervention" and "no intervention" is incomplete unless it specifies which relational exposure, co-participation and substitution opportunities differ between the histories. Random assignment, where ethical and feasible, does not by itself remove contamination, spillovers or changes in institutional behavior. The present framework does not assume independent units or stable interventions. The appropriate design may compare clusters, task networks, sequences or otherwise bounded configurations; evidence quality and legal constraints determine which contrasts are admissible.

A long-run institutional effect should not be inferred by adding short-run changes in disparate outcomes. A task can become easier for one population while access deteriorates for another; a program's survival can depend on unpaid labor that erodes the capacities of its participants. The researcher must report whose outcome is evaluated, which time window is chosen, what obligations are carried forward, and whether an apparent improvement reflects altered case mix or displaced burdens. Ethical judgment concerning the distribution of these consequences remains independent from their causal attribution.

B.5 Documentation as an Endogenous Historical Process

Records are often produced by the practices under study. A funding application may generate indicators that subsequently reshape service definitions; a classification tool may alter who appears in a recipient register; a new governance regime may retain records of compliance more reliably than records of refusal. Manifestation feedback therefore affects both the social process and the evidence available to describe it. The historian should distinguish changes in the underlying activity, changes in whether it is documented, and changes in how it is represented. Treating a dataset as a neutral measurement channel would obscure this separation.

A defensible longitudinal design should preserve versions of procedures, databases and category definitions; compare sources with distinct production incentives where access permits; and mark periods when measurement instruments changed. An increase in recorded referrals after new training could reflect better service delivery, expanded documentation, changes in eligibility, or a combination. An interrupted trend occurring exactly when the recording scheme changed is evidence for a measurement hypothesis but is not automatically decisive: actual service conditions might have changed simultaneously. Independent outcome traces and investigation of those simultaneous changes are needed for stronger inference.

Confidentiality imposes real limits. Some relevant accounts cannot be collected, linked or published without infringing privacy or rights, particularly in clinical, disability or humanitarian settings. Those limitations should shape the claim's scope. They cannot justify inventing unobserved motives or converting ethically protected missingness into a negative finding. Authorized summaries and explicitly unresolved hypotheses may be preferable to invasive attempts at methodological completeness.

Table 29: Research-reporting distinctions for increasingly specific causal and normative questions.

Question type	Evidence or assumption required	Conclusion that does not follow automatically
Occurrence and chronology	Individuated events, trustworthy dates, provenance	A generative mechanism
Associational pattern	Comparable measurements and relevant exposure histories	Direction of causation
Mechanism contribution	Dated intermediate traces and diagnostic rivals	A unique or quantified intervention effect
Effect contrast	Defined intervention, population, interference structure and defensible identification assumptions	Moral, democratic or legal approval
Normative and legal appraisal	Public reasons, relevant subjects, applicable standards and competent authority	A verified causal history or prediction

B.6 Claim Strength, Sensitivity, and Normative Independence

The manuscript's three- and four-state review conventions organize a bounded *claim assessment*; they do not order hypotheses by their probability, compute treatment effects or settle the direction of ambiguous mechanisms. For an actual study, a supported mechanism candidate needs a declared population, independently described process observations, adequately investigated major rivals, and a sensitivity assessment of consequential uncertain dates, categories and omitted episodes. A candidate remains revisable when a rival explains the same observations. If two supported candidates are observationally inseparable, the report should preserve both. Classification of one narrow mechanism as contradicted does not amount to confirmation of its preferred competitor.

The following reporting distinctions should remain visible: a documented event; a temporal or relational association; a proposed process with some discriminating traces; an adequately defended causal attribution within a bounded case; an identified effect contrast under specified design assumptions; and an independent normative or legal conclusion. They form neither a total order nor a universal scale. A process attribution can be strong while an average effect remains unidentified; a credible estimate may coexist with uncertainty about the mediators. A claim that cooperative resources were generated can be true for one task without supporting an assertion of democratic progress or the legality of an intervention.

A practical sensitivity review should vary the boundaries, observation window, plausible event orderings, attribution of duplicated sources, selection of negative cases, and the representation of affected populations. Where possible it should explicitly re-examine conclusions under a rival account of document production. The results should identify which inferences survive, which require narrower wording, and which must remain unresolved. This procedure is an obligation to make reasoning reproducible, not a claim that a common formal syntax guarantees stronger science.

Table 29 is a discipline for bounded inquiry. It has not been tested against a historical case corpus and does not replace method-specific standards of evidence. A future study should identify at least one instance where the typed distinction prevents a substantively false inference that an ordinary transparent prose account would otherwise have permitted. If that added discrimination cannot be demonstrated, the formalism should be simplified. These obligations are compatible with GR's suspended ontology, relational analysis and multiple research traditions while keeping the empirical and normative limitations of the present paper explicit.

C Formal Claim Types, Identifiability, and Verification Obligations

The present appendix audits the logical strength of the formal devices used in the historical sections. Its objective is to specify the types of their inputs and outputs, exhibit the limited results that follow

from explicit assumptions, and identify what the formal definitions cannot establish. The argument is mathematical only where a result follows from stipulated maps or truth conditions. Whether the stipulations adequately describe any actual volunteer-supported system requires independent historical inquiry. The two conditional propositions below are elementary verification lemmas and are not offered as novel results in mathematical logic or causal inference.

C.1 Typed Claims and Observation Maps

Fix a bounded question q , a history boundary B , an interval I , and an evidential protocol κ . Let $H_{B,I}$ be a class of admissible possible histories, O_κ a class of available observation records (including their provenance and declared missingness), M_q a class of explicitly defined mechanism attributions, and J_d a class of claims in an independently specified normative or legal domain d . The maps $\mathcal{O}_\kappa : H_{B,I} \rightarrow O_\kappa$ and $\mathcal{M}_q : H_{B,I} \rightarrow M_q$ are analytic idealizations. Their specification does not assume that a research project knows their true values; in particular, $\mathcal{M}_q$ is not inferred solely by naming a pattern in the observations.

$$h_1 \sim_{\mathcal{O}_\kappa} h_2 \iff \mathcal{O}_\kappa(h_1) = \mathcal{O}_\kappa(h_2). \quad (52)$$

Equation 52 defines observational equivalence relative to the declared accessible record and coding scheme. Two histories may agree in their recorded manifestations while differing in unobserved contributions, the availability of feasible alternatives, or the mechanism that produced a decision. This equivalence relation is reflexive, symmetric, and transitive because equality on O_κ has those properties. It is not an equivalence of underlying persons, histories, or moral standings.

Proposition C.1 (Conditional non-identification by a bounded observation map). *Suppose there exist $h_1, h_2 \in H_{B,I}$ such that $\mathcal{O}_\kappa(h_1) = \mathcal{O}_\kappa(h_2)$ but $\mathcal{M}_q(h_1) \neq \mathcal{M}_q(h_2)$. There is no function $f : O_\kappa \rightarrow M_q$ satisfying $f(\mathcal{O}_\kappa(h)) = \mathcal{M}_q(h)$ for both $h = h_1$ and $h = h_2$.*

Proof. If such a function existed, equal arguments $\mathcal{O}_\kappa(h_1) = \mathcal{O}_\kappa(h_2)$ would imply equal outputs under f . By its stipulated correctness, those outputs would equal $\mathcal{M}_q(h_1)$ and $\mathcal{M}_q(h_2)$, respectively, contradicting their stipulated inequality. $\square$

The proposition provides a diagnostic burden, not an empirical finding of non-identifiability in every case. A researcher who proposes a mechanism must supply observations or defensible restrictions capable of separating at least the relevant rival histories. Enlarging an observation archive, obtaining authorized interviews, or redefining the claim may distinguish histories that were observationally equivalent under a narrower protocol. Merely introducing a more expressive GR grammar does not supply such observations.

C.2 Three-Valued Evidential Conjunction

Let each necessary guard g_i for a fixed claim type take one of the values $\{T, F, U\}$. The value T denotes supported satisfaction; F denotes admissible affirmative evidence that the specifically defined necessary condition fails; and U denotes unresolved or inaccessible evidence. The notation specifies states of an inquiry, rather than the complete truth of a historical proposition. A local classifier may call a candidate supported when every guard is T, contradicted when at least one necessary guard is F, and unresolved otherwise. Exclusion for an out-of-scope claim precedes this rule and is evaluated separately. The distinction is important for interpreting the conjunctive admission gates in Sections 2 and 21: a Boolean non-admission does not by itself discriminate F from U.

Proposition C.2 (Conservative admission under an unresolved necessary guard). *Fix a claim with a finite, nonempty collection of necessary guards and apply the three-valued classifier just specified. If at least one necessary guard has value U and none has value F, the classifier returns unresolved, regardless of how many other guards are supported.*

Table 30: Proof, typing and external-verification obligations for the formal constructions.

Construction	What the formal expression warrants	Additional obligation for stronger claims
Historical dossier	Typed and ordered inventory of relevant records	Validate each component and research permissions
Boolean admission	Positive support under every specified gate	Distinguish defeated from unresolved individual guards
Three-valued classification	Status conditional on necessary evidence checks	Justify necessity and evidential interpretation of guards
Observation equivalence	Equal outputs under a declared observation map	Examine unmeasured histories and changed coding
Mechanism attribution	Proposed contribution conditional on a defined history	Test discriminating process traces and causal rivals
Temporal ordering	Supported order of identifiable events	Account for dating resolution and retrospective editing
Cross-history correspondence	Admissible partial mapping between selected objects	Preserve unmatched persons, effects and source differences
Normative interface	Documented question and external justificatory source	Independently evaluate the applicable ethical or legal norm

Proof. A supported classification requires that every necessary guard have value T, which the stipulated U prevents. A contradicted classification requires at least one F, which is excluded by assumption. The residual classification is therefore unresolved. $\square$

The result concerns a declared classification convention. If the validity of a guard, the identity of a history, or the permissions to examine a source change, the guard record must be re-evaluated. Neither proposition licenses replacing contradictory evidence with a single probability or assigning a universal epistemic ordering to historical cases. Normative standards, legal validity, and causal effects remain separate types and require their own warrant.

C.3 Formal Claim Audit and Visual Presentation

Table 30 states the proof or evidential obligation corresponding to commonly used formal constructions. A displayed tuple records coordinates and provenance; it does not constitute a derivation of the world from those coordinates. Similarly, a historical countermodel establishes the possibility of rival interpretations under stated assumptions; it does not establish their empirical frequency. These limitations are part of the reproducibility requirements of the GR research programme.

The equations in this manuscript are primarily typed descriptive conventions. The propositions in this appendix certify only the limited mathematical statements supported by their assumptions. No diagrammatic dependence, geometric embedding or arrow is required to express these conclusions, and no empirical threshold, numerical effect size, or legal entitlement is derived here. The next research step would be to establish a case-specific observation design, define admissible rival histories, and test whether the available evidence distinguishes their proposed mechanisms without violating the rights or privacy of affected participants.

Research Ethics and Source Provenance

Research materials and ethics. All historical cases and countermodels are explicitly constructed analytical illustrations; none reports fieldwork concerning an identifiable institution or participant. No original human-participant data were collected for this manuscript, and no research-ethics approval for a human-participant study is claimed. The LaTeX sources, bibliography, and a source-support matrix accompany the versioned source package. The absence of an original dataset is not evidence that the proposed mechanisms occur in practice.

Scope of authority. An account of historical change does not establish participants' legal entitlements, institutional mandates, moral duties or democratic legitimacy. Specific legal rules, clinical safeguards, and ethical assessments require independent contextual assessment. No university, hospital, aid agency, participant, or cited scholar is represented as endorsing this manuscript.

Source-verification boundary. The accompanying bibliography contains works checked at differing levels of access. Publisher descriptions and abstracts can ground cautious descriptions of their themes, but they do not certify the detail of an inaccessible full text. The Pass 4 source-support matrix records these distinctions; a prior *VERIFIED* bibliographic identity is not evidence that every passage of a work has been examined. Substantive authorial interpretations and proposed GR extensions remain the author's own claims.

References

- [1] Andrew Abbott. "Sequence Analysis: New Methods for Old Ideas". In: *Annual Review of Sociology* 21 (1995), pp. 93–113. DOI: 10.1146/annurev.so.21.080195.000521.
- [2] Andrew Abbott. *Time Matters: On Theory and Method*. Chicago: University of Chicago Press, 2001. URL: <https://press.uchicago.edu/ucp/books/book/chicago/T/bo3643810.html>.
- [3] James F. Allen. "Maintaining Knowledge about Temporal Intervals". In: *Communications of the ACM* 26.11 (1983), pp. 832–843. DOI: 10.1145/182.358434.
- [4] Paul D. Allison. *Event History Analysis: Regression for Longitudinal Event Data*. Quantitative Applications in the Social Sciences 46. SAGE Publications, 1984. ISBN: 9780803920552. DOI: 10.4135/9781412984195.
- [5] Elizabeth Anderson. *Value in Ethics and Economics*. Cambridge, MA: Harvard University Press, 1993. ISBN: 9780674931893.
- [6] Linda Argote and Paul Ingram. "Knowledge Transfer: A Basis for Competitive Advantage in Firms". In: *Organizational Behavior and Human Decision Processes* 82.1 (2000), pp. 150–169. DOI: 10.1006/obhd.2000.2893.
- [7] Sherry R. Arnstein. "A Ladder of Citizen Participation". In: *Journal of the American Institute of Planners* 35.4 (1969), pp. 216–224. DOI: 10.1080/01944366908977225.
- [8] Peter Bachrach and Morton S. Baratz. "Two Faces of Power". In: *American Political Science Review* 56.4 (1962), pp. 947–952. DOI: 10.2307/1952796.
- [9] Annette Baier. "Trust and Antitrust". In: *Ethics* 96.2 (1986), pp. 231–260. DOI: 10.1086/292745.
- [10] Andrew Bennett and Jeffrey T. Checkel, eds. *Process Tracing: From Metaphor to Analytic Tool*. Cambridge University Press, 2014. DOI: 10.1017/CBO9781139858472.
- [11] Bruce J. Biddle. "Recent Developments in Role Theory". In: *Annual Review of Sociology* 12 (1986), pp. 67–92. DOI: 10.1146/annurev.so.12.080186.000435.
- [12] Jonathan Birch et al. *Review of the Evidence of Sentience in Cephalopod Molluscs and Decapod Crustaceans*. Report commissioned by the UK Department for Environment, Food and Rural Affairs. London School of Economics and Political Science, 2021. URL: <https://www.lse.ac.uk/business/consulting/reports/review-of-the-evidence-of-sentiences-in-cephalopod-molluscs-and-decapod-crustaceans>.
- [13] Luc Boltanski and Laurent Thévenot. *On Justification: Economies of Worth*. Trans. by Catherine Porter. Princeton, NJ: Princeton University Press, 2006. ISBN: 9780691118376.
- [14] Stephen P. Borgatti. "Centrality and Network Flow". In: *Social Networks* 27.1 (2005), pp. 55–71. DOI: 10.1016/j.socnet.2004.11.008.
- [15] Geoffrey C. Bowker and Susan Leigh Star. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press, 1999. DOI: 10.7551/mitpress/6352.001.0001.
- [16] Michael E. Bratman. "Shared Cooperative Activity". In: *The Philosophical Review* 101.2 (1992), pp. 327–341. DOI: 10.2307/2185537.

- [17] Giovanni Capoccia and R. Daniel Kelemen. "The Study of Critical Junctures: Theory, Narrative, and Counterfactuals in Historical Institutionalism". In: *World Politics* 59.3 (2007), pp. 341–369. DOI: 10.1017/S0043887100020852.
- [18] Emanuela Ceva. *Interactive Justice: A Proceduralist Approach to Value Conflict in Politics*. Routledge, 2016. ISBN: 9781138676466.
- [19] Mark Coeckelbergh. "Robot Rights? Towards a Social-Relational Justification of Moral Consideration". In: *Ethics and Information Technology* 12 (2010), pp. 209–221. DOI: 10.1007/s10676-010-9235-5.
- [20] James S. Coleman. "Social Capital in the Creation of Human Capital". In: *American Journal of Sociology* 94 (1988). Supplement: Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure, S95–S120. DOI: 10.1086/228943.
- [21] David Collier. "Understanding Process Tracing". In: *PS: Political Science & Politics* 44.4 (2011), pp. 823–830. DOI: 10.1017/S1049096511001429.
- [22] Paul Connerton. *How Societies Remember*. Cambridge University Press, 1989. ISBN: 9780521270939. DOI: 10.1017/CB09780521270939.
- [23] Karen S. Cook, Russell Hardin, and Margaret Levi. *Cooperation Without Trust?* New York: Russell Sage Foundation, 2005. URL: <https://www.jstor.org/stable/10.7758/9781610441353>.
- [24] Sue E. S. Crawford and Elinor Ostrom. "A Grammar of Institutions". In: *American Political Science Review* 89.3 (1995), pp. 582–600. DOI: 10.2307/2082975.
- [25] Vasilis Dakos et al. "Methods for Detecting Early Warnings of Critical Transitions in Time Series Illustrated Using Simulated Ecological Data". In: *PLOS ONE* 7.7, e41010 (2012). DOI: 10.1371/journal.pone.0041010.
- [26] Ron Eglash. "An Introduction to Generative Justice". In: *Teknokultura. Revista de Cultura Digital y Movimientos Sociales* 13.2 (2016), pp. 369–404. DOI: 10.5209/rev_TEKN.2016.v13.n2.52847.
- [27] Richard M. Emerson. "Power-Dependence Relations". In: *American Sociological Review* 27.1 (1962), pp. 31–41. DOI: 10.2307/2089716.
- [28] Mustafa Emirbayer. "Manifesto for a Relational Sociology". In: *American Journal of Sociology* 103.2 (1997), pp. 281–317. DOI: 10.1086/231209.
- [29] Wendy Nelson Espeland and Mitchell L. Stevens. "Commensuration as a Social Process". In: *Annual Review of Sociology* 24 (1998), pp. 313–343. DOI: 10.1146/annurev.soc.24.1.313.
- [30] Scott L. Feld. "The Focused Organization of Social Ties". In: *American Journal of Sociology* 86.5 (1981), pp. 1015–1035. DOI: 10.1086/227352.
- [31] Martha S. Feldman. "Organizational Routines as a Source of Continuous Change". In: *Organization Science* 11.6 (2000), pp. 611–629. DOI: 10.1287/orsc.11.6.611.12529.
- [32] Martha S. Feldman and Brian T. Pentland. "Reconceptualizing Organizational Routines as a Source of Flexibility and Change". In: *Administrative Science Quarterly* 48.1 (2003), pp. 94–118. DOI: 10.2307/3556620.
- [33] Archon Fung. "Varieties of Participation in Complex Governance". In: *Public Administration Review* 66.s1 (2006), pp. 66–75. DOI: 10.1111/j.1540-6210.2006.00667.x.
- [34] Mark Granovetter. "Threshold Models of Collective Behavior". In: *American Journal of Sociology* 83.6 (1978), pp. 1420–1443. DOI: 10.1086/226707.
- [35] Mark S. Granovetter. "The Strength of Weak Ties". In: *American Journal of Sociology* 78.6 (1973), pp. 1360–1380. DOI: 10.1086/225469.
- [36] Michael T. Hannan and John Freeman. *Organizational Ecology*. Cambridge, MA: Harvard University Press, 1989. ISBN: 9780674643482.
- [37] H. L. A. Hart. *The Concept of Law*. 3rd ed. Third edition with introduction by Leslie Green and postscript edited by Penelope A. Bulloch and Joseph Raz. Oxford: Oxford University Press, 2012. ISBN: 9780199644704.
- [38] Albert O. Hirschman. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Cambridge, MA: Harvard University Press, 1970. ISBN: 9780674276604.
- [39] Quy Nguyen Huy. "Time, Temporal Capability, and Planned Change". In: *Academy of Management Review* 26.4 (2001), pp. 601–623. DOI: 10.5465/amr.2001.5393897.

- [40] Jean Lave and Etienne Wenger. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press, 1991. ISBN: 9780521423748. DOI: 10.1017/CB09780511815355.
- [41] Steven Lukes. *Power: A Radical View*. 2nd ed. Palgrave Macmillan, 2005. ISBN: 9780333420928.
- [42] James Mahoney. “The Logic of Process Tracing Tests in the Social Sciences”. In: *Sociological Methods & Research* 41.4 (2012), pp. 570–597. DOI: 10.1177/0049124112437709.
- [43] James Mahoney and Kathleen Thelen, eds. *Explaining Institutional Change: Ambiguity, Agency, and Power*. Cambridge University Press, 2010. DOI: 10.1017/CB09780511806414.
- [44] Jane Mansbridge. “Should Blacks Represent Blacks and Women Represent Women? A Contingent “Yes””. In: *The Journal of Politics* 61.3 (1999), pp. 628–657. DOI: 10.2307/2647821.
- [45] Roger C. Mayer, James H. Davis, and F. David Schoorman. “An Integrative Model of Organizational Trust”. In: *Academy of Management Review* 20.3 (1995), pp. 709–734. DOI: 10.5465/amr.1995.9508080335.
- [46] Daniel J. McAllister. “Affect- and Cognition-Based Trust as Foundations for Interpersonal Cooperation in Organizations”. In: *Academy of Management Journal* 38.1 (1995), pp. 24–59. DOI: 10.5465/256727.
- [47] Manjana Milkoreit et al. “Defining Tipping Points for Social-Ecological Systems Scholarship: An Interdisciplinary Literature Review”. In: *Environmental Research Letters* 13.3, 033005 (2018). DOI: 10.1088/1748-9326/aaaa75.
- [48] Douglass C. North. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press, 1990. DOI: 10.1017/CB09780511808678.
- [49] Martha C. Nussbaum. *Frontiers of Justice: Disability, Nationality, Species Membership*. Cambridge, MA: The Belknap Press of Harvard University Press, 2006. DOI: 10.4159/9780674041578.
- [50] Elinor Ostrom. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press, 1990. DOI: 10.1017/CB09780511807763.
- [51] Elinor Ostrom. “Collective Action and the Evolution of Social Norms”. In: *Journal of Economic Perspectives* 14.3 (2000), pp. 137–158. DOI: 10.1257/jep.14.3.137.
- [52] Louis A. Penner. “Dispositional and Organizational Influences on Sustained Volunteerism: An Interactionist Perspective”. In: *Journal of Social Issues* 58.3 (2002), pp. 447–467. DOI: 10.1111/1540-4560.00270.
- [53] Jeffrey Pfeffer and Gerald R. Salancik. *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper & Row, 1978.
- [54] Paul Pierson. “Increasing Returns, Path Dependence, and the Study of Politics”. In: *American Political Science Review* 94.2 (2000), pp. 251–267. DOI: 10.2307/2586011.
- [55] Keith G. Provan and Patrick Kenis. “Modes of Network Governance: Structure, Management, and Effectiveness”. In: *Journal of Public Administration Research and Theory* 18.2 (2008), pp. 229–252. DOI: 10.1093/jopart/mum015.
- [56] Charles C. Ragin. *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies*. Berkeley: University of California Press, 1987. URL: <https://www.jstor.org/stable/10.1525/j.ctt1pnx57>.
- [57] George P. Richardson. *Feedback Thought in Social Science and Systems Theory*. Philadelphia: University of Pennsylvania Press, 1991. ISBN: 9780812213324.
- [58] Denise M. Rousseau et al. “Not So Different After All: A Cross-Discipline View of Trust”. In: *Academy of Management Review* 23.3 (1998), pp. 393–404. DOI: 10.5465/amr.1998.926617.
- [59] Lester M. Salamon. “Of Market Failure, Voluntary Failure, and Third-Party Government: Toward a Theory of Government–Nonprofit Relations in the Modern Welfare State”. In: *Journal of Voluntary Action Research* 16.1–2 (1987), pp. 29–49. DOI: 10.1177/089976408701600104.
- [60] Marten Scheffer et al. “Early-Warning Signals for Critical Transitions”. In: *Nature* 461.7260 (2009), pp. 53–59. DOI: 10.1038/nature08227.
- [61] Jason Seawright and John Gerring. “Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options”. In: *Political Research Quarterly* 61.2 (2008), pp. 294–308. DOI: 10.1177/1065912907313077.
- [62] Amartya Sen. *Development as Freedom*. Oxford: Oxford University Press, 1999. ISBN: 9780198297581.
- [63] Amartya Sen. *The Idea of Justice*. Cambridge, MA: Harvard University Press, 2009. ISBN: 9780674036130.

- [64] Jr. Sewell William H. “Three Temporalities: Toward an Eventful Sociology”. In: *The Historic Turn in the Human Sciences*. Ed. by Terrence J. McDonald. University of Michigan Press, 1996, pp. 245–280. URL: <https://www.jstor.org/stable/10.3998/jj.45096256.17>.
- [65] Susan Leigh Star and James R. Griesemer. “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907–39”. In: *Social Studies of Science* 19.3 (1989), pp. 387–420. DOI: 10.1177/030631289019003001.
- [66] Susan Leigh Star and Anselm Strauss. “Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work”. In: *Computer Supported Cooperative Work* 8.1-2 (1999), pp. 9–30. DOI: 10.1023/A:1008651105359.
- [67] Mark C. Suchman. “Managing Legitimacy: Strategic and Institutional Approaches”. In: *Academy of Management Review* 20.3 (1995), pp. 571–610. DOI: 10.5465/amr.1995.9508080331.
- [68] Robert I. Sutton. “The Process of Organizational Death: Disbanding and Reconnecting”. In: *Administrative Science Quarterly* 32.4 (1987), pp. 542–569. DOI: 10.2307/2392883.
- [69] Jörg Sydow, Georg Schreyögg, and Jochen Koch. “Organizational Path Dependence: Opening the Black Box”. In: *Academy of Management Review* 34.4 (2009), pp. 689–709. DOI: 10.5465/amr.34.4.zok689.
- [70] Gabriel Szulanski. “Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm”. In: *Strategic Management Journal* 17.S2 (1996), pp. 27–43. DOI: 10.1002/smj.4250171105.
- [71] Kathleen Thelen. “Historical Institutionalism in Comparative Politics”. In: *Annual Review of Political Science* 2 (1999), pp. 369–404. DOI: 10.1146/annurev.polisci.2.1.369.
- [72] UNESCO. *Recommendation on the Ethics of Artificial Intelligence*. Recommendation adopted 23 November 2021; non-binding recommendation for voluntary application by member states. Nov. 23, 2021. URL: <https://www.unesco.org/en/legal-affairs/recommendation-ethics-artificial-intelligence>.
- [73] United Nations General Assembly. *Convention on the Rights of the Child*. Treaty adopted by General Assembly resolution 44/25; Article 12 cited as comparative international legal framework. Nov. 20, 1989. URL: <https://www.unicef.org/child-rights-convention/convention-text>.
- [74] United Nations General Assembly. *Convention on the Rights of Persons with Disabilities*. Article 12; treaty obligations of States Parties distinguished from local legal implementation. Dec. 13, 2006. URL: <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-12-equal-recognition-before-the-law.html>.
- [75] Brian Walker et al. “Resilience, Adaptability and Transformability in Social–ecological Systems”. In: *Ecology and Society* 9.2, 5 (2004). DOI: 10.5751/ES-00650-090205.
- [76] James P. Walsh and Gerardo Rivera Ungson. “Organizational Memory”. In: *Academy of Management Review* 16.1 (1991), pp. 57–91. DOI: 10.5465/amr.1991.4278992.
- [77] Etienne Wenger. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press, 1998. DOI: 10.1017/CB09780511803932.
- [78] Iris Marion Young. *Inclusion and Democracy*. Print publication 2000; Oxford Academic online listing 2002. Oxford University Press, 2000. DOI: 10.1093/0198297556.001.0001.
- [79] Iris Marion Young. *Responsibility for Justice*. New York: Oxford University Press, 2011. ISBN: 9780195392388. DOI: 10.1093/acprof:oso/9780195392388.001.0001.
- [80] Viviana A. Zelizer. *The Purchase of Intimacy*. Princeton, NJ: Princeton University Press, 2005. ISBN: 9780691124087.