

Chapter 10

Application-Dominant Praxis in Generative Relational Theory

Chapter 10 develops the domain-general architecture of application-dominant praxis in Generative Relational Theory. Its role within Part IV is to establish the practical-philosophical landscape required before the book turns to concrete decision and intervention methodologies. Part III organized research-dominant praxis around the production, revision, adjudication, preservation, and provisional closure of warranted knowledge. The transition into Part IV changes the governing practical orientation. Consequential action now becomes the principal task even though knowledge, values, institutional conditions, consequences, and future developments can remain incomplete, contested, or partly unknown. The present chapter reconstructs the structure of praxis under that condition.

The chapter therefore begins from a different principal contradiction from the one that organized the research-dominant block. Research can often continue inquiry when warrant remains insufficient for the intended claim. Application-dominant praxis eventually encounters situations in which action, restraint, waiting, refusal, continuation, withdrawal, or commitment themselves carry consequences. The practical configuration must then organize a response while uncertainty remains. Inquiry remains constitutive within this changed orientation through diagnosis, interpretation, evidence generation, monitoring, evaluation, and revision. Their function changes because knowledge now supports a practical process whose consequences extend beyond the epistemic quality of a claim.

This distinction replaces a linear research-to-execution image with a recursive architecture of knowledge and action. Research outputs enter practice with particular scopes, assumptions, uncertainties, provenance, and purposes. Practical use can change their function. Action then alters the relational field, generates new manifestations, redistributes capacities and constraints, and produces evidential traces newly created through intervention. Application can therefore modify the conditions under which later inquiry proceeds. Research and application remain distinguishable praxis modes while also forming a recursive relation through which each can transform the conditions of the other.

The account remains deliberately domain-general. Although this book ultimately develops Generative Relational Economics, theories of economic allocation, value

conversion, circulation, production, exchange, institutional economy, and economic power are reserved for later Parts. The present chapter develops a GR-level account of consequential praxis that can later be specialized within economics while retaining interfaces with governance, law, education, medicine, engineering, environmental action, organizational practice, humanitarian intervention, and other domains. Economic examples serve as illustrations within an architecture whose constitutive categories remain domain-general.

The analytical object is therefore broader than decision in the narrow sense. Application-dominant praxis includes the constitution of a practical situation, the formation of a practical problem, the exercise of judgment, the specification and revision of ends, the construction of an action space, the organization of decisions under incomplete knowledge, and the consequences of both action and non-action. It also includes risk, irreversibility, power, participation, responsibility, justice, institutional organization, learning, closure, and methodological transition. These elements interact. A decision threshold can depend on reversibility. Reversibility can depend on institutional capacity. Institutional capacity can depend on trust and coordination. Participation can change problem formulation, values, evidence, and action possibilities. Power can shape measurement, evaluation, delay, and exit. Practical closure can therefore be understood only through the relations among these dimensions.

The chapter preserves ontological restraint throughout this analysis. Practical actors require working descriptions of situations, relations, capacities, constraints, institutions, consequences, and possible trajectories, yet those descriptions remain historically situated representations. The practical necessity of acting leaves the epistemic and ontological status of a useful model unchanged unless stronger support is independently established. Application can increase pressure for simplification because decisions require operational categories, thresholds, and responsibilities. The framework therefore treats the provenance, scope, and revisability of practical representations as constitutive parts of responsible praxis across both research and application.

The same restraint applies to normativity. Application-dominant praxis necessarily contains normative commitments because consequential action distributes benefits, burdens, risks, opportunities, recognition, authority, and future possibilities. These commitments retain their normative standing alongside technical analysis and optimization. Epistemic judgment, normative judgment, aesthetic judgment, and practical judgment perform different functions. Practical judgment must often coordinate them without converting their differences into one homogeneous metric. Value plurality, partial comparability, thresholds, protected values, unresolved conflict, and revisable closure therefore enter the ordinary architecture of practical judgment.

Action is likewise treated relationally. An intervention changes more than an isolated target variable. It can modify dependencies, capacities, constraints, institutions, expectations, classifications, trust, option structures, and the future conditions of agency. Non-action can also participate in generation because existing processes continue, opportunities expire, institutions reproduce themselves, and other actors respond. Waiting, refusal, withdrawal, and exit therefore require their own practical analysis. The relevant question concerns how each practical response participates in

the transformation or preservation of the relational field.

This generative orientation makes time especially important. Consequences can be delayed, cumulative, path-dependent, partially reversible, or effectively irreversible. Present action can preserve future options or foreclose them. Institutions can inherit responsibilities from earlier decisions, while later actors can inherit benefits, burdens, risks, infrastructures, categories, and damaged or expanded action spaces formed before their participation. Application-dominant praxis therefore requires temporal horizons that extend beyond the immediate decision moment. Monitoring, maintenance, repair, institutional memory, reopening conditions, and long-horizon responsibility become parts of the practical architecture.

Power enters for the same reason. Practical power is distributed across the sequence through which a situation becomes actionable. Actors can differ in their capacity to define the problem, select ends, authorize decisions, execute interventions, delay or withhold action, construct measurement, evaluate outcomes, or exit an arrangement. Resource, expertise, information, legitimacy, mobility, institutional position, and coordination centrality can become practical power when conversion pathways make those asymmetries consequential. Participation and distributed agency therefore require analysis across the full practical sequence, including stages before and after formal consultation or voting.

Responsibility and justice extend this relational account. Responsibility concerns how decision, action, inaction, uncertainty, institutional role, distributed contribution, maintenance, repair, and long-horizon consequence are connected to positions capable of answer and response. Justice asks how the practical configuration distributes or transforms benefits, burdens, risk, participation, recognition, relational position, generative opportunity, historical consequence, and future conditions. Neither concept is treated as an external ethical appendix. Both are constitutive of application-dominant praxis because practical action changes who is exposed, who can respond, who can revise, and what possibilities remain available later.

Institutions provide the durable medium through which many of these practical relations are stabilized. Mandates, authority, resources, routines, infrastructures, records, coordination mechanisms, trust, conflict, and collective memory affect what organizations and collectives can perceive, decide, implement, preserve, contest, and revise. Collective capability can exceed, redirect, or constrain the aggregate of individual capabilities through relational and institutional organization. Institutional arrangements can generate forms of agency that emerge only through collective organization, while poorly designed interfaces can make highly capable participants collectively ineffective. The chapter accordingly treats institutional and collective praxis as a generative structure in its own right.

Application also produces epistemic consequences. Implementation reveals interfaces, resistance, adaptation, unexpected uptake, missing mechanisms, and previously hidden constraints. Practical failure can generate questions that became visible only through intervention. Successful outcomes can likewise expose mechanisms different from those assumed at the time of decision. The chapter therefore develops a coupling between application and research in which practical experience can generate evidence, theory pressure, revised categories, and research-return triggers. Later knowledge can reinterpret earlier practical episodes through re-epistemization while

preserving the distinction between what was knowable at the earlier decision point and what became visible only afterward.

Continued learning coexists with a requirement for practical closure. Application-dominant praxis requires stopping points sufficient for coordination, commitment, responsibility, and implementation. The chapter therefore develops practical closure as provisional stabilization with preserved conditions for later reassessment. Residual uncertainty and disagreement can remain attached to the closure through records, monitoring, revision conditions, reversal pathways, exit conditions, and re-opening procedures. Closure becomes an institutional achievement that permits action while preserving the practical capacity to respond when materially relevant conditions change.

The chapter proceeds through six broad movements. Sections 10.1–10.2 establish application-dominant praxis and its principal contradiction. Sections 10.3–10.7 reconstruct the practical situation, problem formation, judgment, ends, and action space. Sections 10.8–10.10 develop decision under incomplete knowledge, action and non-action, risk, reversibility, and option structure. Sections 10.11–10.15 examine power, participation, responsibility, justice, and institutional or collective praxis. Sections 10.16–10.17 develop research–application recoupling and practical closure. Section 10.18 then translates the resulting practical architecture into methodological requirements and provides the direct handoff to Chapter 11.

The objective of Chapter 10 is architectural. Universal decision rules, single evaluative metrics, and privileged intervention methods remain outside its intended scope. It establishes the distinctions and interfaces that an applied methodology should preserve when consequential action is organized under incomplete knowledge and historically changing conditions. These include the relation between situation and problem, knowledge and judgment, values and ends, formal possibility and effective action space, uncertainty and commitment, action and non-action, risk and reversibility, asymmetry and power, participation and agency, responsibility and accountability, justice and heterogeneous value, institutions and collective generativity, learning and re-epistemization, and closure and reopening.

Chapter 11 takes this architecture as its practical foundation. It develops concrete methods for diagnosis, criterion specification, evidential thresholds, decision analysis, scenarios, robustness, adaptation, optimization, formal and quantitative modeling, historical and interpretive analysis, participation, intervention targeting, timing, scale, intervention depth, monitoring, evaluation, repair, rollback, and AI-assisted decision support. The division of labor is deliberate. Chapter 10 specifies the conditions under which methods become practically meaningful and responsible; Chapter 11 examines how different methodological families can satisfy those conditions in actual decision and intervention design. The substantive specialization into Generative Relational Economics remains deferred until the domain-general architecture of knowing and acting has been completed.

10.1 Application-Dominant Praxis

Part III developed the architecture of research-dominant praxis around the production, revision, adjudication, and provisional closure of warranted knowledge. The role of the present section is to establish the complementary praxis configuration that becomes central when consequential action must be organized under conditions that remain epistemically incomplete. Its objective is to define application-dominant praxis without separating it from inquiry, to preserve praxis as the superordinate category within which research and application are differentiated, to specify the overlap and transformation between the two modes, and to delimit the analytical value of the distinction. The discussion proceeds from the common structure of praxis through research-dominant and application-dominant configurations, their overlap, transitions between them, and the limits of treating their boundary as fixed. The method is architectural and domain-general. The section develops a GR-level landscape of praxis that can later be specialized within economics and other substantive domains without making those later specifications constitutive of the general account.

The distinction introduced here concerns the organization of praxis rather than a taxonomy of occupations, institutions, or activities. A laboratory, ministry, community organization, firm, court, school, hospital, engineering project, or household can contain both research and application functions. The same project can move between praxis modes over time, and different components of a distributed project can occupy different modes simultaneously. The analytical question is therefore which practical contradiction, orientation, responsibility structure, and closure problem currently organize the configuration most strongly.

Definition 10.1 (Praxis mode). A *praxis mode* is a historically situated and revisable configuration of knowing, judging, acting, relating, coordinating, and learning whose organization is shaped by a principal practical orientation, a characteristic contradiction, and the forms of responsibility and closure required by that orientation.

Definition 10.1 makes dominance relational and functional. It does not assign an activity an immutable identity. A project becomes intelligible as research-dominant or application-dominant according to how its heterogeneous components are organized at a given stage, scale, and level of analysis. The same observable act—measurement, modeling, consultation, experimentation, classification, communication, resource commitment, or institutional redesign—can perform different functions depending on the surrounding praxis configuration.

Table 10.1 provides a first comparison of the two modes. The table is intentionally schematic. Its purpose is to expose differences in organizing orientation while preserving their shared components and recurrent movement between them.

The shared column is as important as the contrast. Both modes involve evidence, judgment, action, uncertainty, institutions, material conditions, relations, values, temporal horizons, and feedback. Their distinction becomes analytically useful when these components are organized around different principal tasks. The remainder of the section develops that claim in greater detail.

Table 10.1: Domain-general landscape of research-dominant and application-dominant praxis

Praxis dimension	Research-dominant configuration	Application-dominant configuration	Shared or coupled function
Principal orientation	Produce, test, revise, and preserve warranted knowledge	Organize consequential action under incomplete knowledge and plural practical conditions	Learning, judgment, revision, and relation to evidence
Characteristic contradiction	Need for sufficiently stable claims under incomplete and changing epistemic access	Need for sufficiently justified action while knowledge, values, consequences, and future conditions remain partly unsettled	Management of incompleteness without suspending praxis
Immediate closure problem	Determine when a claim or research cycle is sufficiently warranted for a stated purpose	Determine when an action, non-action, delay, or intervention is sufficiently justified for a stated practical horizon	Provisional closure with explicit reopening conditions
Primary consequence of error	Misdescription, weak inference, distorted explanation, lost evidence, or misleading theory	Distributed harm, foreclosed options, misallocated burdens, institutional damage, or missed opportunity in addition to epistemic error	Error propagation across knowledge and action
Role of action	Action supports inquiry and can generate epistemic access	Action constitutes a principal practical task and also generates new evidence	Intervention and observation remain mutually connected
Role of inquiry	Inquiry organizes the principal practical task	Inquiry supports diagnosis, judgment, monitoring, adaptation, and reassessment	Research persists across both modes
Responsibility emphasis	Evidential, interpretive, methodological, institutional, and field responsibility	Consequential, distributive, participatory, temporal, institutional, and epistemic responsibility	Traceability of choices and effects
Typical transition signal	Consequential choice begins to organize the project more strongly than further knowledge stabilization	Practical uncertainty, failure, novelty, or contested interpretation requires renewed epistemic work	Reassessment of the organizing contradiction

10.1.1 Praxis as the Superordinate Category

The first task is to establish the common category within which research and application can be differentiated. Its role is to prevent the book from reproducing a linear image in which knowledge is first produced in an epistemically isolated domain and subsequently transferred into a separate domain of action. The objective is to treat inquiry and application as configurations of praxis that share constitutive elements while assigning different weights and functions to them. The discussion develops the components of praxis, the relation between orientation and activity, the significance of principal contradiction, and the consequences of treating praxis as historically transformable.

Praxis, in the present framework, concerns situated participation in a relational field through which agents and collectives encounter conditions, form judgments, act or withhold action, experience consequences, generate records, and revise subsequent orientations. The category therefore includes epistemic activity without reducing itself to epistemology, and it includes consequential action without reducing itself to intervention. A praxis configuration can contain perception, inquiry, interpretation, classification, imagination, deliberation, coordination, implementation, main-

tenance, refusal, monitoring, repair, preservation, and institutionalization. Which of these functions becomes dominant depends on the practical organization of the situation.

The superordinate role of praxis also places knowing inside history. Evidence does not arrive independently of prior practices. Observation can depend on infrastructures, classifications, access relations, instruments, institutions, languages, and preserved records. Action can then modify those same conditions. A monitoring system can make some manifestations more visible. An institutional reform can change the categories through which later observations are recorded. A technical intervention can create new failure modes whose traces become the basis of subsequent inquiry. Praxis therefore contributes to the conditions under which later praxis becomes possible.

Definition 10.2 (Generative-relational praxis). *Generative-relational praxis* is historically situated participation in relational configurations through which agents and collectives form knowledge and judgment, exercise or withhold agency, transform conditions, encounter generated consequences, and revise the relations and capacities that shape later possibilities of inquiry and action.

This definition gives the category a generative dimension. Action matters partly because it changes later conditions; inquiry matters partly because it changes what can be recognized, represented, justified, and acted upon. The generated consequences can include intended outcomes, unintended effects, institutional residues, new constraints, changed capacities, altered distributions of attention, revised classifications, transformed expectations, and new practical possibilities. Some consequences become visible quickly, while others emerge across longer temporal or organizational scales.

Praxis therefore requires an account of orientation. Two projects can perform similar activities while being organized toward different practical ends. Consider a controlled intervention that alters a local condition and measures the resulting response. In one configuration, the intervention may be organized principally to discriminate among competing explanations. In another, it may be organized principally to improve a practical condition while measurement supports adaptation. The observable techniques overlap; the organizing function differs.

Orientation is also insufficient by itself when treated as declared intention. Institutions frequently contain multiple objectives, and stated missions can diverge from actual allocation of authority, resources, deadlines, and accountability. A praxis analysis therefore examines how the configuration is materially organized: which decisions receive priority, which failures trigger reconsideration, what forms of closure are demanded, who possesses authority, where consequences are borne, and what the project must deliver to count as practically successful.

The concept of a principal contradiction provides one way to interpret this organization. A principal contradiction is the tension whose management most strongly structures practical choices within the configuration at a specified stage and scale. In research-dominant praxis, the characteristic tension concerns the stabilization of warranted claims under incomplete, mediated, and revisable epistemic access. In application-dominant praxis, the characteristic tension concerns the organization of

consequential action while knowledge and practical conditions remain incomplete. These formulations are analytical guides rather than claims that every project contains a single contradiction in a simple or invariant form.

Proposition 10.3 (Praxis-mode differentiation by organizing contradiction). *A distinction between research-dominant and application-dominant praxis is most informative when it tracks the contradiction, orientation, responsibility structure, and closure requirement that organize a configuration more strongly than alternative practical functions at the relevant stage and scale.*

Proposition 10.3 establishes four linked dimensions. Orientation identifies what the configuration is principally trying to accomplish. Contradiction identifies the practical tension through which that accomplishment is pursued. Responsibility identifies whose judgments and consequences require governance. Closure identifies what must become sufficiently settled for the configuration to proceed. These dimensions can align strongly, or they can diverge. A project that declares an epistemic objective while imposing operational deadlines and irreversible commitments may already contain a growing application-dominant component. A practical programme that suspends implementation to reconstruct an uncertain mechanism may temporarily intensify its research-dominant organization.

Praxis is therefore temporally indexed. The relevant mode can change as evidence accumulates, emergencies develop, institutions alter their mandates, consequences become visible, or practical options close. It is also scale-indexed. A large programme may be application-dominant overall while containing research-dominant subprojects. A research consortium may remain research-dominant overall while one operational component carries substantial application responsibility. The superordinate category allows such nested structures to be described without forcing the entire system into one permanent label.

A further consequence concerns evaluation. If research and application are both forms of praxis, quality cannot be judged solely from outputs detached from the conditions through which they were generated. A well-estimated effect can remain practically inadequate if the action space was poorly constituted. A useful intervention can remain epistemically obscure if its mechanism and boundary conditions are unknown. A failed intervention can still produce substantial epistemic value if its traces are preserved and interpreted responsibly. A research failure can create practical harm if classifications, datasets, or models travel into consequential institutions. Praxis analysis therefore follows both epistemic and practical lineages.

This broader framing prepares the distinction developed in the next two subsections. Research-dominant praxis and application-dominant praxis are differentiated within a shared field of praxis, and their relation remains one of changing organization rather than categorical separation.

10.1.2 Research-Dominant Praxis

The second task is to restate research-dominant praxis from the perspective required by Part IV. Its role is transitional: the preceding Part developed research-dominant praxis in detail, while the present subsection identifies the features that matter for comparison with application-dominant praxis. The objective is to specify its organiz-

ing orientation, characteristic closure problem, practical consequences, and continuing presence within later application. The method is selective and synthetic, avoiding a repetition of the methodological architecture already developed.

Research-dominant praxis is organized principally around the production and revision of warranted knowledge. Its practical work can include formulating questions, constituting objects of inquiry, constructing records, selecting methods, defining variables and categories, developing interpretations, building models, comparing explanations, adjudicating evidence, preserving uncertainty, and deciding when a claim is sufficiently supported for a specified research purpose. These activities can involve extensive material and institutional action, yet their principal organization remains epistemic when the project is primarily governed by the need to improve warranted understanding.

Definition 10.4 (Research-dominant praxis). *Research-dominant praxis* is a praxis configuration in which the production, testing, revision, preservation, and provisional closure of warranted knowledge provide the principal practical orientation, while action, coordination, intervention, and institutional relations are organized primarily in relation to that epistemic task.

The phrase “primarily in relation to” is important. Research can alter the world it studies. Fieldwork changes relations of attention and access. Experiments intentionally alter conditions. Classification changes what becomes recordable and comparable. Publication can redistribute visibility and authority. Data infrastructures influence what later researchers and institutions can encounter. Research-dominant praxis therefore carries practical responsibility even when its immediate justification is epistemic.

Its characteristic closure problem concerns sufficiency of warrant. Inquiry cannot remain indefinitely open at every level. Researchers decide when to stabilize a concept provisionally, when to accept a measurement procedure, when to privilege one model for a stated function, when to publish an interpretation, and when to close a research cycle while preserving uncertainty and conditions for reopening. The required closure remains purpose-relative. A model sufficient for exploratory comparison may remain insufficient for high-consequence prediction. A historical reconstruction sufficiently supported for one bounded claim may remain inadequate for broader causal attribution.

Research-dominant praxis also contains practical choices whose consequences can exceed the immediate epistemic task. Participant exposure, experimental burden, environmental disturbance, publication risk, resource use, access control, data governance, classification effects, and institutional reputation can all become consequential. The research orientation therefore cannot be used to discount the actual effects of research action. The distinction concerns which task organizes the configuration, while responsibility follows the effects and relations that the configuration generates.

Proposition 10.5 (Consequence-sensitive research praxis). *Research-dominant organization can coexist with substantial practical consequence; the praxis mode identifies the principal organizing task, while responsibility for generated effects remains sensitive to the scale, distribution, reversibility, and duration of those effects.*

This proposition matters for the transition into Part IV because application func-

tions frequently emerge inside research before an explicit mode change occurs. A pilot may begin as a limited test and gradually become relied upon by participants. A classification developed for analysis may enter administrative practice. A prototype may acquire users before its governing institution has reclassified it as an operational system. A recommendation may shape behavior even while researchers continue to describe it as provisional. Such cases create a widening distance between formal research status and practical consequence.

Research-dominant praxis can respond by making the consequence pathway explicit. This includes identifying where research outputs can travel, who may act on them, what uncertainty accompanies them, what constraints apply to reuse, what harms could follow from misinterpretation, and what evidence would trigger revision. Such governance belongs to research-dominant praxis itself because the production of knowledge includes responsibility for the conditions under which that knowledge becomes available and actionable.

The distinction also clarifies why application-dominant praxis cannot be defined by the mere presence of intervention. Intervention can serve research. Observation can serve application. The mode changes when the practical organization changes: consequential action becomes a principal task whose timing, distribution, legitimacy, and generated effects can no longer be subordinated to the epistemic objective alone.

This boundary is necessarily revisable. A research project can remain strongly research-dominant across many consequential activities when those activities are tightly governed as means of inquiry. It can also move toward application-dominant praxis rapidly when external institutions begin to operationalize its outputs, when participants become dependent on an intervention, or when the decision to continue, scale, withdraw, or institutionalize the intervention becomes the dominant practical problem. The next subsection develops the configuration that emerges under those conditions.

10.1.3 Application-Dominant Praxis

The third task is to define the principal object of Chapter 10. Its role is to establish application-dominant praxis as a general GR category before later sections analyze practical situations, judgment, ends, action spaces, uncertainty, risk, power, participation, responsibility, justice, institutions, and closure. The objective is to specify what becomes distinctive when consequential action organizes praxis more strongly than further stabilization of knowledge. The method is constitutive: the subsection identifies the orientation, contradiction, consequences, and recursive learning structure that make the configuration application-dominant.

Application-dominant praxis arises when a configuration must organize action, non-action, delay, maintenance, withdrawal, repair, commitment, or institutional change in relation to practical consequences that matter independently of further inquiry. The agent or collective may possess extensive research, limited research, contested research, or rapidly changing evidence. In each case, the practical configuration requires a judgment about how to proceed while some relevant uncertainty remains.

Definition 10.6 (Application-dominant praxis). *Application-dominant praxis is a*

praxis configuration in which the organization of consequential action under incomplete knowledge becomes the principal practical orientation, so that judgment, evidence, values, capacities, constraints, timing, risk, participation, responsibility, and anticipated generative consequences are coordinated around what to do within a situated practical horizon.

Definition 10.6 treats “application” broadly. The term includes implementation of established knowledge, yet it also covers situations in which knowledge is contested, emergent, locally incomplete, or transformed by the act of intervention itself. Application can concern the continuation of an existing practice, the introduction of a new one, the withholding of an available action, the repair of a damaged relation, the redesign of an institution, the preservation of a fragile condition, or the deliberate creation of time for further inquiry. The central feature is consequential practical organization.

The characteristic contradiction follows from the relation between necessity and incompleteness. Practical conditions can require action before all relevant uncertainty has been resolved. Delaying action can preserve epistemic opportunity while also generating costs, risks, or foreclosed possibilities. Acting can address an urgent condition while also creating new exposures. A choice among actions can depend on values that lack a common measure. The affected population can exceed the population that participates in the decision. Consequences can emerge on temporal and spatial scales beyond the immediate horizon of the acting institution.

Application-dominant praxis therefore changes the function of knowledge. Evidence remains indispensable, yet evidential adequacy becomes connected to a concrete action horizon. Uncertainty becomes practically distributed. A model’s error is no longer only an epistemic defect when decisions rely upon it. A category boundary can affect eligibility, recognition, burden, or access. A scenario can privilege some futures by making them more governable than others. A measurement choice can shape what receives institutional attention. The passage from evidence to action is consequently itself an object of praxis analysis.

The same transformation applies to values. Practical action requires orientation toward ends, yet ends can be plural, contested, layered, and historically formed. Application-dominant praxis therefore includes normative judgment within its constitutive architecture. This does not imply that every practical choice requires a comprehensive moral theory. It implies that choices distribute consequences and presuppose criteria of relevance, acceptability, priority, protection, or obligation. Those criteria should be made as visible and contestable as the practical situation permits.

Application also has a generative dimension. An intervention changes more than an immediate output when it alters capacities, dependencies, institutions, expectations, categories, relations of trust, future action spaces, or conditions of evidence production. A short-term success can generate a long-term constraint. A costly intervention can create new capacities that later reduce dependence. A reversible pilot can generate information and institutional learning. A seemingly minor procedural change can redistribute voice or visibility. The practical object therefore includes trajectories and generated conditions, not only terminal outcomes.

Proposition 10.7 (Generative consequence of application). *Application-dominant praxis should evaluate consequential action partly through the relational and generative conditions it creates for later action, inquiry, participation, capacity, constraint, and revision, in addition to the immediate outcomes used to justify the action.*

The proposition expands the temporal horizon of practical evaluation while preserving scope discipline. Some decisions can reasonably be assessed through relatively immediate outcomes. Others materially transform future possibility structures. The analytical burden should scale with the plausible depth, duration, and distribution of those transformations. The framework therefore supports differentiated levels of practical analysis rather than requiring exhaustive reconstruction for every ordinary action.

Application-dominant praxis also contains inquiry as an internal function. Diagnosis precedes and accompanies action. Monitoring observes generated consequences. Failure can reveal mistaken assumptions. Implementation can expose institutional constraints that were absent from prior models. Participation can disclose values, experiences, or dependencies that formal analysis did not capture. New manifestations can require revised categories. Application can therefore become a site of epistemic generation without ceasing to be application-dominant.

Definition 10.8 (Action–learning recursion). An *action–learning recursion* is a practical sequence in which situated action generates consequences and manifestations that are interpreted as evidence for revising diagnosis, judgment, intervention, institutional arrangement, or the governing representation of the practical situation.

The recursion is central to the chapter’s later architecture. It explains why application-dominant praxis requires monitoring, traceability, reversibility where feasible, institutional memory, and explicit conditions for reassessment. A practical decision can be provisional even when action must be immediate. Provisionality refers to openness to governed revision rather than hesitation about acting.

The concept also clarifies why practical success and epistemic success can diverge. An intervention can produce a desirable local outcome through a mechanism that remains poorly understood. A well-supported mechanism can produce disappointing results because the practical situation contained unmodeled constraints. A programme can meet its declared target while generating harmful relational effects outside the metric. Application-dominant praxis therefore needs multiple forms of evaluation and a capacity to reconsider the practical situation itself.

This domain-general account leaves substantive specification open. Later parts of the book can examine how application-dominant praxis changes when the relevant objects are economic resources, institutions, value forms, allocation structures, power relations, or economic capacities. Other domains can specify different materials, authorities, risks, and norms. The general category established here provides the landscape within which those differences can become analytically explicit.

10.1.4 Overlap between Praxis Modes

The fourth task is to describe the shared interior of research-dominant and application-dominant praxis. Its role is to prevent the distinction from becom-

ing a binary division that assigns inquiry to one side and action to the other. The objective is to identify functions that recur across both modes and to explain how their practical meaning changes with the surrounding organization. The discussion considers inquiry within application, action within research, hybrid configurations, nested modes, and the consequences of distributed agency.

Both modes contain inquiry. Research-dominant praxis places inquiry at the center of the practical configuration, whereas application-dominant praxis uses inquiry to constitute the situation, assess options, anticipate consequences, monitor effects, and revise action. The difference therefore concerns the function of inquiry within the configuration. In application-dominant praxis, the question “what can be warranted?” remains present, while the configuration also requires judgments about what to do before every uncertainty is resolved.

Both modes also contain action. Research requires the construction of records, the use of instruments, engagement with participants, allocation of resources, design of studies, maintenance of infrastructures, and decisions about publication and preservation. These acts can change the relational field. Application places consequential transformation more centrally, yet its interventions can also be designed to preserve epistemic access and enable learning. The same project can therefore combine strong inquiry and strong intervention intensity.

Definition 10.9 (Praxis-mode overlap). *Praxis-mode overlap* is the coexistence of research and application functions within a shared configuration, where the presence of both functions remains compatible with identifying one mode as dominant when its organizing contradiction and practical closure problem structure the configuration more strongly.

Overlap can take several forms. The first is *functional overlap*: the same act serves both epistemic and practical purposes. A pilot can improve a condition while producing evidence about feasibility. Monitoring can protect affected subjects while generating data. Consultation can support legitimacy while revealing previously unrecognized causal relations. A model can guide a decision while exposing uncertainty that motivates new research.

The second is *temporal overlap*. A programme can contain research and application processes unfolding on different clocks. Operational teams may act daily while a research team updates models monthly. Community participants may encounter consequences immediately while institutional evaluation occurs later. Short-run application can therefore coexist with longer-run research-dominant inquiry.

The third is *organizational overlap*. Distinct institutions or teams can occupy different praxis modes while contributing to one distributed project. A research unit can estimate mechanisms, an operational unit can implement interventions, a regulatory body can authorize action, and affected communities can generate situated knowledge and contest practical assumptions. The overall configuration cannot be understood adequately by assigning the entire network a single institutional identity.

The fourth is *scale overlap*. A local component may be research-dominant while the larger programme is application-dominant, or the reverse. An organization testing a small procedural variation may conduct a research-dominant subproject inside a mature service system. A research consortium can operate an application-dominant

safety or support function whose success is practically required irrespective of the research outcome. Scale-sensitive analysis therefore matters whenever responsibility, authority, and consequence are distributed unevenly.

Proposition 10.10 (Co-presence without mode collapse). *The coexistence of substantial research and application functions does not by itself eliminate praxis-mode differentiation; differentiation remains informative when one organizing contradiction, responsibility structure, and closure requirement is sufficiently dominant at the specified stage and scale.*

This proposition allows hybrid configurations to be described without assuming that every overlap produces an analytically indeterminate case. At the same time, the dominance claim should remain revisable. If authority, resource allocation, success criteria, or practical consequences shift, the mode assessment can change.

Overlap also creates distinctive governance demands. An intervention designed partly for learning can expose participants to risks that arise from experimentation. An operational programme that simultaneously produces research data can create consent, access, ownership, or representation questions. A research activity embedded in a service institution can be difficult for affected subjects to distinguish from ordinary service provision. A project can therefore require mode-specific governance within a shared organizational setting.

A further issue concerns success criteria. Research-dominant success can include improved discrimination among explanations, stronger measurement, productive falsification, discovery of uncertainty, or generation of a better question. Application-dominant success can include acceptable practical improvement, prevented harm, preserved options, enhanced capacity, or legitimate coordination. A hybrid project may satisfy one criterion while failing another. Praxis-mode overlap therefore benefits from separate but connected evaluation records rather than a single composite score that obscures the difference.

The overlap also matters for learning from failure. A practically unsuccessful intervention can generate valuable knowledge. That epistemic value does not erase the practical loss, especially where burdens were distributed unequally. Conversely, a practically useful intervention can generate weak knowledge if attribution remains uncertain. The framework can preserve both evaluations simultaneously. Such double accounting is important for a generative-relational approach because later action can depend on both what happened and what has actually been learned from what happened.

These overlapping structures make transitions between praxis modes common rather than exceptional. Once inquiry and application are understood as co-present functions, the next question concerns how their relative organization changes over time.

10.1.5 Transformation between Praxis Modes

The fifth task is to theorize movement between praxis modes. Its role is to replace a one-way research-to-application pipeline with a reversible and recursively governed account of practical transformation. The objective is to identify transition signals,

distinguish gradual from abrupt mode change, preserve continuity of records and responsibility, and explain how a configuration can return toward research-dominant organization after consequential action has begun. The method is process-oriented and scale-sensitive.

A mode transition occurs when the relative organization of praxis changes. The activities present before and after the transition can remain partly continuous. Researchers may continue collecting data after an intervention becomes operational. Practitioners may continue implementing a programme while suspending one component for intensive inquiry. What changes is the practical hierarchy among tasks, the authority attached to decisions, the urgency of closure, and the consequences attached to error.

Definition 10.11 (Praxis-mode transition). A *praxis-mode transition* is a change in the dominant organization of a praxis configuration through which another practical orientation, contradiction, responsibility structure, or closure requirement becomes sufficiently determinative to reorganize how evidence, judgment, action, authority, resources, and revision are coordinated.

Transitions can be gradual. A prototype can acquire users, dependencies, and institutional commitments over time. A pilot can expand in scale until withdrawal becomes materially costly. A research recommendation can be incorporated incrementally into operating procedures. A dataset can become infrastructural for decisions. In such cases the mode can shift before any formal declaration of “implementation” occurs.

Transitions can also be abrupt. An emergency can convert an exploratory research setting into a practical decision environment. Discovery of an immediate hazard can create a responsibility to act. A regulatory authorization can move a technology into operational use. A sudden institutional decision can require a research team to provide decision support before its preferred research cycle has closed. Abrupt transitions compress the time available for reassessing uncertainty, responsibility, and governance.

Several signals can indicate movement toward application-dominant praxis. Consequential outcomes may become direct performance criteria. Affected subjects may begin to depend on continuation of the intervention. Withdrawal can acquire its own risks. Decisions about scale, access, eligibility, timing, or allocation can become more important than further epistemic refinement. Operational deadlines can constrain inquiry. Authority can shift from investigators toward institutions responsible for implementation. Error can begin to carry consequences whose distribution requires explicit practical governance.

Movement in the other direction is equally important. An intervention may expose a poorly understood mechanism. Monitoring may reveal unexpected heterogeneity. A practical failure may undermine the representation on which the decision was based. New affected subjects may become visible. A contested value assumption may destabilize the initial problem formulation. Under such conditions, application-dominant praxis can intensify research functions or temporarily return a component of the project to research-dominant organization.

Proposition 10.12 (Reversible orientation of praxis transitions). *Praxis-mode transi-*

tions can proceed in either direction and can recur within the same project; the appropriate direction depends on changes in the practical contradiction, available knowledge, generated consequences, institutional conditions, and responsibility structure rather than on a presumed developmental sequence from research toward application.

This proposition is important because the familiar image of research followed by application encourages premature closure. Once an intervention has been classified as “implemented,” organizations can become reluctant to reopen foundational questions. A recursive praxis architecture keeps re-epistemization available when practical experience reveals that prior knowledge, categories, or assumptions require reconstruction.

Transitions also require continuity of records. Evidence, uncertainty, assumptions, affected populations, decision rationales, authorization structures, anticipated consequences, and reopening conditions should travel across the transition where materially relevant. Otherwise application can inherit decontextualized research outputs, while renewed research can lose the practical history through which anomalies emerged. The practical meaning of a record can change across modes, yet its lineage remains important.

Definition 10.13 (Praxis-transition record). *A praxis-transition record is a revisable account of the evidence, uncertainty, assumptions, values, authority, affected relations, responsibilities, anticipated consequences, and reopening conditions that accompany a change in the dominant organization of praxis.*

A transition record does not need to be bureaucratically elaborate in every setting. Its form should scale with consequence, institutional complexity, uncertainty, duration, and reversibility. In a high-consequence system, the record may require formal governance and extensive traceability. In an ordinary local decision, a simpler articulation of assumptions, responsibilities, and revision conditions may be sufficient. The underlying principle is continuity of practical intelligibility.

Mode transition can also be asymmetric across actors. A research team may still understand a project as experimental while an affected community experiences it as an operational intervention. A regulator may treat a system as deployed while developers continue to treat it as a prototype. A public institution may adopt a model as decision support while model builders describe it as exploratory. Such asymmetry matters because responsibilities cannot be allocated reliably from one actor’s self-description alone.

Proposition 10.14 (Transition assessment through distributed consequence). *Assessment of a praxis-mode transition should include how relevant actors and affected subjects encounter the configuration, because operational dependence, exposure, authority, and practical consequence can shift before the initiating organization formally reclassifies its activity.*

This distributed perspective prepares later analysis of participation, responsibility, and justice. It also shows why the research–application distinction is analytically useful only when treated as a dynamic relation. The final subsection therefore turns to the limits of fixed boundaries and specifies how the distinction can be retained without reifying it.

10.1.6 Limits of Fixed Research–Application Boundaries

The final task is to delimit the distinction developed in this section. Its role is to prevent research-dominant and application-dominant praxis from becoming rigid ontological categories, institutional stereotypes, or universal stage sequences. The objective is to state the conditions under which the distinction remains useful, identify characteristic boundary failures, and formulate the open transition into the principal contradiction of application-dominant praxis. The method is reflexive: the analytical categories are subjected to the same requirements of scope, revisability, and historical sensitivity that the broader framework applies to other representations.

A fixed boundary can fail first by institutional substitution. Universities, laboratories, firms, governments, non-governmental organizations, communities, courts, hospitals, and international institutions cannot be assigned a praxis mode from institutional identity alone. Each can conduct inquiry, intervention, governance, experimentation, preservation, or service. The relevant configuration must be reconstructed from actual orientation, authority, consequence, and closure requirements.

A fixed boundary can also fail by occupational substitution. “Researcher” and “practitioner” are roles with real institutional significance, yet they do not exhaust the praxis functions performed by the people who occupy them. Practitioners generate situated knowledge. Researchers make consequential decisions. Participants can become co-investigators. Technical operators can discover mechanisms through maintenance. Communities can develop practical theories through long experience. Praxis analysis therefore follows functions and relations in addition to formal roles.

A third failure arises from temporal staging. The sequence research, application, evaluation, and renewed research can be useful for planning, yet many configurations operate recursively. Diagnosis continues during implementation. Intervention generates evidence. Evaluation changes the intervention before a nominal end point. Practical urgency can initiate action while research remains active. Long-term operation can uncover conditions that return the project to foundational inquiry. A fixed stage model can obscure these recursions.

A fourth failure concerns scale. The dominant mode at one level can differ from the dominant mode at another. A research-dominant organization may operate an application-dominant infrastructure. An application-dominant public programme may contain research-dominant trials. A collective can pursue an application-dominant objective while one subgroup undertakes epistemic reconstruction. The appropriate classification therefore depends on the analytical unit.

A fifth failure arises from power over classification. Organizations can benefit from describing an activity as research when that description reduces practical accountability, or as application when it discourages reopening epistemic assumptions. Formal labels can therefore become strategically consequential. Praxis-mode analysis should examine who has authority to classify the activity, what obligations follow from that classification, and how affected subjects experience the actual consequences.

Definition 10.15 (Praxis-boundary profile). A *praxis-boundary profile* is a stage- and scale-specific account of the orientation, principal contradiction, inquiry functions, application functions, authority relations, consequence structure, closure require-

ments, and plausible transition signals through which a praxis configuration is provisionally characterized.

The profile formulation preserves analytical usefulness while avoiding categorical rigidity. It allows a project to be described as strongly research-dominant, strongly application-dominant, mixed with one dominant orientation, locally divergent across subcomponents, or temporarily indeterminate when the organizing structure is genuinely unstable. Indeterminacy can itself be informative when responsibility structures are changing faster than institutional classifications.

Proposition 10.16 (Provisionality of praxis-mode classification). *A praxis-mode classification should be treated as a provisional analytical judgment indexed to stage, scale, actors, and consequence, and should be reopened when changes in orientation, authority, dependence, uncertainty, or practical effect materially alter the configuration.*

This principle also limits the theoretical ambition of Chapter 10. The chapter does not require every form of human or institutional activity to be reduced to two modes. Research-dominant and application-dominant praxis are tools for analyzing an important family of configurations in which inquiry and consequential action interact. Other distinctions can become necessary for different problems. The present framework remains open to such extension.

The boundary limitation does not diminish the importance of application-dominant praxis. It sharpens the concept by locating its function. The category becomes most useful when practical consequence has become sufficiently central that evidence, uncertainty, values, timing, risk, authority, participation, and responsibility must be coordinated around a decision about what to do. Once that condition is present, the characteristic contradiction of application-dominant praxis becomes visible.

Proposition 10.17 (Application-dominant entry condition). *Application-dominant analysis becomes especially important when consequential choice has acquired sufficient practical weight that further inquiry alone cannot discharge the responsibilities created by action, non-action, delay, commitment, withdrawal, or institutional continuation.*

Proposition 10.17 establishes the transition to the next section. The principal problem is now more specific than the general distinction between praxis modes. Once action becomes practically determinative, a configuration must act with knowledge that remains partial, values that may remain plural, consequences that can be distributed unequally, and temporal conditions that can constrain revision. Section 10.2 therefore develops the principal contradiction of application-dominant praxis: the organization of necessary or consequential action under epistemic incompleteness, uncertainty, normative commitment, plural value, urgency, and possible irreversibility.

10.2 The Principal Contradiction of Application-Dominant Praxis

Section 10.1 established application-dominant praxis as a provisional configuration in which consequential choice and intervention organize the practical field. The present section identifies the characteristic tension that becomes especially important within that configuration. Its objective is to specify why consequential action can become practically required while the epistemic, normative, temporal, and institutional conditions of action remain incomplete or contested. The discussion proceeds through necessity of action, incomplete knowledge, uncertainty, normative commitment, value plurality, urgency, irreversibility, and transformation of the contradiction. The method is conceptual and relational: each dimension is treated as part of a changing practical configuration rather than as an isolated obstacle to otherwise complete decision-making.

The term *principal contradiction* is used here in a restricted analytical sense. It identifies a tension that can become organizing for a praxis configuration because multiple practical demands must be coordinated through it. The term does not imply that every concrete situation has one exhaustive contradiction, that secondary tensions cease to matter, or that practical history follows a predetermined dialectical sequence. A principal contradiction can change with scale, stage, actor, institutional location, and consequence. Its analytical value lies in identifying what currently organizes the difficulty of acting.

Definition 10.18 (Principal contradiction of application-dominant praxis). The *principal contradiction of application-dominant praxis* is the recurrent tension between the practical requirement to organize consequential action and the incompleteness of the epistemic, normative, temporal, and institutional conditions through which that action can be justified, coordinated, revised, and borne.

Table 10.2: Dimensions of the principal contradiction in application-dominant praxis.

Dimension	Practical pressure	Residual openness
Action	Consequences accumulate through action, non-action, continuation, or delay.	Multiple feasible orientations can remain available.
Knowledge	Decisions require some account of conditions, mechanisms, and consequences.	Evidence and models remain partial, mediated, and revisable.
Uncertainty	Choice must proceed with possible divergence between expectation and realization.	Probabilities, mechanisms, or relevant possibilities can remain incompletely specified.
Normativity	Action distributes benefits, burdens, exposure, capacities, and opportunities.	Legitimate ends and acceptable trade-offs can remain contested.
Value plurality	Several goods, commitments, or evaluative registers can bear on one decision.	Conversion among values can be partial, disputed, or context-dependent.
Time	Deliberation occurs within changing conditions and practical deadlines.	Additional inquiry can improve understanding while delay changes the field.
Reversibility	Decisions can commit resources, institutions, relations, or trajectories.	Future correction can range from inexpensive revision to severe path dependence.

The definition contains two interacting poles. The first is practical determination: a configuration reaches a point at which action, non-action, delay, withdrawal, continuation, or commitment has consequences that require judgment. The second is conditional incompleteness: the knowledge required for prediction can remain partial, values can remain plural, authority can be distributed, timing can compress deliberation, and consequences can exceed the reversibility of the decision. Application-dominant praxis therefore develops through the organization of action within residual incompleteness.

This formulation also clarifies why the contradiction cannot be reduced to uncertainty alone. A technically well-estimated probability distribution can coexist with disagreement about acceptable risk, unequal exposure to loss, contested authority, and incompatible values. Conversely, a normative consensus can coexist with profound uncertainty about causal mechanisms. The practical difficulty emerges from the joint configuration of these dimensions.

Table 10.2 summarizes the configuration developed below. The paired columns are intentionally relational. Practical pressure and residual openness are not separate lists of problems. Each pressure acquires meaning through the openness that accompanies it, while each form of openness becomes practically significant because consequential choice remains present. The principal contradiction is therefore a structure of co-presence.

10.2.1 Necessity of Action

The first dimension concerns the conditions under which action acquires practical necessity. The term *necessity* requires careful qualification. Application-dominant praxis frequently contains several available responses, including waiting, continuation, withdrawal, delegation, experimentation, or deliberate non-intervention. Necessity therefore does not ordinarily mean that one uniquely determined act follows from the situation. It means that the configuration has reached a point at which the practical consequences of choosing, deferring, continuing, or refusing can no longer be treated as external to the responsible organization of praxis.

A practical field can acquire this character through many pathways. Material deterioration may continue during deliberation. Existing institutions may reproduce burdens through routine operation. A time-limited opportunity may close. An affected population may already be exposed to ongoing harm. A technical system may require maintenance decisions. An organization may need to allocate finite attention or resources. A collective commitment may reach an implementation stage. In each case, practical consequence accumulates through temporal passage and existing relations, even before a new intervention is selected.

Definition 10.19 (Practical necessity). *Practical necessity* is a condition in which the consequences of action, non-action, delay, continuation, or withdrawal have become sufficiently salient that responsible praxis requires an explicit practical orientation within the relevant horizon.

This definition separates practical necessity from deterministic compulsion. An actor can remain uncertain about what to do while still facing a practical requirement to organize a response. The relevant object is the relation between consequence and responsibility. When the field continues to evolve, a refusal to select an intervention can itself preserve existing mechanisms, shift burdens through delay, or allow opportunities to disappear. The practical configuration therefore contains an active temporal structure.

Necessity is also scale-sensitive. A situation can be urgent for one actor and comparatively stable for another. A decision that appears deferrable at an organizational level can already be consequential at the level of households, ecosystems, communities, patients, infrastructures, or workers. Conversely, a local actor can experience immediate pressure while a wider institutional system requires slower coordination to avoid transferring risk elsewhere. Application-dominant analysis therefore asks whose horizon supplies the practical clock and whose consequences establish the significance of delay.

The concept also has an institutional dimension. Formal mandates can create decision deadlines, yet institutional deadlines do not exhaust practical necessity. A statutory timetable, contractual obligation, budget cycle, or operational schedule can organize action even when the underlying human or ecological situation changes at a different pace. Equally, severe practical necessity can arise without formal recognition. The distinction between institutional time and experienced consequence becomes important when the two diverge.

Proposition 10.20 (Consequential continuity). *When relevant relations continue to generate material, institutional, social, ecological, or other practical consequences dur-*

ing deliberation, the passage of time forms part of the action field and should be included in the assessment of practical necessity.

Proposition 10.20 prevents a common abstraction in which deliberation is represented as occurring outside the world it seeks to govern. Application-dominant praxis unfolds inside ongoing processes. Inquiry consumes time. Consultation consumes time. Coordination consumes time. Delay may preserve options in one domain while closing them in another. A practical theory therefore needs to represent temporal passage as part of the situation itself.

Practical necessity can also be generated endogenously by prior commitments. Earlier decisions may create dependencies, expectations, infrastructures, or obligations that make later decisions harder to avoid. An experimental intervention can generate a population that depends on continued support. A temporary institution can become embedded in a wider system. A technological standard can induce complementary investments. A practical configuration consequently inherits the generative effects of its own history.

The recognition of necessity does not settle the substantive decision. It identifies why application-dominant praxis cannot wait for epistemic completion as a general precondition of action. The next subsection therefore turns to the incomplete knowledge with which practical necessity must be coordinated.

10.2.2 Incomplete Knowledge

Incomplete knowledge is a structural condition of application-dominant praxis because practical decisions concern open relational configurations whose future development cannot ordinarily be exhausted by current observation. Parts II and III developed the epistemic architecture through which manifestation, evidence, representation, inference, modeling, and research closure remain partial and revisable. Application-dominant praxis inherits that architecture while adding practical consequence. The question becomes how epistemic incompleteness should enter judgment when decisions can no longer be postponed solely for the sake of further inquiry.

Knowledge can be incomplete in several distinct senses. Relevant entities or relations may remain unobserved. Observations may be available but noisy, delayed, selectively recorded, or institutionally filtered. Mechanisms may be contested. Models may omit important interactions. Parameter estimates may be unstable across contexts. Historical analogies may have limited transferability. Affected subjects may possess situated knowledge that has not entered formal evidence systems. Future conditions can change the transformation rules on which present predictions depend.

These forms of incompleteness should be kept analytically distinct because they support different responses. Missing data can motivate additional measurement. Model uncertainty can motivate comparison across representations. Mechanism uncertainty can motivate causal investigation or controlled variation where feasible. Unrecognized experience can motivate participation and epistemic widening. Structural change can motivate adaptive monitoring. Application-dominant praxis benefits from diagnosing the form of incompleteness before selecting a practical response to it.

Definition 10.21 (Decision-relevant epistemic incompleteness). *Decision-relevant epistemic incompleteness* is the residual uncertainty, omission, ambiguity, disagreement, or model dependence that can materially alter the interpretation of available actions, anticipated consequences, affected relations, or revision conditions within a practical horizon.

The definition narrows attention to incompleteness that can matter for practical judgment. Complete knowledge is unavailable in most real settings, while much missing information has little bearing on the present decision. The relevant question is therefore selective: which uncertainties could reasonably change what is considered permissible, robust, proportionate, reversible, urgent, or worthy of further inquiry?

This selection itself is fallible. What appears practically irrelevant can later prove important because the relational field changes or because previously marginalized effects become visible. For that reason, practical sufficiency should remain revisable. An evidence threshold can support action at one stage while reopening when new consequences emerge.

Proposition 10.22 (Provisional practical sufficiency). *Application-dominant praxis can treat knowledge as provisionally sufficient for a bounded decision while retaining explicit residual uncertainty, scope conditions, monitoring requirements, and reopening criteria.*

The proposition establishes a middle position between indefinite inquiry and epistemic overclosure. Provisional sufficiency means that available knowledge supports a particular practical commitment under specified conditions. It does not convert partial knowledge into certainty. The distinction is especially important for high-consequence decisions because the pressure to act can encourage institutional language that suppresses residual uncertainty once authorization has been granted.

Incomplete knowledge also interacts with power. Some uncertainties are visible because institutions possess instruments for measuring them; others remain obscure because affected relations fall outside established categories or data systems. The absence of evidence can therefore reflect both epistemic difficulty and institutional history. Later sections on power and participation will develop this issue directly. At this stage, the implication is that epistemic incompleteness has a relational distribution: different actors know different things, possess different capacities to make knowledge legible, and bear different consequences when uncertainty is resolved incorrectly.

Application-dominant praxis consequently requires a representation of knowledge that remains attached to provenance, uncertainty, disagreement, and scope. Research outputs entering an action field should carry their epistemic conditions with them. A point estimate separated from its assumptions, a model output separated from its training or observation domain, or an expert recommendation separated from dissent can acquire unwarranted practical authority. The transition from research to application therefore changes the consequences of epistemic compression.

Incomplete knowledge becomes practically acute when choice must proceed among alternatives whose consequences remain partly unresolved. This leads directly to decision under uncertainty.

10.2.3 Decision under Uncertainty

Uncertainty describes the practical openness that remains after available knowledge has been organized. Its role in application-dominant praxis is broader than statistical uncertainty. Some uncertainties can be represented probabilistically; others concern model structure, causal interpretation, institutional response, value change, strategic interaction, unanticipated events, or the appearance of possibilities that are absent from the current action model. A general theory of praxis therefore needs a layered conception of uncertainty.

Decision under uncertainty begins with an asymmetry between anticipation and realization. Action is selected through representations of possible futures, while consequences unfold in a relational field that exceeds those representations. The gap can be small in highly controlled settings and substantial in open systems. Practical judgment should therefore attend both to expected consequence and to the architecture through which surprise can be detected and absorbed.

A useful distinction separates *estimable uncertainty* from *structural openness*. Estimable uncertainty concerns variation that can be represented through a sufficiently stable model or empirical distribution. Structural openness concerns changes in relations, categories, mechanisms, actors, institutions, or environmental conditions that can alter the relevance of the model itself. The distinction is analytical rather than absolute; practical situations can move between the two as evidence accumulates or the system changes.

Definition 10.23 (Practical uncertainty). *Practical uncertainty* is the decision-relevant openness between anticipated and realized consequences, including uncertainty about observations, parameters, mechanisms, models, interactions, values, institutions, and possible future configurations.

This definition supports several responses that will be developed more fully in Chapters 10 and 11. Praxis can preserve options, stage commitments, diversify interventions, use reversible pilots, establish monitoring, define stopping rules, maintain contingency capacity, or select actions that remain acceptable across several plausible representations. These strategies respond to different forms of uncertainty and should therefore be chosen through diagnosis rather than through a universal template.

Uncertainty also alters the meaning of evidence. In research-dominant praxis, unresolved uncertainty can motivate continued inquiry as the principal response. In application-dominant praxis, the same uncertainty enters a decision architecture that must weigh the consequences of acting, waiting, and learning. Additional information has practical value only in relation to the time, cost, reversibility, and consequence structure of the decision.

Proposition 10.24 (Uncertainty-sensitive action). *When consequential action proceeds under residual uncertainty, the practical design of the action should reflect the form, distribution, and potential consequence of that uncertainty through appropriate degrees of reversibility, monitoring, redundancy, contestability, and capacity for revision.*

Proposition 10.24 shifts uncertainty from a descriptive appendix into the architecture of action. A claim that a decision is uncertain has limited practical content un-

less the design of the intervention changes accordingly. High uncertainty combined with high irreversibility can justify a different practical configuration from high uncertainty combined with inexpensive reversibility. Likewise, uncertainty borne predominantly by actors who lack decision power raises questions that extend beyond technical risk estimation.

Decision under uncertainty therefore already touches normative commitment. Choosing an action under uncertainty means deciding which possibilities count, which harms warrant protection, which benefits justify exposure, and who may legitimately bear residual risk. The next subsection develops this normative dimension directly.

10.2.4 Normative Commitment

Application-dominant praxis contains normative commitment because consequential action changes conditions that matter to subjects, institutions, communities, or other valued entities. Even when a practical task is framed in technical language, decisions about objectives, thresholds, acceptable error, burden distribution, priority, and continuation embed evaluative commitments. The analytical task is to make those commitments sufficiently visible for judgment, contestation, and revision.

Normative commitment can enter praxis through explicit goals, legal obligations, professional duties, organizational missions, social expectations, ethical principles, cultural practices, or tacit assumptions about what counts as improvement. These sources can reinforce one another or conflict. Their practical force also varies across actors. A statutory obligation may bind an institution even when individual participants disagree with its underlying value. A community norm may carry substantial legitimacy locally while remaining absent from formal policy documents.

The presence of normative commitment does not imply that practical reasoning reduces to moral theory. Application-dominant praxis also contains empirical, technical, institutional, and strategic questions. The key point is that these dimensions interact. A causal model can estimate possible consequences, yet the decision to privilege one consequence over another requires evaluative judgment. A cost estimate can describe resource requirements, yet the acceptability of distributing costs across groups remains normative. A prediction can describe likely behavior, yet the decision to design around that behavior can raise questions of autonomy, fairness, or responsibility.

Definition 10.25 (Normative commitment in praxis). A *normative commitment in praxis* is an explicit or implicit evaluative orientation that influences which conditions are treated as desirable, acceptable, protectable, compensable, urgent, or worthy of transformation within a practical configuration.

The definition is intentionally broad because normative content can enter far upstream of final choice. Problem formulation can privilege some harms. Measurement systems can operationalize particular values. Eligibility criteria can define whose needs count. Optimization objectives can formalize selected ends. Monitoring indicators can determine what becomes visible after implementation. Practical judgment therefore benefits from tracing normative commitments through the entire action architecture.

Normative commitment also creates responsibility for justification. The stronger the consequences imposed on others, the greater the practical importance of explaining which values were used, how conflicts were handled, whose interests were represented, and what conditions would justify revision. This requirement can be institutionalized through public reasoning, participation, review, appeal, or independent oversight, depending on the scale and character of the intervention.

Proposition 10.26 (Normative traceability). *When practical decisions materially affect others, the evaluative commitments that shape objectives, thresholds, trade-offs, and revision conditions should remain sufficiently traceable for relevant forms of justification, contestation, and accountability.*

Normative traceability does not require a single comprehensive moral doctrine shared by all participants. In plural settings, practical legitimacy may depend on procedures for negotiating partially incompatible commitments, protecting certain constraints, identifying areas of overlap, and preserving contestability where consensus is unavailable. The resulting architecture can remain provisional.

This leads to value plurality. Application-dominant praxis often contains several forms of value whose relations are only partially commensurable. Treating normative commitment as singular would therefore oversimplify the practical field.

10.2.5 Plural Values

Value plurality concerns the coexistence of several evaluative registers within one practical situation. Safety, autonomy, equality, continuity, dignity, ecological integrity, efficiency, cultural meaning, learning, resilience, procedural legitimacy, and future option value can all become relevant without sharing a common unit. The specific values vary by domain and history; the general problem is that practical choice can require coordination across evaluative differences that resist complete conversion.

A plural-value perspective has two implications. First, disagreement need not indicate a simple information deficit. Actors can agree on facts and still prefer different practical orientations because they assign different significance to consequences. Second, aggregation procedures can transform the problem. Converting multiple values into a common score, price, ranking, or objective function can be useful for selected decisions, yet the conversion itself introduces assumptions about weights, substitutability, thresholds, and admissible loss.

This chapter remains domain-general, so it does not attempt to settle a substantive theory of value. Its task is structural: application-dominant praxis should be able to represent the presence of heterogeneous values, partial commensurability, and contested conversion without forcing premature synthesis.

Definition 10.27 (Plural practical value). *Plural practical value* refers to a configuration in which several evaluative registers bear materially on practical judgment and cannot be presumed in advance to admit complete, stable, or uncontested conversion into a single ordering.

The phrase *cannot be presumed in advance* is important. Some practical situations do support workable common metrics for bounded purposes. Others require threshold rules, side constraints, lexical priorities, deliberative comparison, multi-criteria

reasoning, or preservation of disagreement. The appropriate architecture depends on the relation among values and on the consequences of conversion.

Value plurality also has a temporal dimension. Present actors can value future flexibility, cultural continuity, institutional trust, learning capacity, or ecological persistence in ways that compete with immediate gains. Future affected subjects cannot always participate directly in current decisions. Application-dominant praxis therefore encounters values across unequal temporal positions as well as across contemporaneous actors.

Proposition 10.28 (Value-conversion visibility). *When heterogeneous values are converted into a common practical ordering, the conversion rules, exclusions, weights, thresholds, and residual disagreements should remain visible to the degree that they can materially affect consequence or legitimacy.*

Proposition 10.28 prepares later GRE analysis without making Chapter 10 economics-specific. Conversion is a general practical operation. A committee can convert different forms of evidence into a recommendation; a court can relate competing rights; a hospital can prioritize care under capacity constraints; an environmental authority can compare immediate livelihood effects with long-horizon ecological consequences. The specific substantive theories differ, while the structural issue of conversion recurs.

Plurality also changes the meaning of optimization. An action that is optimal under one evaluative representation can be unacceptable under another. Application-dominant praxis therefore benefits from identifying where optimization is locally valid and where practical judgment must preserve multiple constraints or unresolved values. Chapter 11 will return to this methodological implication.

Value plurality becomes especially difficult when time for deliberation contracts. Urgency can reduce the practical space for evidence gathering, participation, negotiation, and institutional review. It can also create incentives to suppress disagreement in the name of speed. The next subsection examines this temporal pressure.

10.2.6 Urgency

Urgency describes a relation between changing conditions and the time available for practical response. It is therefore more than subjective pressure or organizational haste. A situation becomes urgent when relevant consequences, opportunities, capacities, or constraints can change materially within the period required for inquiry and coordination. Urgency can arise gradually, suddenly, or through accumulation that becomes visible only after thresholds are crossed.

A relational account distinguishes several sources of urgency. Harm can accelerate. A window for prevention can narrow. A temporary resource can expire. A cascading process can amplify delay. Institutional legitimacy can deteriorate. A conflict can intensify. Seasonal, ecological, technical, legal, or biological cycles can impose deadlines. In other cases, urgency is produced institutionally through budgets, electoral calendars, contractual terms, reporting cycles, or managerial targets. These different sources should not be treated as interchangeable because their flexibility and legitimacy differ.

Definition 10.29 (Practical urgency). *Practical urgency* is a condition in which the expected practical consequences of temporal delay become sufficiently significant that the available period for inquiry, deliberation, coordination, or staged intervention is materially constrained.

Urgency compresses the relation between research and application. Under generous time conditions, uncertainty can motivate additional inquiry before commitment. Under compressed conditions, inquiry may need to continue during action. This increases the importance of adaptive design, distributed observation, explicit uncertainty, contingency capacity, and revision mechanisms. A decision architecture suitable for a stable environment can become fragile when used under rapidly changing conditions.

Urgency should also be assessed distributively. The same delay can impose severe costs on one group while giving another group valuable time for learning or preparation. A decision framed as urgent from the perspective of an institution can transfer risk to actors who receive little opportunity to participate. Conversely, lengthy procedure can protect formal process while allowing material harm to accumulate among people with less institutional voice. Practical urgency therefore cannot be inferred solely from the timetable of the most powerful decision-maker.

Proposition 10.30 (Distributed temporal assessment). *Assessment of urgency should include the temporal consequences of action and delay across materially affected actors, relations, and scales, because practical time can be distributed unevenly within the same configuration.*

The proposition also helps distinguish urgency from manufactured haste. Institutions can compress deadlines through prior inaction, strategic framing, resource withdrawal, or avoidable planning failures. Once a deadline becomes real, its historical origin still matters for responsibility and for redesigning future praxis. A generative-relational account therefore examines both present temporal constraint and the processes that produced it.

Urgency interacts strongly with epistemic incompleteness. Less time can reduce measurement, consultation, model comparison, and review. At the same time, urgent situations can produce new information rapidly because consequences become observable. The resulting praxis benefits from short learning cycles and from actions whose commitment depth matches the available knowledge. This relation becomes especially important when choices have irreversible effects.

10.2.7 Irreversibility

Irreversibility concerns the degree to which an action changes the future action field in ways that are costly, incomplete, or impossible to undo within the relevant horizon. Many actions are partly reversible: a policy can be amended, a device removed, a programme redesigned, or a contract renegotiated. Yet reversal can still leave residual effects through sunk costs, altered expectations, lost opportunities, institutional learning, ecological change, damaged relations, or path dependence. Application-dominant praxis therefore benefits from treating reversibility as graded and multi-dimensional.

The relevant question is not simply whether an intervention can technically be stopped. A system can be shut down while its data, incentives, dependencies, reputational effects, or distributional consequences persist. A legal rule can be repealed while cases decided under it remain consequential. An infrastructure can be abandoned while spatial patterns and financial commitments continue. A temporary organizational arrangement can change expectations that shape later cooperation. Reversibility should therefore be assessed in relation to the generative consequences of prior action.

Definition 10.31 (Practical irreversibility). *Practical irreversibility* is the degree to which an action commits a relational configuration to consequences, dependencies, losses, or foreclosed possibilities that cannot be restored within the relevant horizon at acceptable practical cost.

This definition makes irreversibility horizon-dependent. A consequence can be reversible over decades and effectively irreversible for people affected during the next year. It is also value-dependent because the acceptability of restoration cost requires judgment. The concept therefore joins temporal, material, institutional, and normative dimensions.

Irreversibility increases the practical significance of uncertainty. If an action can be cheaply revised after new evidence appears, residual uncertainty can often be managed through experimentation and monitoring. If the action closes future options or creates durable exposure, the same uncertainty warrants a different decision architecture. This relation does not generate a universal rule favoring inaction. Non-action can itself be irreversible when opportunities disappear, harms accumulate, or capacities degrade.

Proposition 10.32 (Reciprocal irreversibility assessment). *Practical assessment of irreversibility should compare the option-changing consequences of action, non-action, continuation, and delay within the relevant horizon, because preserving one option set can simultaneously foreclose another.*

Proposition 10.32 prevents reversibility from becoming a one-sided argument for postponement. Waiting can preserve information-gathering opportunities while allowing material deterioration. Immediate intervention can preserve a threatened system while creating institutional lock-in. A staged intervention can preserve both learning and partial protection. The practical problem concerns the configuration of option value across competing trajectories.

Irreversibility also creates responsibility across time. Decisions taken under current uncertainty can constrain future actors who neither participated in the decision nor share present values. This intertemporal distribution of agency becomes especially important for long-lived institutions, technologies, environments, and infrastructures. Later sections on responsibility and justice will develop the normative implications.

The interaction among necessity, incomplete knowledge, uncertainty, normative commitment, plural values, urgency, and irreversibility produces the principal contradiction described at the beginning of the section. The final subsection clarifies how this contradiction can change through praxis rather than remaining a static condition.

10.2.8 Transformation of the Principal Contradiction

The principal contradiction of application-dominant praxis is dynamic. Inquiry can reduce some uncertainties. Participation can reveal previously unrecognized values. Institutional reform can redistribute authority. Pilot interventions can generate evidence. Delay can increase urgency. Early action can create lock-in. New harms can become visible. A practical configuration can therefore transform the relative importance of the dimensions developed above.

Transformation can occur through epistemic change. Additional observation, experimentation, historical comparison, modeling, or situated knowledge can improve understanding of mechanisms and consequences. Yet epistemic improvement may also reveal greater complexity. A decision initially represented as technically simple can become normatively or institutionally more difficult once affected relations are recognized. Knowledge can therefore transform the contradiction without necessarily making the decision easier.

Transformation can occur through practical design. Reversible staging, modular intervention, option preservation, contingency resources, distributed monitoring, or adaptive governance can reduce the cost of being wrong. These designs change the relation between uncertainty and consequence. They are especially important because some uncertainty is resistant to ex ante elimination and can only be learned through interaction with the practical field.

Transformation can also occur through normative and institutional processes. Deliberation can clarify values. Participation can alter problem formulation. Negotiation can generate acceptable compromises. Rights or side constraints can remove some options from consideration. Institutional authorization can clarify responsibility. Appeal and contestation can keep decisions reopenable. These processes alter the structure within which uncertainty and action are coordinated.

A further transformation occurs when action changes the field itself. Application generates new relations, evidence, dependencies, capacities, expectations, and constraints. The principal contradiction after intervention can therefore differ from the contradiction that motivated the intervention. A programme initially dominated by uncertainty about effectiveness can later become dominated by distributional conflict. A technical intervention can generate institutional dependence. An emergency response can evolve into a long-term governance arrangement. Praxis analysis should therefore remain stage-sensitive.

Definition 10.33 (Contradiction transformation). *Contradiction transformation* is a change in the composition, intensity, distribution, or practical organization of the tensions that structure application-dominant praxis as knowledge, values, institutions, relations, capacities, and consequences evolve.

This definition avoids treating successful praxis as the permanent elimination of contradiction. Some tensions can be reduced, others displaced, and new ones generated. A decision that resolves an immediate coordination problem can create a later accountability problem. An intervention that reduces one form of risk can concentrate another. A consensus can become unstable as circumstances change. The relevant criterion is therefore whether praxis can recognize and reorganize changing tensions with appropriate learning, responsibility, and revision.

Proposition 10.34 (Recursive transformation of application-dominant praxis). *Application-dominant praxis should be understood as recursively transforming its own principal contradiction because inquiry, judgment, action, and consequence continuously alter the conditions under which subsequent action becomes necessary and justifiable.*

Proposition 10.34 connects the present section to the action–learning recursion defined in Section 10.1. It also clarifies the relationship between Chapter 10 and Chapter 11. Chapter 10 develops the constitutive landscape of practical action. Chapter 11 will examine methodologies through which specific dimensions of that landscape can be diagnosed, modeled, deliberated, monitored, and revised.

At the present stage, however, the contradiction remains too abstract for direct practical analysis. Necessity, uncertainty, value plurality, urgency, and irreversibility always occur somewhere: within a historically formed configuration of actors, institutions, resources, capacities, constraints, and relations. The next analytical step is therefore to reconstruct the *practical situation* within which the principal contradiction acquires determinate form. Section 10.3 develops that relational and historical configuration.

10.3 Practical Situation

Section 10.2 identified the principal contradiction of application-dominant praxis as the organization of consequential action while knowledge, values, authority, timing, and reversibility remain partly open. The present section specifies the relational field within which that contradiction becomes practically determinate. Its objective is to develop the concept of a *practical situation* as a historically formed and revisable configuration of positions, institutions, material conditions, relations, constraints, capacities, and uncertainties. The discussion proceeds from the relational constitution of situations through historical, institutional, material, and relational positioning, then examines constraints, capacities, practical uncertainty, and situation revision. The method is reconstructive and relational: a practical situation is treated as an analytical specification of relevant conditions for action rather than as a self-evident inventory of facts.

The distinction between a practical situation and a practical problem is central to the chapter architecture. A situation is broader than any particular problem formulation. It contains relations, histories, capacities, burdens, opportunities, temporal processes, and possible developments that can become differently salient from different positions. Problem formation, developed in Section 10.4, selects and organizes some of these elements into an actionable interpretation. The present section therefore establishes the situational field before examining how that field becomes articulated as a practical problem.

Definition 10.35 (Practical situation). A *practical situation* is a stage-, scale-, and standpoint-indexed relational configuration within which consequential praxis is being organized, including the historically formed positions, institutions, material conditions, existing relations, constraints, capacities, temporal processes, and uncertainties that are relevant to possible action and its consequences.

Table 10.3: Constitutive dimensions of a practical situation in application-dominant praxis.

Dimension	Analytical focus	Practical significance
Historical position	Pathways, prior commitments, inherited categories, accumulated consequences, and temporal stage.	Shapes dependencies, expectations, available options, and the meaning of present action.
Institutional position	Mandates, rules, jurisdiction, authority, routines, and organizational relations.	Conditions who may decide, implement, contest, revise, or bear responsibility.
Material conditions	Bodies, infrastructures, technologies, environments, resources, and physical dependencies.	Establishes enabling conditions, exposure, durability, operational limits, and consequence pathways.
Existing relations	Dependence, cooperation, conflict, trust, recognition, information, exchange, and coordination.	Structures how actions propagate and how burdens or capacities are distributed.
Constraints	Conditions that restrict feasible, legitimate, sustainable, or timely action.	Narrows practical possibility in actor-, scale-, and time-specific ways.
Capacities	Relational abilities to perceive, decide, act, coordinate, sustain, learn, repair, and revise.	Determines which possibilities can be converted into effective and revisable praxis.
Practical uncertainty	Residual openness concerning conditions, mechanisms, values, responses, and consequences.	Qualifies confidence, sequencing, safeguards, monitoring, and revision requirements.

Definition 10.35 emphasizes indexing because the practical meaning of a configuration depends partly on where and when it is reconstructed. A municipal authority, a resident, a technical operator, a future affected population, and an ecological subsystem can occupy different positions within one wider process. Their exposure, information, authority, dependencies, and available actions can diverge. An analysis that selects one standpoint as exhaustive can therefore omit relations that become decisive elsewhere in the same configuration.

The definition also treats relevance as revisable. Practical analysis cannot include an unlimited history or an indefinitely extended relational field. Boundaries are required for action and inquiry. Yet boundary selection can exclude affected entities, long-horizon consequences, hidden dependencies, or cross-scale processes. A practical situation is therefore neither the totality of reality nor a closed dataset. It is a disciplined reconstruction whose adequacy depends on whether its boundary, scale, temporal horizon, and standpoint are appropriate to the consequences under consideration.

Table 10.3 summarizes the main dimensions developed below. The dimensions are analytically distinguishable while remaining mutually constitutive. Institutional authority can depend on material infrastructure. Material access can depend on social

relations. Capacity can be constrained by law, time, trust, or technology. Historical commitments can harden into institutional routines and physical systems. Practical uncertainty can arise from limited knowledge of any of these relations and from the possibility that the relations themselves will change during action.

Proposition 10.36 (Relational constitution of practical relevance). *The practical relevance of a condition depends on its relation to possible action, affected positions, temporal horizons, and consequence pathways; relevance should therefore be reconstructed within the practical configuration rather than assigned from descriptive prominence alone.*

Proposition 10.36 matters because conspicuous features can dominate attention while quieter relations organize consequence. A visible technical failure may depend on institutional maintenance practices. An immediate shortage may reflect a longer sequence of access decisions. A conflict framed as interpersonal may be sustained by organizational incentives. A stable outcome can conceal accumulated vulnerability. Situational analysis therefore asks how conditions participate in the generation, transmission, amplification, mitigation, or transformation of practical consequence.

10.3.1 Situation as Relational Configuration

The first task is to clarify what it means to treat a situation relationally. The analytical unit is neither an isolated decision-maker nor a static environment surrounding that decision-maker. A practical situation is constituted through relations among actors, affected subjects, institutions, material systems, histories, representations, and possible futures. The significance of each element depends partly on the relations through which it enters the field of action.

A relational description changes the interpretation of familiar practical categories. A resource becomes practically meaningful through access, control, convertibility, timing, maintenance, and dependence. An institutional rule matters through the actors able to invoke, interpret, enforce, circumvent, or contest it. Information matters through credibility, accessibility, authority, and the capacity to act upon it. A technology matters through infrastructures, users, standards, complementary skills, dependencies, and failure modes. Even an apparently individual capacity can depend on education, recognition, networks, legal status, tools, health, time, and collective support.

The practical situation therefore includes both entities and relations, while granting analytical priority to the configuration through which entities acquire practical significance. This does not require the claim that entities can be reduced to relations. Ontological suspension remains appropriate. The methodological point is more limited: consequential praxis is rarely intelligible through an inventory of isolated attributes because action propagates through structures of dependence, coordination, exclusion, feedback, and transformation.

Definition 10.37 (Situational position). *A situational position is the relationally constituted location of an actor, affected subject, institution, or other practically relevant entity within a specified configuration, including its access, exposure, authority, dependencies, capacities, obligations, and channels of influence.*

Situational position is indexed to the practical configuration. The same organization can be powerful in one relation and dependent in another. A person can possess formal rights while lacking the material or informational capacity required to exercise them. A technical operator can have extensive knowledge of system behavior while holding little authority over strategic decisions. A community can carry high exposure to consequences while having limited representation in problem formation. Position therefore cannot be inferred from a single ranking of power or resources.

The relational character of situations also introduces perspective without reducing analysis to subjectivity. Different positions disclose different parts of a configuration because they encounter different consequences, records, routines, and dependencies. Situated knowledge can therefore contribute distinctive evidence. At the same time, each position remains partial. A practical reconstruction can combine multiple standpoints while preserving disagreement about interpretation, value, and consequence.

A situation can also contain latent relations that become visible only when conditions change. Backup infrastructure matters differently during ordinary operation and during failure. Informal care networks can remain analytically peripheral until formal provision becomes unavailable. A legal provision can remain dormant until invoked. Ecological dependence can become salient after threshold change. Application-dominant praxis therefore benefits from examining both currently activated relations and plausible relations that can become consequential under disturbance or transition.

Proposition 10.38 (Situational activation). *Relations that appear practically secondary under one configuration can become organizing under altered material, institutional, temporal, or interpretive conditions; situational analysis should therefore distinguish current salience from potential activation.*

Proposition 10.38 supports a dynamic understanding of context. A practical situation is not a frozen background against which action occurs. Action changes relations, and changing relations alter the situation in which later action is judged. This dynamic feature becomes especially important once interventions create new dependencies, expectations, data, constituencies, or risks.

The relational configuration also has a boundary problem. Expanding the boundary can reveal additional consequences, yet unlimited expansion makes practical analysis unusable. Boundary discipline therefore requires explicit justification. Analysts should specify the stage, scale, standpoint, affected field, and time horizon that organize the current reconstruction, while leaving open the possibility that consequences crossing those boundaries will require revision. The practical situation is consequently a bounded representation of an open relational field.

10.3.2 Historical Position

A practical situation is historically positioned because present relations inherit prior decisions, events, classifications, investments, conflicts, settlements, and accumulated consequences. Historical position concerns the pathway through which the current configuration became possible and the degree to which that pathway conditions present action. Its role in situational analysis is to prevent current feasibility from being mistaken for an ahistorical property of the field.

History enters praxis through several mechanisms. Earlier commitments can create infrastructures that favor some actions over others. Institutional precedents can shape expectations and standards of legitimacy. Past harms can influence trust, participation, and the interpretation of new intervention. Previous successes can produce routines that remain useful under some conditions and brittle under others. Categories established for earlier purposes can continue organizing records, eligibility, or recognition after the surrounding reality has changed.

Historical position also includes temporal stage. A configuration can be emerging, consolidating, mature, destabilizing, recovering, or undergoing transformation. The practical significance of an intervention can differ across these stages even when its immediate form is similar. Early intervention can preserve flexibility. Later intervention can benefit from richer evidence while facing stronger dependencies. Recovery can require different capacities from expansion. A stage-sensitive analysis therefore asks how present action interacts with accumulated path formation.

Definition 10.39 (Historical practical position). The *historical practical position* of a configuration is the temporally situated pattern of inherited commitments, accumulated consequences, institutional memories, path dependencies, unresolved claims, and emerging possibilities that conditions present praxis.

Historical position should not be interpreted as historical determinism. Inherited structures constrain and enable without fully determining later trajectories. New relations, technologies, coalitions, interpretations, shocks, and institutional reforms can transform available possibilities. The analytical purpose of history is therefore to identify how the present field has been generated and where prior trajectories continue to shape the costs, legitimacy, visibility, and feasibility of action.

The historical horizon selected for reconstruction should follow the practical problem rather than a fixed chronological rule. Some decisions require attention to recent operational history. Others depend on institutional formation over decades or on intergenerational consequences. The relevant depth can also differ across dimensions of the same situation. A technical component can have a short replacement cycle while the social trust surrounding its use reflects a much longer history.

Historical reconstruction additionally affects responsibility. Current actors can inherit obligations generated before their participation, and present action can create conditions borne by later actors. Responsibility therefore has temporal extension. The details of responsibility are developed in Section 10.13; within situational analysis, the key point is that the present cannot be treated as an isolated decision moment detached from inherited burdens and future consequence.

Proposition 10.40 (Historical conditioning of practical possibility). *Present action spaces are partly generated by prior commitments and accumulated consequences; assessment of current feasibility should therefore include the historical processes that produced enabling conditions, dependencies, expectations, and foreclosures where these materially affect praxis.*

This proposition also clarifies why apparent inertia can have multiple sources. Continuity can reflect deliberate preservation, material sunk structures, institutional mandate, social expectation, contractual dependence, loss aversion, limited alternatives, or a history of failed reform. Different historical sources imply different

practical responses. Situational analysis therefore benefits from reconstructing the mechanisms of continuity rather than treating persistence as a single phenomenon.

10.3.3 Institutional Position

Institutional position specifies how rules, mandates, jurisdictions, organizational routines, offices, procedures, and recognized forms of authority enter the practical situation. Institutions coordinate action by stabilizing expectations and distributing roles, while also shaping which problems become legible, who may decide, what evidence counts, and how consequences are recorded. Application-dominant praxis therefore occurs within institutional arrangements even when its immediate form appears informal.

Institutional position has several dimensions. Formal mandate establishes what an organization or office is authorized or required to do. Jurisdiction identifies the domain within which that authority can operate. Procedure shapes how decisions are initiated, reviewed, challenged, and implemented. Budgetary and staffing structures condition operational capacity. Record systems influence what becomes visible over time. Accountability arrangements distribute responsibility for consequences. Informal norms can modify the practical operation of each formal component.

The same practical situation can cross multiple institutional locations. A decision can involve professional standards, local administration, national regulation, contractual relations, community governance, technical operators, and transnational standards simultaneously. Their boundaries can overlap imperfectly. One institution can possess authority without capacity, another capacity without jurisdiction, and another relevant knowledge without formal standing. Coordination problems often emerge from these misalignments.

Definition 10.41 (Institutional practical position). An *institutional practical position* is the configuration of mandate, jurisdiction, authority, procedure, resources, accountability, and inter-institutional dependence through which an institution or institutional role participates in consequential praxis.

Institutional position is also historically variable. Mandates can be reinterpreted, emergency conditions can activate exceptional procedures, informal practices can become regularized, and new institutions can be created when existing arrangements fail to coordinate emerging problems. Institutional analysis therefore concerns practical operation in a particular stage rather than an abstract description of organizational charts.

A critical issue is the relation between formal authority and practical consequence. An actor with limited formal authority can nonetheless have substantial influence through technical control, information, agenda setting, financing, logistical access, or public legitimacy. Conversely, an institution with extensive legal authority can remain practically weak when implementation capacity, trust, information, or coordination is limited. Situational analysis should therefore reconstruct how institutional rules interact with actual relational capacity.

Institutional position also shapes epistemic access. Reporting systems, professional categories, audit requirements, eligibility rules, and administrative bound-

aries determine which manifestations enter formal knowledge systems. Some consequences become highly legible because institutions are designed to measure them. Others remain dispersed across departments, informal networks, or populations with weak representation. Practical situation reconstruction should therefore examine how institutional arrangements generate both visibility and obscurity.

Proposition 10.42 (Institutional mediation of praxis). *Institutional rules and organizational arrangements mediate both action and knowledge by distributing authority, resources, records, categories, and channels of contestation; situational analysis should therefore examine institutional form as part of the practical configuration rather than as an external administrative layer.*

The proposition prepares later analysis of power, participation, responsibility, and collective praxis. At the situational level, its immediate implication is diagnostic: a practical difficulty can arise from misalignment among mandates, capacities, information, and consequences. Such misalignment may require institutional transformation rather than a better choice by any single decision-maker.

10.3.4 Material Conditions

Material conditions anchor application-dominant praxis in bodies, infrastructures, technologies, environments, spatial arrangements, resources, and physical dependencies. Their role is to specify the enabling and limiting conditions through which practical intentions become effective action. A relational theory of praxis therefore retains materiality as a constitutive dimension rather than treating action as a sequence of preferences and decisions alone.

Material conditions influence what can be done, how quickly it can be done, who can access the means of action, how consequences propagate, and how durable an intervention becomes. Transport systems shape mobility and emergency response. Communication infrastructure shapes coordination. Buildings and spatial design shape access and interaction. Technologies create capabilities while introducing maintenance and compatibility requirements. Ecological systems condition resource availability and exposure. Bodies introduce limits of endurance, vulnerability, perception, and care.

Materiality also has temporal depth. Infrastructure embodies previous investments and design assumptions. Durable systems can stabilize beneficial practices while producing path dependence. Maintenance deficits accumulate gradually and may become visible only during stress. Material stocks can buffer temporary disturbance. Supply chains can transmit distant disruptions into local practical situations. Situational analysis therefore examines material condition as a dynamic relation between present functioning, inherited structure, and future sustainment.

A material resource is not equivalent to usable capacity. Effective use can require rights of access, knowledge, complementary infrastructure, time, energy, institutional permission, trust, and maintenance. Two actors facing the same nominal stock can therefore occupy sharply different practical positions. The relational interpretation of materiality links this subsection directly to existing relations and capacities.

Definition 10.43 (Material practical condition). A *material practical condition* is a bodily, technological, infrastructural, environmental, spatial, or resource configuration whose properties and relations materially shape the feasibility, timing, durability, exposure, or consequences of possible action.

Material conditions can also carry normative and political significance because their design distributes access, convenience, risk, and dependence. An infrastructure can make some actions routine and others costly. A technical interface can privilege some users. Spatial arrangements can facilitate participation or exclusion. Environmental burdens can be concentrated across particular places or populations. These consequences do not derive from materiality alone, yet material configurations can stabilize them over long periods.

Practical analysis should also distinguish stocks from flows and operational states from latent capacities. A reserve can exist without being rapidly deployable. A service can function at ordinary load while lacking resilience to disturbance. A technology can be technically available while absent from the relevant place. A material system can have redundancy that becomes visible only during failure. Such distinctions become important when application-dominant praxis operates under urgency.

Proposition 10.44 (Material mediation of practical feasibility). *Practical feasibility depends on the relation between intended action and the material conditions required to initiate, sustain, coordinate, and revise it; nominal availability of resources or technology therefore provides only a partial account of actionable capacity.*

The proposition avoids a narrow interpretation of feasibility. A proposed action can be technically possible while practically fragile because maintenance, logistics, staffing, energy, access, or recovery capacity are insufficient. Conversely, local improvisation can create feasible pathways that formal planning overlooked. Material situational analysis should therefore remain attentive to both durable structures and emergent arrangements.

10.3.5 Existing Relations

Existing relations connect historical, institutional, and material conditions into an operative practical field. They include dependence, cooperation, conflict, trust, authority, exchange, care, information, recognition, coordination, obligation, representation, and other relational structures through which actors and systems affect one another. Their role in situational analysis is to explain how actions travel through the configuration and why similar interventions can produce different consequences across relational settings.

Relations can enable action by coordinating complementary capacities, sharing information, legitimizing authority, sustaining trust, or distributing workload. They can also transmit vulnerability, concentrate control, reproduce exclusion, amplify failure, or make exit costly. The same relation can contain enabling and constraining features simultaneously. Dependence, for example, can provide reliable access to specialized capacity while increasing exposure to disruption or control. Stability can support long-term cooperation while making institutional change difficult.

The density and topology of relations matter, yet formal network representations

capture only part of their practical content. Two connections can differ in trust, authority, reciprocity, duration, visibility, enforceability, and emotional significance. A relational map therefore requires qualitative interpretation in addition to structural representation where such differences affect consequence. Methodological pluralism remains important even within apparently network-like situations.

Existing relations also structure information. People learn through professional networks, local experience, institutional reports, informal communication, sensors, documents, and public narratives. Information can travel unevenly. Some actors can observe consequences early while decision-makers receive delayed summaries. Some knowledge can remain tacit or difficult to translate into authorized evidential forms. Situational analysis should therefore ask how information relations affect practical judgment.

Definition 10.45 (Practical relation). A *practical relation* is a relation whose operation materially influences access, exposure, coordination, authority, information, obligation, capacity, or consequence within the practical situation under analysis.

The definition uses practical relevance rather than an exhaustive ontology of relation. Many relations can exist within a field while only some materially affect the current action problem. Their relevance can change over time. A relationship that initially appears peripheral can become decisive after a disturbance, institutional transition, or shift in objectives. Situational analysis should therefore preserve revisability in the relational map.

Relations can also connect scales. Household conditions can depend on municipal infrastructure. Local organizations can depend on national funding. Regional ecological systems can influence local production. Technical standards established internationally can structure local design choices. Cross-scale relations can create situations in which authority and consequence reside at different levels. Application-dominant praxis then requires coordination across partially overlapping action spaces.

Proposition 10.46 (Relational transmission of consequence). *The consequences of action frequently propagate through existing relations of dependence, coordination, information, authority, and material connection; assessment of a practical situation should therefore include plausible transmission pathways beyond the immediate target of intervention.*

This proposition is especially important when an intervention appears local. Changing one relation can alter incentives, trust, workload, access, or risk elsewhere. A practical situation is thus partly defined by the pathways through which consequence can travel. Later sections on risk, power, participation, and justice develop these implications more fully.

10.3.6 Constraints

Constraints specify the conditions that restrict practical possibility. Their role is to explain why an action that appears desirable or technically imaginable may remain unavailable, illegitimate, unsustainable, or excessively costly within a particular configuration. Constraints are relational because their effect depends on actor, position, scale, timing, and available complementary capacities.

A constraint can be material, legal, institutional, financial, temporal, informational, organizational, cognitive, social, ecological, or normative. These categories can overlap. A legal restriction can become materially consequential through enforcement infrastructure. A financial limitation can reflect institutional eligibility rules. A time constraint can arise from ecological change or administrative deadlines. A social constraint can be stabilized through spatial design. Situational analysis therefore examines how constraints are generated and maintained rather than merely listing them.

Definition 10.47 (Practical constraint). A *practical constraint* is a condition or relational configuration that restricts the feasibility, legitimacy, timing, sustainability, or revisability of an action for a specified actor or collective within a specified practical horizon.

This definition makes constraints indexed rather than absolute. A requirement that constrains one actor can enable coordination for another. A safety standard can restrict rapid deployment while preserving trust and reducing downstream risk. Limited budgets constrain expenditure while creating incentives for prioritization. Physical limits can make some options unavailable across many actors, yet technological or institutional change can alter their practical significance. Constraint analysis should therefore distinguish hard limits from transformable conditions.

Constraints can also be generated by prior action. Commitments consume resources and create obligations. Successful programmes can generate demand that exceeds capacity. Institutional reforms can produce transition costs. Technologies can lock organizations into standards or vendors. Public promises can narrow later political discretion. Application-dominant praxis thus acts inside a constraint landscape that it partly inherits and partly produces.

Constraint interactions are often more important than isolated constraints. A modest informational limitation can become severe when combined with urgency and centralized authority. A material shortage can be manageable when coordination is strong and difficult when trust is low. A legal pathway can exist while procedural complexity makes it practically inaccessible. Situational analysis therefore benefits from identifying clusters of constraints and the relations among them.

Proposition 10.48 (Constraint dependence on configuration). *The practical force of a constraint depends on its interaction with capacities, institutions, time, relations, and alternative pathways; assessment should therefore distinguish the existence of a limiting condition from the configuration through which it becomes binding.*

This distinction has direct practical importance. If a constraint is binding because a complementary capacity is absent, capacity building can change the situation. If it arises from a legitimate safeguard, bypassing it can transfer risk. If it reflects coordination failure, institutional redesign can be more effective than resource addition. If it is physical and durable, preserving options elsewhere can become more important. Constraint diagnosis therefore prepares the analysis of action space in Section 10.7.

10.3.7 Capacities

Capacities specify what actors and collectives are able to perceive, decide, initiate, coordinate, sustain, absorb, learn from, and revise within the practical situation. Their

role is complementary to constraint analysis. Practical possibility emerges through the relation between enabling capacities and limiting conditions, with both changing through action and history.

Capacity should be understood relationally. Expertise becomes practical capacity when it can access relevant information, communicate with decision-makers, and influence action. Financial resources become capacity when they can be mobilized at the required time and converted into appropriate means. Legal authority becomes capacity when implementation structures exist. Social trust becomes capacity when it supports coordination under uncertainty. Technical infrastructure becomes capacity when people can operate, maintain, repair, and adapt it.

Definition 10.49 (Practical capacity). *A practical capacity is a relationally supported ability to perform one or more practically relevant functions, including perception, interpretation, decision, coordination, implementation, sustainment, adaptation, repair, learning, or revision, within a specified situation and horizon.*

Capacity is therefore function-specific. An organization can be strong in implementation and weak in learning. A community can possess rich situated knowledge and limited formal authority. A technical team can rapidly prototype while lacking the capacity to sustain long-term operation. An institution can coordinate routine activity effectively and respond poorly to novel disturbance. Situational analysis should identify the capacities required by the practical configuration rather than rely on aggregate labels such as strong or weak institutions.

Capacities can also be distributed across relations. Collective capacity may exceed the capabilities of any individual member when coordination allows specialization and complementarity. It can also fall below the sum of individual capabilities when mistrust, incompatible procedures, or fragmented authority prevent effective combination. The relation between individual and collective capacity is therefore organizational rather than additive.

A further distinction concerns action capacity and adaptive capacity. The ability to initiate an intervention can exceed the ability to monitor consequences, sustain support, correct error, compensate affected subjects, or withdraw safely. High initial action capacity paired with low revision capacity can create fragile praxis. Application-dominant analysis should therefore examine the full lifecycle of capacity required by consequential action.

Proposition 10.50 (Capacity for revision). *Where consequences remain uncertain or conditions are expected to change, the capacity to observe, learn, repair, and revise forms part of practical capacity rather than an optional activity added after implementation.*

Proposition 10.50 links situational analysis to the principal contradiction developed in Section 10.2. Residual uncertainty cannot always be removed before action. In such cases, practical adequacy depends partly on the ability to detect divergence and respond to it. The capacity to revise therefore becomes a constitutive feature of responsible action under incomplete knowledge.

Capacity analysis also raises distributional questions. Some actors can possess the capacity to act while others possess the capacity to bear or resist consequences. Some can exit a failing arrangement while others remain dependent on it. Some can gen-

erate data while others lack access to the resulting knowledge. These asymmetries prepare later analysis of power, participation, and justice, but they already matter for reconstructing the practical situation accurately.

10.3.8 Practical Uncertainty

Practical uncertainty concerns the residual openness of the situation as reconstructed for action. Section 10.2 introduced uncertainty as a constitutive dimension of the principal contradiction. The present subsection locates uncertainty within the situation itself by asking what remains unknown, indeterminate, contested, or liable to change across historical, institutional, material, relational, and normative dimensions.

Practical uncertainty can arise from limited observation, measurement error, incomplete causal understanding, disagreement about interpretation, changing behavior, hidden dependencies, contested values, institutional response, strategic interaction, emergent phenomena, and unforeseen consequences. Some uncertainties can be reduced through additional inquiry. Others persist because the underlying configuration remains dynamic, because relevant events are rare, because actors adapt, or because values and institutions change during the period of action.

A useful situational analysis therefore avoids compressing uncertainty into a single confidence measure. Different uncertainties require different practical responses. Uncertainty about current conditions can motivate observation. Uncertainty about mechanism can motivate experimentation or comparison. Uncertainty about stakeholder response can motivate participation and staged implementation. Uncertainty about irreversible harm can motivate option preservation and safeguards. Normative uncertainty can motivate explicit deliberation and contestability.

Definition 10.51 (Situational practical uncertainty). *Situational practical uncertainty* is the residual openness relevant to consequential praxis concerning the state, relations, mechanisms, values, responses, temporal development, or consequences of the practical configuration.

The definition includes normative and institutional openness because practical uncertainty exceeds predictive uncertainty. A decision can be causally predictable while authority remains contested. An intervention can have stable average effects while distributional consequences remain poorly understood. A material process can be well characterized while public response changes its feasibility. Situational uncertainty therefore concerns the whole configuration within which consequences are generated and judged.

Uncertainty is position-sensitive. An administrator can be uncertain about local conditions that residents know well. Residents can be uncertain about institutional constraints visible to administrators. Technical specialists can understand failure mechanisms while affected users understand burdens created by workarounds. Combining standpoints can reduce some uncertainty, though disagreement can also reveal genuine plurality that should remain visible rather than be averaged away.

Practical uncertainty also changes through action. Intervention can reveal mechanisms, alter incentives, generate new data, create dependencies, and shift expectations. Some uncertainty decreases while new uncertainty emerges. Monitoring

therefore observes a moving configuration rather than a fixed system. This dynamic feature prepares the need for situation revision.

Proposition 10.52 (Uncertainty as situationally differentiated). *Practical uncertainty should be differentiated by its object, source, affected positions, temporal horizon, and reversibility implications because distinct uncertainties can support distinct forms of inquiry, precaution, participation, sequencing, and revision.*

The proposition resists both overconfidence and undifferentiated caution. Praxis organized around application needs enough specificity to decide which uncertainty matters for which consequence. A low-confidence estimate concerning a reversible pilot can have different practical significance from moderate uncertainty concerning irreversible harm. The practical situation provides the context within which such differences become intelligible.

10.3.9 Situation Revision

The final task is to make the practical situation explicitly revisable. Situational reconstruction is performed under partial access and within a changing field. New evidence can reveal omitted relations. Action can alter material conditions. Participation can disclose affected positions that were previously absent. Institutional changes can redistribute authority. Disturbance can activate latent dependencies. Values and priorities can also change. A practical theory therefore requires procedures for reopening the situation description itself.

Definition 10.53 (Situation revision). *Situation revision* is the reconstruction of the practical situation in response to materially relevant changes in evidence, relations, positions, institutions, material conditions, constraints, capacities, values, temporal stage, or observed consequences.

Revision can vary in depth. A local update can modify one parameter or factual assumption while preserving the wider situational frame. A structural revision can change the identified relations, relevant actors, scale, or institutional interpretation. A foundational revision can alter the boundary of the situation or the categories through which it is understood. Application-dominant praxis should distinguish these depths because they imply different demands on decision, governance, and evidence.

Revisions should also preserve lineage. When a situation specification changes, the prior account remains important for understanding why earlier decisions appeared justified and how the field evolved. Traceability allows later analysis to distinguish changes in evidence from changes in values, institutions, constraints, or objectives. It also supports accountability when consequences emerge from assumptions that were reasonable at one stage and became untenable later.

Definition 10.54 (Situation revision record). A *situation revision record* is a traceable account of materially significant changes in the boundaries, positions, evidence, relations, constraints, capacities, uncertainties, and temporal interpretation through which a practical situation is reconstructed across stages of praxis.

The required degree of formalization should scale with consequence. High-consequence institutional action can require extensive records, versioned assump-

tions, documented participation, and explicit revision triggers. Local and reversible action can use lighter forms. The underlying principle is continuity of practical intelligibility: later actors should be able to understand what changed in the situation and why the practical orientation changed with it.

Situation revision can be triggered by evidence, consequence, contestation, or change. Evidence can invalidate a factual assumption. Consequence can reveal an unanticipated transmission pathway. Contestation can disclose an affected position excluded from the original boundary. Institutional change can redistribute authority. Material deterioration can make a previously feasible option unavailable. A threshold event can activate relations that were formerly latent. Revision is therefore broader than updating a forecast.

Proposition 10.55 (Revisability of situation specification). *A practical situation should be treated as a revisable specification whose boundary, scale, standpoint, and constitutive relations are reopened when new evidence or changing consequences materially alter the conditions under which action is interpreted and justified.*

Revisability also places a limit on situational completeness. Application-dominant praxis rarely has the time or epistemic access required to produce a final description of the field. The aim is sufficient practical articulation for responsible action, accompanied by mechanisms that can detect when the articulation has become inadequate. This standard links situational analysis to later sections on decision thresholds, robustness, monitoring, and practical closure.

The relation between situation and problem can now be stated more precisely. A practical situation provides a structured account of the field in which consequential praxis unfolds. A practical problem emerges when some configuration of conditions becomes salient enough to require interpretation, boundary setting, and practical response. Different actors can identify different problems within the same wider situation, and different problem formulations can reorganize which features of the situation become central. Problem formulation can in turn reveal omissions in the prior situation specification.

Proposition 10.56 (Situation–problem recursion). *Practical situation reconstruction and practical problem formation are recursively related: a situation conditions which problems can become salient, while problem formation can reveal relations, positions, histories, or consequences that require revision of the situation specification.*

Proposition 10.56 establishes the transition to Section 10.4. The chapter has moved from the general constitution of application-dominant praxis, through its principal contradiction, to the relational field within which consequential action becomes situated. The next task is to examine how a practical problem is encountered, recognized, constructed, contested, historically formed, relationally constituted, and revised within that field.

10.4 Practical Problem Formation

Section 10.3 developed the practical situation as a historically formed and revisable relational configuration within which consequential praxis is organized. The present section examines the next analytical movement: the formation of a *practical problem*

Table 10.4: Analytical moments in practical problem formation.

Moment	Analytical operation	Practical significance
Encounter	A condition, consequence, interruption, claim, or emerging possibility enters practical experience.	Creates an initial relation between the wider situation and possible response.
Salience	Some features acquire practical prominence from particular positions and horizons.	Directs scarce attention while leaving other features less visible.
Recognition	A condition is identified as requiring interpretation, responsibility, coordination, or response.	Converts experienced significance into an articulated practical concern.
Construction	Boundaries, categories, causal relations, affected positions, scales, and temporal horizons are provisionally specified.	Produces an actionable representation of what the problem consists in.
Competition	Alternative formulations organize the same situation through different boundaries, values, mechanisms, or priorities.	Reveals disagreement concerning what requires action and which consequences count.
Historical and relational reconstruction	The formulation is situated within inherited trajectories and operative relations.	Connects present difficulty to processes that generated, stabilized, or transformed it.
Revision	The formulation is reopened as evidence, consequences, participation, or conditions change.	Preserves learning and practical responsiveness across stages of action.

within that wider situation. Its objective is to distinguish encounter, salience, recognition, construction, contestation, historical formation, relational formation, and revision as related moments through which a condition becomes organized for practical judgment and response. The discussion is conceptual and diagnostic. It treats problem formation as a selective and consequential operation performed under partial access, while preserving the possibility that material conditions, harms, constraints, or dependencies possess practical significance before they are adequately recognized or represented.

Definition 10.57 (Practical problem). A *practical problem* is a provisionally bounded configuration of conditions, relations, consequences, and unresolved practical demands that has become sufficiently salient to require organized judgment concerning response, continuation, delay, revision, or other consequential orientation.

Definition 10.57 places the practical problem between the wider situation and later decision. The problem is narrower than the practical situation because it selects a configuration for focused response. It is broader than a single decision variable because its formation can involve contested boundaries, uncertain mechanisms, affected subjects, histories, institutional positions, and multiple possible orientations. A problem formulation therefore organizes attention before it organizes choice.

Table 10.4 presents these moments as analytically distinguishable rather than me-

chanically sequential. An encounter can immediately be interpreted through an inherited problem category. Recognition can precede adequate situational reconstruction. Competing formulations can alter what appears salient. Historical analysis can transform the boundaries of the problem. Intervention can generate evidence that reconstitutes the problem itself. Practical problem formation is therefore recursive and temporally layered.

A further distinction is necessary at the outset. The formation of a problem does not imply that the underlying condition is created by description. Material deterioration, exclusion, institutional failure, ecological change, bodily vulnerability, or dependence can exert consequences independently of whether authorized actors have recognized them. At the same time, practical access to such conditions is mediated through observation, language, categories, institutions, measurements, testimony, models, and standpoint. The practical problem is therefore neither a pure discovery of a fully pre-specified object nor a free construction unconstrained by reality. It is a revisable practical articulation formed through relations between consequential conditions and situated interpretation.

Proposition 10.58 (Practical mediation of problem formation). *Practical problem formation mediates between consequential conditions and organized response: the conditions constrain viable formulations, while standpoint, categories, institutions, values, and available evidence shape which aspects become visible, bounded, and actionable.*

Proposition 10.58 provides the organizing principle for the section. It allows the analysis to take practical conditions seriously while also examining the epistemic and institutional work through which those conditions become objects of action.

10.4.1 Encounter with a Practical Problem

Problem formation often begins through an encounter. The encounter can take the form of an interruption, anomaly, complaint, observed harm, recurring failure, opportunity, unmet need, conflict, breakdown, threshold crossing, unexpected consequence, or discrepancy between expected and experienced conditions. Its analytical role is to mark the point at which some aspect of the practical situation acquires sufficient experiential or institutional presence to disturb an existing practical orientation.

An encounter need not begin with explicit diagnosis. A system can repeatedly require workarounds before its maintenance structure becomes an articulated problem. A community can experience increasing burdens before those burdens enter formal reporting channels. An organization can observe declining coordination while different units attribute the decline to different causes. A technical intervention can appear successful at one scale while generating unanticipated difficulties elsewhere. Encounter therefore precedes, and can remain less articulated than, a stabilized problem formulation.

The same situation can be encountered differently from different positions. An affected subject can encounter a condition as immediate burden. A practitioner can encounter it as operational difficulty. A regulator can encounter it as non-compliance. A researcher can encounter it as unexplained variation. A manager can encounter it as coordination failure. These encounters can refer to overlapping parts of one

relational configuration while differing in temporality, language, available evidence, and practical stakes.

Definition 10.59 (Practical encounter). A *practical encounter* is an event or sequence through which some feature of a practical situation becomes experientially, materially, institutionally, or evidentially present enough to disturb, redirect, or call for examination of an existing practical orientation.

The definition includes opportunities as well as difficulties. Application-dominant praxis can be organized around the possibility of improving a condition, preserving a threatened capacity, using a temporary opening, or creating a new relation. A practical problem therefore need not be framed solely around damage. It can concern a mismatch between current and possible conditions, provided that the mismatch generates a demand for consequential judgment.

Encounter is also temporally structured. Some problems arrive abruptly through failure, disaster, conflict, discovery, or institutional change. Others emerge through accumulation. Small deviations can compound until a threshold is crossed. Burdens can be normalized for long periods before becoming visible to actors with decision authority. A slow process can become practically urgent when remaining options narrow. The date at which a problem is formally recognized can therefore differ substantially from the history through which it became consequential.

The distinction between encounter and formation helps explain why early response is often difficult. At the moment of encounter, evidence can be sparse, categories unstable, causal structure unclear, and relevant actors incompletely identified. Yet practical consequences can already be accumulating. Application-dominant praxis must therefore preserve the possibility of provisional attention without prematurely fixing the meaning of the encounter.

Proposition 10.60 (Encounter without completed formulation). A *practical encounter* can justify intensified observation, communication, safeguarding, or provisional response before the problem has acquired a stable formulation, provided that the provisional status of the formulation remains explicit and revisable.

Proposition 10.60 links encounter to the principal contradiction developed in Section 10.2. Consequential conditions can require action while interpretation remains incomplete. The challenge is to respond proportionately without allowing provisional categories to harden into unquestioned descriptions of the field.

10.4.2 Salience in Practice

Encounter alone does not determine which conditions receive sustained practical attention. Application-dominant praxis takes place under finite time, attention, institutional capacity, information, and authority. Some features of the situation therefore become more salient than others. Salience is the process through which a condition acquires practical prominence relative to competing demands.

Salience can arise through severity, frequency, novelty, visibility, proximity, symbolic significance, political attention, legal obligation, measured deviation, concentrated harm, institutional mandate, available indicators, media representation, professional routines, or the presence of actors capable of making a claim. These path-

ways differ in their relation to consequence. A highly visible condition can be less consequential than a diffuse process that lacks a clear indicator. A recurring burden can become normalized and thereby receive less attention than a rare disruption. A measurable variable can dominate a less measurable but practically important relation.

Definition 10.61 (Practical salience). *Practical salience* is the degree and form of practical prominence acquired by a feature of the situation within a specified standpoint, institutional setting, temporal horizon, and field of competing demands.

This definition treats salience as indexed rather than intrinsic. Conditions possess properties and consequences that can support attention, yet the route through which those properties become practically prominent depends on relations. A safety failure can be highly salient to exposed users and weakly represented in managerial reporting. A long-horizon risk can be salient to planners and comparatively remote to actors operating under immediate scarcity. A local loss can be decisive for a small population while remaining statistically minor within an aggregate indicator.

Salience therefore has a distribution. Different positions can possess different capacities to observe, report, classify, and amplify practical concerns. Institutional procedures can make some claims easy to register and others difficult to translate into recognized categories. Technical systems can continuously monitor some variables while leaving other consequences dependent on testimony. Professional training can orient attention toward familiar mechanisms. Existing concepts can render one pattern immediately legible while another remains difficult to name.

Proposition 10.62 (Distributed salience). *Practical salience is distributed across positions because actors differ in exposure, observation, interpretive resources, authority, communication channels, and capacity to convert experienced conditions into institutionally consequential attention.*

The proposition has two implications. First, low institutional salience provides limited evidence of low practical significance. A condition can remain weakly represented because the actors most affected possess limited access to recognized channels. Second, disagreement about salience can contain information. Different assessments can reflect distinct exposures, temporal horizons, responsibilities, or understandings of consequence. Such disagreement should therefore be examined before it is interpreted simply as noise or resistance.

Salience can also be generated by action. Once an intervention begins, monitoring systems can make certain effects more visible. Public consultation can bring previously marginal consequences into view. A pilot can reveal operational burdens. Litigation, audit, reporting, or evaluation can reclassify what counts as a significant condition. Practical salience can therefore be reshaped by the organization of praxis because intervention and observation can alter the field of attention. The underlying conditions remain capable of constraining these changes in attention.

A responsible problem-formation process should consequently distinguish salience from significance. Salience concerns practical prominence; significance concerns the interpreted importance of a condition for values, consequences, capacities, responsibilities, or future trajectories. The two can converge, but they can also diverge. Section 269 develops judgment of significance more fully. At the

present stage, the important point is that attention allocation forms part of problem formation and should remain open to correction.

10.4.3 Problem Recognition

Problem recognition occurs when practical salience is articulated as a condition requiring organized interpretation or response. Recognition gives the encounter a more determinate practical status. Actors begin to ask which conditions require explanation, which consequences matter, whose responsibilities are implicated, what evidence is needed, and whether existing routines remain adequate.

Recognition can be informal or institutionalized. A practitioner can recognize a recurring pattern before an organization has a category for it. A community can recognize a burden before administrative data register it. An institution can formally recognize a problem through a declaration, review, complaint process, audit, threshold rule, emergency procedure, or planning cycle. These forms differ in authority and consequence. Formal recognition can mobilize resources, establish jurisdiction, trigger reporting duties, or authorize intervention. Informal recognition can provide earlier and more situated knowledge while lacking comparable institutional leverage.

Definition 10.63 (Problem recognition). *Problem recognition* is the practical articulation through which a condition or relational configuration is identified as requiring sustained interpretation, responsibility, coordination, or consequential response within a specified field of praxis.

Recognition is selective because a situation contains more relations than any practical process can address simultaneously. The act of recognition foregrounds some conditions and backgrounds others. It can identify a target population, responsible institution, temporal horizon, mechanism, or form of harm. These selections can be initially useful while remaining incomplete. Their practical importance requires them to be visible as selections rather than treated as transparent reflections of the whole situation.

Recognition can also be delayed. Institutional categories can lag behind emergent conditions. Existing routines can absorb anomalies without reclassifying them as problems. Benefits concentrated among influential actors can coexist with distributed burdens that remain weakly represented. A condition can fall between jurisdictions. Scientific uncertainty can be interpreted as grounds for postponing recognition even when exposure continues. Conversely, a rapidly recognized problem can be framed through categories imported from another context before local relations are adequately reconstructed.

Proposition 10.64 (Recognition threshold). *The threshold for recognizing a practical problem should be interpreted in relation to potential consequence, reversibility, affected positions, available response capacity, and the cost of delayed recognition, rather than through evidential confidence alone.*

Proposition 10.64 does not supply a universal threshold. Its role is to prevent a single epistemic criterion from carrying the whole practical burden. A weak signal concerning a highly reversible inconvenience can justify observation. A weak signal

concerning severe and irreversible harm can justify earlier protective attention. A recurring burden documented through multiple situated accounts can warrant recognition even when a standardized indicator remains unavailable. The appropriate threshold depends on the configuration developed in Sections 10.2 and 10.3.

Recognition also has a reflexive dimension. Once a condition is named as a problem, actors can change behavior in response to the label. Resources can be redirected. Expectations can shift. Measurement can intensify. Institutions can defend or revise their role. Affected subjects can gain or lose visibility. The recognized problem thereby enters the causal and relational field it describes. Application-dominant praxis should account for this reflexivity when recognition itself changes incentives, identities, or relations.

10.4.4 Problem Construction

Recognition establishes that a practical concern requires organized attention. Problem construction specifies what that concern consists in. This movement introduces boundaries, categories, scales, temporal horizons, causal hypotheses, affected positions, relevant values, and provisional criteria of adequacy. The term *construction* refers to the analytical and practical work of forming an actionable representation; it does not imply that the underlying conditions lack material or relational reality.

Definition 10.65 (Problem construction). *Problem construction* is the process through which a recognized practical concern is provisionally organized into a bounded representation of relevant conditions, relations, histories, affected positions, consequences, uncertainties, and practical demands.

Construction is necessary because action requires some specification of relevance. An institution cannot investigate every relation simultaneously. A collective cannot deliberate across unlimited temporal horizons. A monitoring system cannot measure every possible consequence. Problem construction therefore reduces complexity. The central issue is whether the reduction preserves the relations necessary for responsible judgment and whether omitted dimensions can be reopened when they become consequential.

Several operations are especially important. Boundary construction specifies which actors, places, institutions, systems, and time periods enter the problem. Category construction specifies how conditions are named and differentiated. Causal construction specifies which relations are treated as mechanisms, contributors, mediators, or contextual conditions. Temporal construction distinguishes immediate triggers from longer histories and future consequences. Normative construction identifies which states, burdens, capacities, rights, values, or opportunities make the condition practically significant. Responsibility construction identifies actors or institutions whose capacities and roles bear on response.

These operations are interdependent. A narrow temporal boundary can make an institutional failure appear as an isolated technical event. A narrow spatial boundary can hide displaced consequences. A category centered on individual behavior can obscure infrastructural constraints. A category centered on system performance can obscure unequal burdens. A problem defined through aggregate outcomes can underrepresent minority experiences. A formulation centered on immediate repair

can neglect the conditions generating recurrence.

Proposition 10.66 (Problem formulation and practical possibility). *A problem formulation conditions practical possibility by shaping which causes, affected positions, responsibilities, evaluative criteria, and response pathways become visible within the field of action.*

The proposition does not mean that a formulation determines action uniquely. It means that formulations create structured fields of attention. If a recurring failure is constructed primarily as a training deficit, training interventions become salient. If the same failure is constructed as a coordination problem, organizational redesign becomes visible. If it is reconstructed as an infrastructure problem, investment and maintenance enter the action space. Each formulation can capture part of the situation while excluding other relations.

Problem construction should therefore preserve an explicit distinction between the *problem condition* and the *problem representation*. The first refers to the consequential configuration being addressed. The second refers to the situated account through which that configuration is made practically intelligible. The distinction parallels the broader epistemic separation between reality and representation developed earlier in the book. It allows practitioners to revise a representation without implying that the condition itself disappeared, and it allows changes in the condition to be distinguished from changes in interpretation.

Definition 10.67 (Practical problem formulation). *A practical problem formulation is a traceable representation that specifies the provisional boundary, relevant conditions and relations, affected positions, temporal horizon, principal uncertainties, and practical demands through which a recognized problem is organized for judgment and response.*

A useful formulation can remain plural and layered. One layer can specify immediate operational failure, another can reconstruct institutional causes, and another can identify long-horizon generative consequences. Such layering is often preferable to forcing a complex situation into one explanatory register. Methodological pluralism applies to problem construction because historical, interpretive, empirical, formal, and participatory approaches can reveal different aspects of the same practical configuration.

10.4.5 Competing Problem Formulations

Practical situations frequently support more than one defensible problem formulation. Competing formulations can differ in boundary, scale, causal account, affected population, temporal horizon, normative emphasis, institutional jurisdiction, or preferred evidence. Their coexistence is a central feature of application-dominant praxis because the way a problem is formulated influences which actions appear relevant and who acquires authority within the response.

Competition among formulations can arise from partial knowledge. Different actors observe different portions of the field. It can arise from disciplinary perspective, because technical, legal, organizational, ecological, clinical, educational, or community-based approaches use different categories. It can arise from values,

because actors disagree about which consequences deserve priority. It can arise from position and interest, because a formulation can distribute responsibility or resources differently. It can also arise from temporal horizon: an intervention that solves an immediate operational problem can intensify a longer-term dependency.

Definition 10.68 (Competing problem formulations). *Competing problem formulations* are distinct, practically consequential representations of an overlapping situation that differ in one or more dimensions of boundary, mechanism, scale, temporality, affected position, evaluative priority, responsibility, or response orientation.

Competition should not automatically be resolved by selecting the formulation with the greatest institutional authority or technical precision. Authority can be relevant to mandate, while situated experience can reveal omitted consequences. Technical precision can improve causal analysis, while a narrow model can exclude values that matter for legitimacy. Historical reconstruction can disclose path dependence that an immediate diagnostic frame misses. Participation can reveal burdens that aggregate data understate. The task is to examine what each formulation renders visible, what its backgrounds, and what practical consequences follow from adopting it.

A useful comparison can ask at least six questions. What boundary does the formulation draw? Which relations does it treat as causally or practically important? Which affected positions become visible? What temporal horizon does it privilege? Which values or criteria organize significance? What kinds of response become available or foreclosed? These questions turn disagreement about formulations into an object of inquiry.

Proposition 10.69 (Diagnostic value of formulation conflict). *Conflict among problem formulations can provide diagnostic information by revealing divergent standpoints, hidden assumptions, omitted relations, incompatible values, or differences in scale and temporal horizon that a single formulation leaves obscure.*

The proposition encourages structured comparison without implying that all formulations are equally adequate. Some can be contradicted by evidence, omit central affected positions, rely on untenable causal assumptions, or place the problem at a scale where response cannot address its generative conditions. Others can be useful for one operational purpose while inadequate for another. Evaluation therefore concerns fitness for the practical situation and the consequences of using the formulation, not merely internal coherence.

Formulation conflict can also expose power. Actors with authority over agenda setting, measurement, funding, classification, or public communication can stabilize one problem representation and marginalize alternatives. Section 275 develops power in praxis more directly. At the present stage, the relevant implication is that the practical dominance of a formulation should be distinguished from its epistemic or normative adequacy.

Where feasible, application-dominant praxis can preserve a portfolio of formulations during early stages rather than forcing immediate convergence. Parallel formulations can guide different inquiries, reveal different risks, or support staged action. Convergence can then occur where evidence, coordination, or practical necessity warrants it. In other cases, persistent plurality can remain part of the decision

environment and should be carried forward explicitly into judgment.

10.4.6 Historical Formation of Practical Problems

A practical problem has a history even when the immediate encounter appears sudden. Historical formation concerns the trajectories through which the relevant conditions, categories, institutions, expectations, dependencies, and response capacities came to occupy their present configuration. Its role is to prevent present difficulty from being interpreted solely through the moment at which it became visible.

The history of a problem can include accumulated maintenance decisions, prior interventions, legal changes, organizational routines, technological adoption, demographic shifts, environmental transformation, educational pathways, financial commitments, patterns of trust, previous conflicts, or earlier attempts at reform. These processes can generate current constraints and capacities. They can also shape which explanations appear plausible and which responses remain institutionally imaginable.

Definition 10.70 (Historical formation of a practical problem). The *historical formation of a practical problem* is the sequence and interaction of prior events, relations, decisions, classifications, institutions, material transformations, and accumulated consequences through which the present problem condition and its available formulations became possible.

Historical formation operates at several levels. The condition itself can have a history, such as gradual infrastructure deterioration. The category used to name the condition can have a different history, such as changing professional or legal classifications. The institution responsible for response can have another history involving jurisdiction, mandate, and resource allocation. The population affected by the problem can have a history of differential exposure or exclusion. The response repertoire can be historically shaped by earlier successes, failures, and investments.

These histories can produce path dependence without making present action fully determined. Past choices can make some options inexpensive and others difficult. Existing infrastructures can stabilize particular practices. Institutional learning can expand capacity. Prior harms can reduce trust and thereby change the feasibility of participation. Earlier reforms can create legal or technical interfaces that enable later transformation. Historical analysis therefore identifies inherited structures while preserving the possibility of new trajectories.

Proposition 10.71 (Historical depth of problem adequacy). *Where inherited relations materially shape present constraints, capacities, exposure, or feasible response, an adequate practical problem formulation should include sufficient historical depth to explain those inherited conditions and their relevance to current action.*

The required depth varies by problem. An acute equipment failure can require a short operational history. A persistent institutional disparity can require a much longer reconstruction. A sudden policy change can be understood only through the institutional rules that made the change consequential. Historical analysis should therefore be proportionate and problem-oriented while remaining alert to the possibility that a short time horizon itself produces misdiagnosis.

History also shapes practical memory. Institutions retain records unevenly. Some failures become encoded in standards and procedures; others disappear with staff turnover. Communities can retain experiential memory absent from formal archives. Data series can begin after an important structural change and thereby normalize the post-change condition as baseline. Historical problem formation should therefore examine the provenance and absences of practical memory as part of the evidence architecture.

Finally, historical formation can transform normative interpretation. A burden produced by a recent accident can raise different questions from an equivalent burden generated through a long sequence of exclusionary arrangements. Present consequence matters in both cases, while historical pathway can change responsibility, legitimacy, trust, reparative obligations, and the design of acceptable response. Later sections on responsibility and justice develop these implications more fully.

10.4.7 Relational Formation of Practical Problems

Historical depth explains how a problem emerged through time. Relational formation explains how it is constituted through dependencies, interactions, positions, institutions, material systems, information pathways, and cross-scale connections in the present field. Its central claim is that practical difficulty often resides in a configuration of relations rather than within an isolated object or actor.

A relationally formed problem can arise from mismatch. Authority can be separated from knowledge. Responsibility can be assigned without sufficient capacity. Resources can exist without access. Technical capability can exceed maintenance capacity. Benefits can accrue at one scale while burdens appear at another. Information can reach decision-makers after consequences have already propagated. Formal participation can exist while practical voice remains unequal. Each difficulty emerges through relations among otherwise familiar elements.

Definition 10.72 (Relational formation of a practical problem). The *relational formation of a practical problem* is the constitution of practical difficulty through patterns of dependence, interaction, separation, coordination, authority, access, information, material connection, recognition, and consequence among positions within the practical situation.

Relational analysis changes the location of intervention. If a problem is attributed to an individual actor, response can focus on knowledge, incentives, or behavior. If the same recurring outcome is generated by coordination failure among units, improving one actor may have limited effect. If the outcome is sustained by an institutional rule, local adaptation can shift burdens without changing the generative condition. If the problem emerges from cross-scale dependence, an intervention confined to one scale can remain fragile.

The practical unit of analysis should therefore follow consequence pathways. Section 10.3 introduced relational transmission of consequence. Problem formation uses that principle to ask where the condition is generated, where it becomes visible, where it is measured, where authority resides, where costs are borne, and where revision can occur. These locations can differ. A single label for the problem can conceal this distributed structure.

Proposition 10.73 (Relational displacement of problem location). *The location at which a practical problem becomes visible can differ from the relations through which it is generated, sustained, amplified, or transmitted; practical formulation should therefore distinguish sites of manifestation from sites of generative influence.*

This proposition has methodological consequences. Observation at the site of manifestation can document severity while providing limited evidence about mechanism. Historical inquiry can identify prior institutional transformations. Network or systems analysis can identify dependencies. Qualitative inquiry can reveal informal relations. Participatory methods can identify burdens and capacities inaccessible to central records. Formal modeling can test implications of hypothesized relational structure. No single method receives automatic priority; the practical problem determines which combination is warranted.

Relational formation also includes the relation between the problem and the act of responding to it. An intervention can redistribute workload, information, trust, authority, and dependence. Solving one manifestation can move the difficulty elsewhere. A temporary workaround can become institutionalized. A new monitoring system can improve visibility while altering behavior. A subsidy, prohibition, technical standard, educational programme, or organizational reform can create new relations whose consequences exceed the initial target. Problem formation should therefore include plausible response-induced transformations when they materially affect the field.

The relational perspective also prevents an excessively narrow opposition between internal and external causes. What appears external to one organization can be internal to a wider system. What appears individual at one scale can be relational at another. What appears structural at a large scale can still be mediated through concrete interactions. Scale selection should follow the problem's generative relations and practical responsibilities rather than disciplinary convention alone.

10.4.8 Revisability of Problem Formulation

The final requirement is revisability. Problem formulations are produced under incomplete knowledge within situations that can change during inquiry and action. New evidence can alter causal interpretation. Participation can reveal affected positions omitted from the original frame. Intervention can generate unanticipated consequences. Institutional change can redistribute authority. A previously peripheral relation can become decisive. Values can be reconsidered. The problem formulation should therefore remain capable of structured revision.

Definition 10.74 (Problem-formulation revision). *Problem-formulation revision is the traceable modification of a practical problem's boundary, categories, causal interpretation, affected positions, temporal horizon, evaluative emphasis, uncertainties, or response-relevant relations in light of materially relevant evidence, consequence, contestation, or change.*

Revision can occur at different depths. A parameter revision updates a factual estimate while preserving the frame. A relational revision changes the identified dependencies or affected positions. A boundary revision alters the scale, population, institution, or temporal horizon included in the problem. A categorical revision changes

how the condition is classified. A generative revision changes the account of how the problem is produced or sustained. A normative revision changes which consequences or values organize practical significance.

These depths should be distinguished because they place different demands on continuity. A parameter update can leave the current response architecture intact. A boundary revision can require new participants, authority, data, or resources. A generative revision can redirect intervention toward different relations. A normative revision can reopen previously settled ends. Traceability allows actors to understand whether practical change arose from new facts, new interpretations, changed values, changed conditions, or changed responsibilities.

Definition 10.75 (Problem-formulation revision record). *A problem-formulation revision record is a proportionate account of materially significant changes in the problem's boundary, evidence, categories, affected positions, causal interpretation, historical depth, values, uncertainties, and response implications across stages of praxis.*

A revision record need not become administratively heavy in every setting. Its form should scale with consequence, institutional complexity, reversibility, and the number of affected positions. High-consequence collective action can warrant versioned formulations, explicit assumptions, documented disagreement, and pre-defined reopening triggers. Local and reversible action can use concise records. The common purpose is to preserve practical intelligibility across time.

Revisability also requires criteria for reopening. Useful triggers include evidence that contradicts a central assumption, emergence of severe unanticipated consequences, discovery of omitted affected subjects, failure of an intervention to influence the hypothesized mechanism, substantial change in material or institutional conditions, persistent contestation concerning boundaries or values, and a shift in reversibility or urgency. These triggers connect problem formation to later monitoring and practical closure.

Proposition 10.76 (Revisable problem adequacy). *A practical problem formulation is adequate provisionally when it supports responsible judgment at the relevant stage while retaining sufficient traceability and openness to incorporate materially important evidence, positions, relations, and consequences that emerge through subsequent praxis.*

The proposition defines adequacy through practical sufficiency and revisability rather than exhaustive description. Application-dominant praxis cannot generally wait for a final account of the situation. It can, however, require that the working formulation make its boundary, assumptions, uncertainties, and affected positions sufficiently explicit for responsible action and later correction.

Problem revision also recouples application with research. A contradiction between expected and observed consequences can create a new research question. Persistent disagreement among formulations can motivate comparative inquiry. A newly visible affected position can require qualitative or participatory investigation. Failure of an intervention can challenge a causal model. Application thereby generates epistemic demands that can shift a project temporarily toward research-dominant praxis before a revised practical orientation emerges.

Proposition 10.77 (Problem-judgment interface). *Practical problem formation estab-*

lishes the provisional object of application-dominant judgment by specifying what is at stake, for whom, through which relations, across which horizon, and under which uncertainties, while leaving the evaluation of significance, urgency, acceptability, and practical orientation to subsequent judgment.

Proposition 10.77 establishes the transition to Section 269. The chapter has moved from the constitution of application-dominant praxis, through its principal contradiction and practical situation, to the formation of a problem within that situation. The next task is to examine the forms of judgment through which practical significance, epistemic warrant, normative acceptability, urgency, and action orientation are assessed under conditions of incomplete knowledge and plural value.

10.5 Judgment in Application-Dominant Praxis

Section 10.4 developed practical problem formation as a selective and revisable articulation of consequential conditions within a wider practical situation. The present section examines the judgments through which such a problem acquires practical orientation. Its role is to clarify how application-dominant praxis moves from a problem formulation toward assessments of significance, urgency, acceptability, and possible response while knowledge remains incomplete and values can remain heterogeneous. The objective is to preserve the distinct functions of aesthetic, epistemic, normative, and practical judgment while explaining how they interact within consequential action. The discussion therefore proceeds from four judgment forms to three composite practical assessments, then examines conflict, the historical formation of practical taste, and revisability. The method is conceptual and relational. Judgment is treated as historically formed, position-sensitive, evidence-constrained, normatively accountable, and open to revision rather than as either an unstructured intuition or a mechanically determined output.

Chapter 6 already developed judgment within research-dominant praxis and later extended aesthetic and normative conditions across the wider field of praxis in Sections 145 and 159 of Chapter 6. The present section inherits that architecture from the standpoint of application-dominant praxis. Its additional concern is the closure-bearing function of judgment when consequences can no longer be deferred entirely to further inquiry. Aesthetic judgment can orient attention and form; epistemic judgment evaluates what is sufficiently warranted; normative judgment evaluates what is permissible, valuable, fair, or responsible; practical judgment organizes a provisional orientation among possible responses. These functions can interact closely without becoming interchangeable.

Definition 10.78 (Application-dominant judgment configuration). An *application-dominant judgment configuration* is the historically and relationally situated combination of aesthetic, epistemic, normative, and practical evaluations through which a practical problem is interpreted and a consequential orientation is provisionally organized under uncertainty, value plurality, temporal pressure, and distributed effects.

Definition 10.78 treats judgment as a configuration rather than a single score. Different judgment forms answer different evaluative demands. Their interaction can

support action, delay, inquiry, redesign, withdrawal, monitoring, or preservation of options. Their disagreement can itself become practically informative.

Table 10.5 summarizes the distinct objects, functions, and non-substitution constraints of the four principal judgment forms together with the composite assessments of significance, urgency, and acceptability. The table is an analytical map rather than a sequence: application-dominant praxis can move recursively among these judgments as new evidence, values, consequences, and options become salient.

10.5.1 Aesthetic Judgment

Aesthetic judgment enters application-dominant praxis wherever form, coherence, fit, atmosphere, legibility, rhythm, simplicity, symbolic resonance, or experiential organization influences how a practical possibility is perceived and inhabited. Its role extends beyond decorative preference. A public environment can communicate care, dignity, exclusion, surveillance, openness, or institutional distance through its spatial organization. A technical interface can make a relation intelligible or obscure it. A procedure can exhibit a coherence that supports participation, or a friction that reveals unresolved practical mismatch. A proposed intervention can also appear elegant because it connects several constraints through a compact architecture.

Section 159 of Chapter 6 introduced aesthetic conditions of application. Within the present chapter, the emphasis moves toward judgment under practical consequence. Application-dominant praxis frequently encounters possibilities whose full effects remain unavailable in advance. Formal evidence can compare some properties while leaving experiential, symbolic, spatial, or relational qualities only partly articulated. Aesthetic judgment can help detect such qualities and can preserve possibilities that established metrics would otherwise overlook.

Definition 10.79 (Aesthetic practical judgment). An *aesthetic practical judgment* is a provisional evaluation of the formal, experiential, symbolic, spatial, temporal, or relational qualities through which a practical option appears coherent, fitting, legible, inhabitable, compelling, discordant, or generatively promising within a specified situation.

Aesthetic practical judgment can precede complete conceptual decomposition. An experienced practitioner can perceive that an intervention “does not fit” a setting before the relevant institutional or relational friction has been fully specified. A community can experience an apparently efficient facility as alienating even when conventional performance indicators remain favorable. A design team can recognize that a cumbersome arrangement contains too many points of dependency before failure probabilities have been estimated. Such responses can function as signals for investigation, comparison, redesign, or preservation.

Their evidential status nevertheless requires discipline. A felt coherence can reflect genuine structural integration, familiar convention, professional training, prestige, or inherited style. Aesthetic fluency can make an intervention appear more trustworthy than its evidence warrants. Conversely, unfamiliar or heterogeneous arrangements can appear disorderly because they depart from established practical taste. Aesthetic judgment therefore contributes most responsibly when its orienting role remains traceable and open to epistemic and normative examination.

Table 10.5: Judgment forms and composite assessments in application-dominant praxis.

Judgment form	Primary object	Practical function	Scope boundary
Aesthetic	Form, fit, coherence, legibility, experiential quality, generative appeal	Orients attention, design, intelligibility, inhabitation, and exploratory selection	Aesthetic force cannot establish truth, permissibility, or overall practical adequacy.
Epistemic	Claims, mechanisms, representations, consequences, uncertainty	Assesses warrant, reliability, scope, and residual uncertainty relevant to action	Evidential support alone cannot determine ends or distribute burdens legitimately.
Normative	Values, rights, responsibilities, fairness, burdens, benefits, recognition	Assesses permissibility, priority, obligation, and evaluative legitimacy	Normative desirability cannot establish causal efficacy or empirical likelihood.
Practical	Response orientation within a concrete situation	Organizes a provisional course of action, inquiry, delay, restraint, or revision	Practical closure should preserve the distinct grounds and residual conflicts that support it.
Significance	Materiality of the problem and its consequences	Orders attention according to depth, extent, persistence, affected positions, and generative effects	Significance should remain distinct from temporal urgency and institutional visibility.
Urgency	Time sensitivity of consequences and option change	Assesses the cost of delay, timing constraints, and windows for reversible response	Organizational pressure or salience alone does not establish practical urgency.
Acceptability	Admissibility of an option within the relevant value and risk configuration	Establishes whether an option can enter or remain within the practically supportable response set	Acceptability is distinct from optimality and can remain contested across affected positions.

Proposition 10.80 (Aesthetic orientation under application). *Aesthetic judgment can legitimately orient attention, exploratory selection, design refinement, and experiential evaluation in application-dominant praxis, while the practical authority of the resulting orientation depends on its relation to epistemic warrant, normative conditions, affected*

positions, and anticipated consequences.

The proposition preserves a distinctive place for aesthetic judgment without converting aesthetic attraction into a universal criterion. Its practical contribution lies partly in making form and experience available for judgment before they are fully represented by established measures.

10.5.2 Epistemic Judgment

Epistemic judgment in application-dominant praxis concerns what can responsibly be treated as sufficiently warranted for a consequential purpose. The relevant object can include the practical situation, the problem formulation, causal or generative mechanisms, anticipated consequences, the reliability of indicators, the transferability of prior evidence, the behavior of models, and the uncertainty surrounding all of these. The principal difference from research-dominant judgment lies in practical orientation: the question is often whether the available knowledge is adequate for a particular action, delay, pilot, restriction, or monitoring arrangement rather than whether inquiry has reached a disciplinary endpoint.

Definition 10.81 (Application-oriented epistemic judgment). *An application-oriented epistemic judgment is a provisional assessment of the warrant, reliability, scope, relevance, uncertainty, and decision sensitivity of the knowledge used to organize consequential praxis within a specified practical situation.*

Decision sensitivity matters because uncertainty can be practically material even when it is modest in abstract statistical or evidential terms. A small uncertainty concerning a reversible and low-consequence action can have limited influence on orientation. The same degree of uncertainty can become decisive when consequences are severe, highly distributed, difficult to reverse, or concentrated on actors with limited capacity to absorb error. Epistemic adequacy for application is therefore partly relation-dependent.

Application also changes the evidential threshold problem. Further inquiry can sometimes reduce uncertainty, but it consumes time and can allow ongoing consequences to continue. Action can itself generate evidence while changing the system from which that evidence is produced. A pilot, staged implementation, reversible trial, or monitoring arrangement can therefore operate simultaneously as practical response and epistemic strategy. These possibilities do not remove uncertainty; they alter its structure and its practical consequences.

Proposition 10.82 (Purpose-sensitive epistemic sufficiency). *Epistemic sufficiency for application depends on the relation among evidential warrant, the contemplated practical orientation, consequence severity, reversibility, timing, affected positions, and the availability of further inquiry rather than on a context-free evidential threshold.*

Proposition 10.82 anticipates the more detailed treatment of decision thresholds in Section 272. Its present function is to keep epistemic judgment distinct from a general demand for maximal certainty. Application-dominant praxis requires explicit attention to what kind of knowledge is sufficient for which kind of practical commitment.

10.5.3 Normative Judgment

Normative judgment evaluates the value-laden dimensions of practical orientation. It concerns permissibility, obligation, fairness, responsibility, recognition, priority, acceptable burden, distribution of benefit and risk, and the values that an intervention may protect, transform, or undermine. Such judgment becomes structurally unavoidable once practical closure affects multiple positions or future possibilities.

Definition 10.83 (Normative practical judgment). *A normative practical judgment is a provisional evaluation of the permissibility, priority, fairness, responsibility, desirability, or evaluative legitimacy of a practical orientation relative to the values, rights, vulnerabilities, relations, and consequences materially implicated in the situation.*

Normative judgment enters before the final choice of action. Problem boundaries already influence which harms, values, and affected positions become visible. Evidence standards can distribute risk between those who demand action and those who bear the consequences of waiting. Participation procedures influence whose reasons enter the decision. Monitoring arrangements determine which consequences remain detectable after implementation. Normativity therefore participates throughout application-dominant praxis rather than appearing only after a technically preferred option has been identified.

Value plurality complicates normative judgment without making it indeterminate. Some conflicts can be reduced by redesign, sequencing, compensation, option preservation, or additional participation. Some values can be locally compared within a shared practical context. Other conflicts can remain partially irreducible. In such cases, the task of judgment includes making the basis of provisional priority visible and preserving the disagreement for later review.

Normative judgment also has a temporal dimension. Present beneficiaries and future affected positions can differ. Immediate relief can create later dependency. A burden accepted during an emergency can become normalized after the emergency passes. A decision that appears fair under one institutional arrangement can become unequal after capacities diverge. Application therefore requires normative judgments whose horizon extends beyond the moment of implementation.

Proposition 10.84 (Normative traceability in application). *When a practical orientation materially depends on normative commitments, the relevant values, affected positions, burden and benefit relations, and basis of provisional priority should remain sufficiently explicit for contestation, accountability, and later revision.*

This proposition prepares later sections on participation, responsibility, and justice. Its immediate role is to prevent normative commitments from disappearing inside apparently technical criteria.

10.5.4 Practical Judgment

Practical judgment occupies a different functional position from the preceding judgment forms. Aesthetic, epistemic, and normative judgments evaluate particular dimensions of a practical situation or option. Practical judgment organizes these differentiated assessments into a provisional orientation under the constraints of action. It therefore has a closure-bearing function without requiring complete convergence

among the judgments that support it.

Definition 10.85 (Practical judgment). A *practical judgment* is the situated and revisable evaluation through which application-dominant praxis provisionally organizes an orientation among action, inquiry, delay, restraint, sequencing, monitoring, redesign, withdrawal, or other consequential responses in light of the materially relevant epistemic, normative, aesthetic, temporal, institutional, and capability conditions.

Definition 10.85 avoids treating practical judgment as a weighted sum whose components must share a common metric. The decision can involve threshold conditions, incomparable values, hard constraints, asymmetric risks, uncertain causal relations, and institutional duties. Some considerations can rule out an option; others can support a preference among remaining options; still others can justify additional inquiry or preserve multiple options. Practical judgment can therefore possess a structured architecture without becoming reducible to a single optimization procedure.

Practical judgment also concerns the level of commitment. A situation can support a full intervention, a limited pilot, a temporary measure, a reversible trial, a monitoring period, a consultation process, or a decision to preserve option value while gathering information. The practical conclusion is therefore broader than “act” or “do nothing.” It can specify a sequence, a degree of reversibility, a review condition, and the responsibilities attached to implementation.

Proposition 10.86 (Differentiated integration of judgment). *Practical judgment should integrate materially relevant judgment forms while preserving their distinct grounds, because practical closure can be warranted despite residual disagreement and can become distorted when strength in one judgment form is silently substituted for weakness in another.*

An intervention can be aesthetically coherent, epistemically plausible, and institutionally feasible while remaining normatively unacceptable. A normatively compelling end can coexist with weak evidence concerning the proposed mechanism. An intervention supported by strong evidence can remain practically unsuitable when local capacity is absent or the action cannot be implemented at the required time. Practical judgment keeps these differences visible while still allowing orientation to occur.

10.5.5 Judgment of Significance

Once a practical problem has been formed, application-dominant praxis must assess how much practical weight it should receive relative to other demands. This assessment concerns significance. Significance is broader than salience because prominence can arise from visibility, novelty, institutional attention, media concentration, professional convention, or recent disruption. A condition with limited immediate visibility can nevertheless possess substantial long-horizon or cross-scale significance.

Definition 10.87 (Practical significance judgment). A *practical significance judgment* is a provisional assessment of the material importance of a practical problem, relation, consequence, or possible response relative to its depth, extent, persistence, af-

affected positions, cross-scale effects, and capacity to alter later possibilities.

Several dimensions can contribute to significance. Depth concerns how substantially a condition affects relevant capabilities, relations, or states. Extent concerns how widely consequences are distributed. Persistence concerns duration and recurrence. Positional significance concerns whether burdens fall on actors with distinctive vulnerability, responsibility, or dependence. Generative significance concerns whether the condition changes future capacities, institutions, relations, or option spaces. Cross-scale significance concerns whether local effects propagate into wider structures or whether large-scale conditions become concentrated in particular sites.

These dimensions need not move together. A narrowly distributed burden can be severe. A mild present disturbance can become significant because it creates a reinforcing trajectory. A widely visible event can be transient. A slow institutional change can have limited immediate salience while altering future possibilities across a long horizon. Practical significance judgment therefore benefits from multidimensional specification rather than a single intuitive impression of importance.

Proposition 10.88 (Significance beyond salience). *Practical significance should be assessed through the consequence structure of the problem and its future generative effects rather than inferred directly from current visibility, institutional attention, or experienced intensity alone.*

The proposition also protects quieter positions. Actors with limited voice can bear consequences that receive little organizational salience. Historical arrangements can normalize burdens until they cease to appear exceptional. Significance judgment therefore connects problem formation to later analysis of participation, power, and justice.

10.5.6 Judgment of Urgency

Urgency is the temporal dimension of practical judgment. Section 10.2 introduced urgency as part of the principal contradiction of application-dominant praxis. The present subsection specifies urgency as an evaluative judgment concerning how delay changes consequences, available options, reversibility, and the conditions of later action.

Definition 10.89 (Practical urgency judgment). *A practical urgency judgment is a provisional assessment of the time sensitivity of a practical problem or response based on how delay, acceleration, sequencing, or missed windows are expected to alter consequences, option spaces, affected relations, or reversibility.*

Urgency therefore differs from significance. A highly significant problem can unfold slowly enough to permit extended inquiry and participation. A locally limited problem can become urgent because a short window exists for preventing irreversible harm. The two judgments can reinforce one another, but neither can substitute for the other.

Urgency also differs from pressure. Administrative deadlines, public attention, political cycles, contractual schedules, and organizational anxiety can create demands for speed. Some of these demands correspond to genuine practical time constraints; others mainly reflect institutional rhythms. Conversely, practical urgency can remain

weakly visible when those most affected lack access to agenda-setting institutions. Judgment should therefore reconstruct the temporal consequence pathway rather than equating urgency with the loudest request for immediate action.

Proposition 10.90 (Consequence-sensitive urgency). *Urgency should increase in practical weight when delay materially worsens plausible consequences, forecloses valuable options, reduces reversibility, or weakens future capacity to respond, while the source and distribution of the temporal constraint remain open to examination.*

A sound urgency judgment can also support deliberate slowing. Where rapid commitment would foreclose safer alternatives, a short delay can preserve option value. Where ongoing harm compounds quickly, delay can itself become the more consequential intervention. Urgency judgment therefore concerns the temporal architecture of response rather than a general preference for speed.

10.5.7 Judgment of Acceptability

Practical orientation also requires an assessment of acceptability. Acceptability concerns whether an option can reasonably enter or remain within the set of supportable responses given the relevant normative commitments, epistemic conditions, risks, capabilities, institutional responsibilities, affected positions, and possibilities for revision. It is a threshold concept rather than a synonym for superiority.

Definition 10.91 (Practical acceptability judgment). *A practical acceptability judgment is a provisional assessment of whether a contemplated response satisfies the materially relevant conditions required for legitimate and responsible consideration within the current practical situation.*

Acceptability can depend on multiple kinds of condition. Some can operate as hard constraints, such as a binding legal prohibition, a basic safety requirement, or the absence of minimum implementation capacity. Others can operate through thresholds that vary with consequence and reversibility. Still others can depend on participation, distribution, compensation, monitoring, or the availability of exit and repair. An option can therefore become acceptable through redesign even when its original form was unsuitable.

Acceptability also differs from optimality. Under incomplete knowledge, several options can remain acceptable without a justified basis for declaring one uniquely best. Conversely, an option that scores highly on a chosen performance metric can remain unacceptable because it violates a responsibility, imposes concentrated irreversible harm, or excludes a materially affected position from a decision where participation is required. Practical judgment should therefore avoid importing an optimization result as if it already contained the full architecture of admissibility.

Definition 10.92 (Practical acceptability region). *A practical acceptability region is the provisionally bounded set of response orientations that satisfy the currently applicable epistemic, normative, institutional, capability, risk, participation, and reversibility conditions strongly enough to remain eligible for practical selection or further development.*

The region can change as the situation changes. New evidence can remove an option. Improved capacity can make a previously infeasible response available. Partici-

pation can reveal an unrecognized burden. Redesign can reduce risk. An emergency can alter acceptable tradeoffs while creating obligations to review those tradeoffs after the emergency. Acceptability is therefore relational and temporally indexed.

Proposition 10.93 (Acceptability before preference). *Where materially relevant threshold conditions exist, application-dominant praxis should distinguish the judgment that an option is practically admissible from the later judgment that it is provisionally preferred among admissible alternatives.*

This distinction prepares Section 271, where available, latent, foreclosed, and generated actions are developed more explicitly.

10.5.8 Conflict among Forms of Judgment

Application-dominant praxis commonly contains disagreement among judgment forms. An intervention can be epistemically well supported and normatively contested. A normatively urgent end can lack a sufficiently reliable mechanism. An aesthetically coherent design can be inaccessible to some users. An operationally feasible response can preserve immediate stability while narrowing future options. These conflicts are part of the practical structure rather than noise surrounding an otherwise singular criterion.

Definition 10.94 (Inter-judgment conflict). *An inter-judgment conflict occurs when materially relevant aesthetic, epistemic, normative, or practical evaluations support incompatible assessments of significance, urgency, acceptability, priority, or response within the same practical situation.*

The first analytical task is localization. A disagreement can concern evidence, causal mechanism, value, scale, time horizon, affected population, responsibility, feasibility, or acceptable risk. Different conflicts invite different responses. Additional inquiry can reduce some epistemic conflicts. Redesign can reconcile some practical and normative tensions. Participation can reveal missing reasons or clarify distributional disagreement. Sequencing can reduce conflict between urgency and deliberation. Other conflicts remain genuinely plural after clarification.

Definition 10.95 (Judgment conflict record). *A judgment conflict record is a traceable account of materially unresolved disagreement among judgment forms, including the object of disagreement, affected positions, evidential basis, normative grounds, temporal horizon, practical implications, and the basis of any provisional priority adopted for action.*

Recording conflict matters because practical closure can otherwise create an appearance of convergence that never occurred. A decision can be reasonable under conditions of unresolved disagreement, especially when delay also carries consequences. The legitimacy of that closure depends partly on whether the disagreement was recognized, whether its practical implications were considered, and whether routes for review remain available.

Proposition 10.96 (Conflict-preserving closure preparation). *When materially relevant judgment forms remain in conflict after proportionate inquiry and deliberation, preparation for practical closure should preserve the unresolved grounds of disagreement and the reasons for provisional priority rather than represent the resulting orien-*

tation as evaluatively unanimous.

The proposition connects directly to the later treatment of practical closure in Section 281. It also makes disagreement a source of future information: later consequences can illuminate which judgment was more sensitive to aspects of the situation that were previously uncertain or weakly represented.

10.5.9 Historical Formation of Practical Taste

Judgment occurs through historically formed dispositions. Section 159 of Chapter 6 defined practical taste as the historically formed disposition through which some questions, representations, values, or forms of action appear especially fitting, credible, serious, elegant, urgent, or worthy. Application-dominant praxis requires this concept because practical judgment frequently relies on forms of recognition that precede complete explicit reasoning.

Professional communities develop senses of what counts as a credible intervention, an acceptable risk, a serious problem, a competent design, a realistic timetable, or an institutionally workable compromise. Communities affected by repeated interventions can develop equally important practical repertoires concerning trust, danger, burden, and the difference between formal provision and usable access. Institutions accumulate procedures, precedents, templates, and tacit expectations. These histories shape the field within which options first appear plausible.

Definition 10.97 (Application-oriented practical taste). *Application-oriented practical taste* is the historically formed disposition through which actors, communities, or institutions experience practical problems, evidence, risks, designs, temporal demands, and possible responses as more or less fitting, credible, serious, workable, or worthy of commitment.

Practical taste can compress experience. A practitioner can recognize a familiar failure pattern from subtle relational cues. A community can anticipate that a nominally inclusive procedure will reproduce exclusion because it resembles earlier arrangements. An institution can know that a technically attractive design exceeds its maintenance capacity. Such judgments can contain knowledge that formal models have not yet represented.

The same historical formation can preserve inherited blind spots. Institutional familiarity can normalize burdens. Professional aesthetics can privilege solutions legible within a discipline while marginalizing other forms of knowledge. Repeated emergency practice can make exceptional restrictions feel ordinary. A successful past intervention can become a template even after the surrounding relations have changed. Practical taste therefore benefits from provenance and contestability.

Definition 10.98 (Practical taste provenance). *Practical taste provenance* is the reconstructable history of training, experience, institutional routine, cultural repertoire, prior success and failure, affected-position knowledge, and inherited convention through which a practical disposition has acquired authority within a field of application.

Making provenance visible neither invalidates tacit expertise nor guarantees its adequacy. It creates a basis for comparing experience with evidence, examining whose

histories shaped the disposition, and identifying conditions under which the inherited practical taste may require revision.

10.5.10 Revisability of Practical Judgment

Practical judgment is provisional because the situation, evidence, values, capabilities, institutions, and consequences can change. Revisability therefore belongs to the architecture of judgment itself. It should be designed before failure whenever the consequence structure makes revision materially important.

Definition 10.99 (Practical judgment revision). *Practical judgment revision* is the traceable reassessment of a provisional practical orientation when materially relevant evidence, relations, affected positions, value configurations, capabilities, consequences, or available actions change the conditions that supported the earlier judgment.

Revision can occur at several levels. An epistemic revision changes what is believed about the situation, mechanism, or consequence. A normative revision changes the evaluation of burdens, benefits, responsibilities, or values. An aesthetic revision changes the experienced fit, coherence, legibility, or symbolic meaning of an intervention. A practical revision changes the orientation among action, delay, inquiry, sequencing, withdrawal, or redesign. These revisions can occur independently or together.

Consequences generated by action are especially important. An intervention can reveal relations that were previously inaccessible, generate new constituencies, alter capacities, change expectations, create dependencies, or transform the value landscape. Success according to an initial objective can therefore coexist with reasons for revising the original judgment. Application-dominant praxis should retain enough traceability to distinguish changed evidence from changed values, changed conditions, and changed practical possibilities.

Definition 10.100 (Judgment revision condition). A *judgment revision condition* is a specified class of evidential, relational, normative, institutional, temporal, or consequential change whose material occurrence is sufficient to reopen one or more components of an earlier practical judgment for reassessment.

Revision conditions need not imply continuous reopening. Stable coordination can itself possess practical value, and some decisions require durable expectations. The relevant design problem concerns the relation between stability and corrigibility. Higher consequence, lower reversibility, greater uncertainty, weaker participation, or stronger dependence can justify more explicit monitoring and lower thresholds for review. Routine low-consequence decisions can support lighter revision architectures.

Proposition 10.101 (Revisability as practical capacity). *The quality of application-dominant judgment depends partly on the capacity to recognize materially changed conditions, preserve the provenance of earlier judgments, and reopen orientation when their supporting configuration has been transformed.*

The judgment architecture developed in this section completes the movement from practical problem formation toward practical orientation. Aesthetic, epistemic, and

normative judgments preserve distinct evaluative functions; practical judgment organizes their relation under consequential conditions; significance, urgency, and acceptability provide composite assessments relevant to response; conflict preserves unresolved plurality; practical taste locates judgment historically; and revisability prevents provisional orientation from becoming insulated from later evidence and consequence.

The next section turns from the architecture of judgment to the objects toward which judgment is directed: the ends of action and the practical orientations through which heterogeneous values acquire provisional direction. Section 270 therefore develops ends, competing values, means–ends relations, generative and future value, value conflict, and the revisability of ends without presuming that application-dominant praxis begins from a single fixed objective.

10.6 Ends and Practical Orientation

Section 10.5 developed the judgment architecture through which a practical problem acquires significance, urgency, acceptability, and a provisional orientation toward response. The present section examines the ends toward which such orientation is organized. Its role is to clarify how application-dominant praxis selects, combines, contests, and revises valued directions without assuming that practical value can be reduced to a single metric or fixed independently of history and relation. The objective is to distinguish ends from values, means, consequences, and future generative conditions while preserving the ways in which these elements co-constitute one another in practice. The discussion proceeds from ends of action and plural forms of value to competing ends, means–ends relations, intrinsic and instrumental value, generative value, future value, value conflict, and revisability of ends. The method is conceptual and relational. Ends are treated as historically situated practical orientations whose content, priority, feasibility, and legitimacy can change as situations, knowledge, affected positions, and consequences change.

Application-dominant praxis requires more than recognition of what matters. It must organize a direction of movement within a concrete situation. A practical problem can be highly significant while supporting several reasonable ends. A value can be widely affirmed while leaving its operational meaning contested. An intervention can advance one valued condition while weakening another. A means can reshape the end it was selected to serve. An immediate improvement can also transform the future conditions under which later value can be generated. The architecture of ends must therefore preserve plurality, temporal extension, relational consequence, and revision.

Definition 10.102 (Practical end). A *practical end* is a provisionally specified valued condition, direction, relation, capability, process, or transformation toward which application-dominant praxis organizes consequential action within a defined situation and temporal horizon.

Definition 10.103 (Practical orientation). A *practical orientation* is the structured relation among practical ends, relevant values, admissible means, temporal horizons, affected positions, uncertainty, and revision conditions through which praxis

acquires direction before a specific action is selected.

Definitions 10.102 and 10.103 separate the end from the wider architecture that gives it practical meaning. An end can be expressed compactly, such as increasing access, reducing exposure, preserving a habitat, maintaining continuity, strengthening a capability, or repairing a damaged relation. Practical orientation additionally asks whose access, which exposure, what habitat, whose continuity, which capability, what relation, across what duration, under which constraints, with what distribution of burdens, and under what conditions the end itself should be reconsidered.

Table 10.6 presents ends as one component of a wider practical architecture. The dimensions interact, yet their distinctions remain analytically useful. In particular, plural value does not by itself specify an end; an end does not by itself identify an admissible means; a selected means does not exhaust the consequence structure; and a present objective does not exhaust the future conditions created through action.

10.6.1 Ends of Action

An end of action gives practical direction to a situation that has already been interpreted through problem formation and judgment. Ends can concern states, relations, capacities, processes, distributions, institutional arrangements, forms of recognition, or trajectories. Some are comparatively determinate, such as restoring a damaged service to a specified level. Others are directional, such as strengthening resilience, widening participation, protecting dignity, sustaining ecological regeneration, or increasing a community's capacity to govern a shared resource. The level of specification should match the practical situation rather than follow a universal template.

Ends are also position-sensitive. The same nominal end can have different meanings for differently situated subjects. "Improving access" can refer to physical availability, affordability, linguistic intelligibility, legal eligibility, temporal convenience, technological compatibility, social safety, or effective capability to use what is formally available. A practical end becomes more determinate when the relevant relations and affected positions are made explicit.

Definition 10.104 (End specification). An *end specification* is the traceable articulation of a practical end through its relevant subjects or positions, valued condition, relational scope, spatial and temporal horizon, degree of attainment, uncertainty, and conditions for later revision.

Specification does not require complete precision at the outset. Application-dominant praxis often begins with a directional end whose operational meaning develops through inquiry, participation, trial, and consequence. Excessively early precision can freeze categories that remain under dispute. Excessively loose formulation can conceal disagreement or make later evaluation indeterminate. The appropriate degree of specification is therefore itself a practical judgment.

Ends can be layered. A near-term end can stabilize a deteriorating condition; an intermediate end can rebuild capability; a longer-horizon end can alter the relations that repeatedly reproduce the problem. These layers can support one another, yet temporal layering can also conceal tension. A stabilization measure can create dependency. A rapid protective intervention can narrow later participation. A long-

Table 10.6: Analytical dimensions of ends and practical orientation.

Dimension	Primary object	Practical question	Characteristic revision trigger
End	Valued direction or condition	What condition, relation, capability, process, or transformation is praxis organized toward?	Change in problem formulation, affected positions, feasibility, or legitimacy
Value plurality	Heterogeneous grounds of worth	Which forms of value are materially relevant, and how are they expressed?	Newly recognized values, positions, scales, or modes of evaluation
Competing ends	Incompatible or tension-bearing directions	Which ends can coexist, which require sequencing, and which generate substantive conflict?	New tradeoffs, redesigned options, altered priorities, or changed constraints
Means–ends relation	Intervention and intended direction	How do selected means enable, reshape, defer, or transform the end?	Means-generated side effects, dependency, institutional change, or goal displacement
Intrinsic and instrumental value	Modes of valuation	Which objects or relations are valued in themselves, through their contribution, or through both relations?	Context change, revised interpretation, or altered consequence structure
Generative value	Conditions of future valued generation	Which relations, capacities, and processes expand or sustain later possibilities for valued generation?	Evidence of capture, depletion, exclusion, fragility, regeneration, or transformed capability
Future value	Delayed and future-facing consequences	Which future conditions, subjects, option spaces, and irreversible effects enter present orientation?	Changed horizon, new forecasts, emergent subjects, or updated reversibility assessment
Value conflict	Incompatible evaluative commitments	Where do values diverge, and what form does the conflict take?	Deliberation, participation, redesign, changed evidence, or consequence
Revision	Orientation over time	Under which conditions should ends or their priority be reformulated?	Material change in knowledge, value, capability, consequence, authority, or context

horizon transformation can impose burdens during transition. End specification should therefore include the relation among temporal layers rather than list them as independent aspirations.

Proposition 10.105 (Relational specification of ends). *The practical adequacy of an*

end specification increases when it identifies the relations, affected positions, temporal horizons, and consequence pathways through which attainment would acquire practical meaning within the relevant situation.

Proposition 10.105 does not imply that every end can be fully formalized. It establishes a discipline of practical articulation. A valued direction becomes more governable when the relations through which it matters are visible enough to support judgment, participation, accountability, monitoring, and revision.

10.6.2 Plural Forms of Value

Practical ends arise within fields of heterogeneous value. Application-dominant praxis can involve welfare, dignity, autonomy, safety, beauty, ecological integrity, continuity, care, truthfulness, recognition, participation, trust, capability, cultural meaning, institutional legitimacy, efficiency, learning, resilience, and many other forms of worth. Their relevance varies by situation. Some can be measured through common units for limited purposes; others remain qualitatively distinct. Some are articulated explicitly; others become visible through conflict, experience, loss, or encounter.

Definition 10.106 (Practical value form). A *practical value form* is a situated mode through which a condition, relation, capability, process, experience, or consequence is regarded as worthy of preservation, realization, expansion, repair, restraint, or protection within application-dominant praxis.

The phrase “value form” is used here at the generalized GR level. It identifies heterogeneity in what matters without yet constructing the substantive economic theory of heterogeneous value developed in later Parts of the book. This distinction allows Chapter 10 to establish a trans-domain praxis architecture while leaving specifically economic questions of valuation, conversion, circulation, return, and capture to the GRE-specific analysis.

Plurality enters in several ways. Distinct actors can hold different values. The same actor can hold several values that become difficult to reconcile in a particular situation. A single value term can contain different interpretations across communities. Values can also operate at different scales: an intervention can improve individual convenience while weakening collective continuity, or support present security while reducing ecological resilience over a longer horizon. Practical plurality therefore concerns more than disagreement among persons.

Definition 10.107 (Value plurality profile). A *value plurality profile* is a situated account of the materially relevant value forms within a practical problem, including their bearers or affected positions, modes of expression, scales, temporal horizons, potential compatibilities, and known areas of tension.

A value plurality profile supports analysis without requiring commensuration. It can identify which values are jointly satisfiable, which depend on different temporal horizons, which are vulnerable to exclusion by a chosen metric, and which require explicit normative judgment. Quantification can remain valuable where a defensible metric exists. The plural architecture simply prevents that metric from silently becoming a complete representation of worth.

Proposition 10.108 (Plural value preservation). *When materially relevant values remain heterogeneous, practical orientation should preserve their distinct grounds long enough to identify genuine compatibility, conversion, conflict, or residual incommensurability before closure.*

This proposition is methodological as much as normative. Premature aggregation can erase information about who gains, who bears burdens, which values change form, and which losses resist compensation. Preserving plurality creates a more informative basis for later judgment and decision.

10.6.3 Competing Ends

Plural value can produce several plausible ends within the same practical situation. These ends may reinforce one another, coexist with limited interaction, compete for scarce capacity, or become substantively incompatible. Application-dominant praxis therefore requires an account of end competition that is richer than a ranked list of objectives.

Definition 10.109 (Competing practical ends). *Competing practical ends* are two or more valued practical directions whose simultaneous pursuit generates material tension through incompatible conditions, scarce capacities, divergent temporal demands, unequal distribution of consequences, or conflicting normative commitments.

Competition can arise through resource use, but it can also arise through relation, timing, institutional attention, or identity. A rapid emergency response can compete with inclusive deliberation because time is scarce. Strong standardization can compete with local adaptability because the same institutional architecture cannot fully maximize both. Expansion of one capability can alter dependencies that another end seeks to reduce. Preservation of continuity can compete with transformation where inherited arrangements carry both valued meaning and reproduced harm.

End competition can also be generated by scale. A local intervention may produce benefits within the target setting while shifting burdens to another site. A short-horizon success can weaken a long-horizon objective. An institution can meet its formal mandate while creating coordination costs for a wider system. Identifying these relations requires tracing consequence beyond the immediate unit of action.

Definition 10.110 (End-compatibility profile). An *end-compatibility profile* records the known relations among practical ends, including reinforcement, conditional compatibility, sequencing requirements, competition, displacement, and substantive incompatibility across relevant scales and horizons.

An end-compatibility profile can reveal opportunities for redesign. Some conflicts reflect the current action architecture rather than the values themselves. Sequencing, modular intervention, differentiated provision, compensatory arrangements, or expanded capacity can make previously competing ends more compatible. Other conflicts remain substantive after redesign and require explicit judgment about priority, burden, and responsibility.

Proposition 10.111 (Conflict localization among ends). *Before practical priority is assigned among competing ends, application-dominant praxis benefits from locating*

whether the tension arises primarily from value disagreement, scarce capacity, temporal sequencing, institutional design, scale, distribution, or the current representation of available action.

Conflict localization matters because different sources of competition call for different responses. A design conflict may be mitigated through redesign. A capacity conflict can motivate capability expansion. A temporal conflict can invite sequencing. A genuine value conflict may require deliberation and explicit practical closure while preserving dissent.

10.6.4 Means and Ends

The relation between means and ends is generative. Means do more than transport praxis toward a pre-existing objective. They create experiences, dependencies, capacities, institutions, habits, categories, and future possibilities while they are being used. These changes can alter the meaning or desirability of the original end. Application-dominant praxis therefore treats means and ends as analytically distinguishable yet dynamically coupled.

Definition 10.112 (Means–ends coupling). *Means–ends coupling* is the relational process through which the instruments, procedures, institutions, technologies, and forms of coordination selected to pursue an end also shape the content, feasibility, distribution, interpretation, and future revision of that end.

A participatory process can change what participants understand the desired end to be. A technology chosen for efficiency can create maintenance dependencies that alter the practical meaning of autonomy. A temporary administrative procedure can become institutionally durable and thereby reshape later expectations. A coercive means can damage trust that the nominal end requires for long-term realization. Conversely, a means designed to build capability can make a more ambitious end feasible over time.

Means also carry normative properties. A desired outcome can be pursued through procedures that distribute voice, burden, exposure, and authority differently. Practical evaluation therefore includes the pathway of action, rather than treating consequences at the terminal point as the sole object of value. This is particularly important where the process itself affects dignity, recognition, consent, trust, or future agency.

Proposition 10.113 (Generative means–ends relation). *Where means materially transform relations, capacities, institutions, or future option spaces, their evaluation belongs to the practical orientation itself because those transformations can alter both the attainability and the content of the end.*

This proposition also limits simple means–ends substitution. Two interventions aimed at the same nominal outcome can generate very different relational futures. Their practical comparison therefore extends beyond expected attainment of the immediate target.

Means can become ends in a limited sense when a previously instrumental condition acquires independent value through practice. Participation initially introduced to improve information can come to be valued as a relation of recognition. A capabil-

ity built to deliver one service can become a broader source of collective agency. Conversely, an end can become instrumental to a wider orientation when its attainment enables later valued possibilities. The categories of means and ends are therefore functional relations within a practical architecture rather than permanent properties of objects.

10.6.5 Intrinsic and Instrumental Value

Application-dominant praxis often distinguishes what is valued in itself from what is valued because it contributes to something else. The distinction remains useful when treated relationally. The same condition can carry intrinsic and instrumental value simultaneously, and its practical role can change across contexts and horizons.

Definition 10.114 (Intrinsic practical valuation). An *intrinsic practical valuation* attributes worth to a condition, relation, capability, process, experience, or form of life as an end within the relevant practical horizon, rather than solely through its contribution to another specified end.

Definition 10.115 (Instrumental practical valuation). An *instrumental practical valuation* attributes worth to a condition, relation, capability, process, or resource through its contribution to the realization, protection, expansion, or regeneration of another specified practical end.

These definitions describe valuation relations rather than metaphysical classes. Trust can be valued for the quality of a relationship and for its contribution to coordination. Knowledge can be valued as understanding and as a basis for safer action. Ecological diversity can be valued as part of a living world and through its contribution to resilience. Institutional transparency can be valued as a relation of accountability and as a means of improving error detection.

The distinction also supports scrutiny of instrumentalization. A relation that has independent value for participants can be treated by an institution solely as a device for achieving another objective. Participation can become data extraction; care can become a productivity mechanism; education can become only credential production. Practical analysis can reveal such reductions by making the valuation relation explicit.

At the same time, intrinsic valuation does not end practical inquiry. A valued end can still conflict with other valued ends, depend on conditions that are costly to sustain, or change meaning across positions. Treating something as intrinsically valuable establishes one ground of practical importance. It does not automatically determine priority across every situation.

Proposition 10.116 (Plural valuation relations). A *practical object can participate simultaneously in intrinsic and instrumental valuation relations, and application-dominant praxis should preserve these relations separately where their conflation would obscure reasons, dependencies, or consequences relevant to judgment.*

This separation becomes especially useful when a policy, technology, institution, environment, or social relation appears beneficial under one evaluative relation while deteriorating under another.

10.6.6 Generative Value

Application-dominant praxis also encounters value that lies in the capacity of present conditions to participate in later valued generation. A relation, capability, institution, environment, knowledge practice, or material resource can matter partly because it supports the emergence, maintenance, diversification, or regeneration of future possibilities. Chapter 10 uses this idea at the generalized GR level. The later GRE-specific Parts develop the economic theory of generative value, heterogeneous value, conversion, circulation, return, capture, dissipation, and regeneration in greater depth.

Definition 10.117 (Generative practical value). *Generative practical value* is the situated worth attributed to a condition, relation, capability, process, or configuration because of its capacity to enable, sustain, diversify, regenerate, or deepen later possibilities for valued generation across a specified horizon.

Generative practical value differs from a prediction of immediate output. A capability can remain valuable even when its future uses cannot be listed exhaustively. A trusted relation can support later cooperation across problems that have not yet emerged. An ecosystem can sustain forms of regeneration whose future contributions are only partly known. A flexible institution can preserve the capacity to learn and redesign under changing conditions. A body of knowledge can open later questions whose significance is invisible at the moment of investment.

The concept therefore draws attention to enabling conditions and option structures. It asks whether action preserves or expands the capacity for later valued generation, who can access that capacity, and which relations govern its use. It also asks whether present gains depend on depletion, capture, exclusion, or fragility that weakens later generation. A highly productive intervention in the short term can have low or adverse generative value if it exhausts the relational or material conditions that make future production, learning, care, adaptation, or cooperation possible.

Definition 10.118 (Generative value horizon). A *generative value horizon* is the spatial, temporal, relational, and subject-relevant range across which the capacity of a present configuration to support later valued generation is assessed.

The horizon matters because generative effects can be redistributed. An arrangement can expand one group's option space while narrowing another's. It can increase local capability while externalizing maintenance burdens. It can generate rapid innovation while concentrating control over the infrastructure required for later participation. Generative value therefore requires attention to access, distribution, dependency, and governance rather than only to aggregate possibility.

Proposition 10.119 (Generative orientation of practical ends). *Where present action materially changes the conditions of later agency or valued generation, practical orientation should evaluate both the immediate end and the generative conditions that the selected pathway is likely to create, preserve, distribute, or erode.*

The proposition does not make generativity the single master value. Some harmful processes are highly generative in the descriptive sense that they reproduce themselves and create further effects. Practical value enters only through a specified evaluative relation. Generative practical value therefore remains one dimension within a plural architecture of judgment.

10.6.7 Future Value

Practical orientation extends across time. Present action can create delayed benefits, cumulative burdens, irreversible losses, new capabilities, future dependencies, altered institutions, or changed option spaces. Future-directed value enters whenever later consequences matter to present judgment even though their exact form remains uncertain.

Definition 10.120 (Future-directed practical value). *Future-directed practical value* is the present practical significance attributed to future conditions, relations, capabilities, experiences, option spaces, or subjects whose realization, exposure, or possibility is materially affected by current action.

Future-directed value includes more than discounted continuation of present preferences. Future subjects can have different needs, technologies, institutions, and value interpretations. Some future possibilities are currently unknown. Present actors can nevertheless recognize responsibilities toward preserving conditions under which later subjects can act, revise, learn, participate, or refuse inherited arrangements.

Temporal asymmetry complicates practical judgment. Present actors can impose durable structures on people who cannot participate in the current decision. Benefits can arrive earlier than burdens. Maintenance responsibilities can persist after the original decision-makers have exited. Damage can become visible only after thresholds are crossed. A future value analysis therefore benefits from distinguishing timing, persistence, reversibility, intergenerational distribution, and the transfer of responsibility.

Definition 10.121 (Future-value profile). A *future-value profile* is a situated account of materially relevant delayed benefits, burdens, capabilities, dependencies, option changes, irreversible effects, and affected future positions across the temporal horizons relevant to a practical orientation.

The profile need not assign a common numerical value to every future consequence. Scenario analysis, qualitative trajectories, thresholds, robustness analysis, and explicit uncertainty can all contribute. The central discipline is to prevent the present decision horizon from silently defining the horizon of practical value.

Future value also interacts with generative value. Preserving a future condition and preserving the capacity for future generation are related yet distinct concerns. A practical orientation can value a specific future state, such as continued access to a place, while also valuing a more open capability, such as the ability of future participants to redesign how that place is governed. The first concerns a valued future condition; the second concerns the generative capacity through which future value can continue to be formed.

Proposition 10.122 (Temporal extension of practical orientation). *When current action materially alters durable conditions or future option spaces, the relevant practical orientation extends beyond the decision-maker's immediate horizon to include delayed consequences, future affected positions, and the revisability available to later actors.*

This proposition prepares later treatments of irreversibility, long-horizon responsibility, and intergenerational justice without requiring Chapter 10 to resolve those

questions in advance.

10.6.8 Value Conflict

Value conflict occurs when materially relevant forms of worth support incompatible practical orientations after reasonable clarification of the situation. Such conflict can arise within one actor, among actors, across institutions, between present and future positions, or among scales. It can also arise because different values respond to different aspects of the same relation. Application-dominant praxis requires conflict to be represented explicitly enough that closure does not masquerade as evaluative unanimity.

Definition 10.123 (Practical value conflict). A *practical value conflict* occurs when two or more materially relevant value forms support incompatible ends, priorities, burdens, permissions, or response orientations within the same practical situation and the incompatibility persists after clarification of factual misunderstanding and available redesign.

The definition separates value conflict from disagreements that can be reduced through better evidence. Two groups can appear to disagree about values while actually relying on different empirical beliefs about consequences. Conversely, shared evidence can leave a genuine conflict over acceptable risk, recognition, autonomy, distribution, continuity, or responsibility. Locating the source of disagreement matters for determining whether further inquiry, deliberation, redesign, compensation, sequencing, or explicit priority judgment is appropriate.

Value conflicts also differ in structure. Some concern priority among values that all parties recognize. Some concern the interpretation of a shared value. Some concern whether a proposed value should carry practical standing at all. Some arise from unequal power to make a value legible within an institution. Others arise because a conversion framework treats one value as compensable in terms of another while affected subjects reject that conversion.

Definition 10.124 (Value-conflict map). A *value-conflict map* is a traceable representation of the values, affected positions, interpretations, conversion assumptions, temporal horizons, distributional consequences, and unresolved normative grounds that structure a practical disagreement.

A value-conflict map supports practical judgment without promising automatic resolution. It can reveal false conflict, conditional compatibility, hidden distribution, asymmetric standing, or a genuine residual disagreement. In the latter case, practical closure may still be required because action or delay has consequences. The closure should then preserve the grounds of disagreement, the authority under which priority was assigned, and the conditions under which the decision may be reviewed.

Proposition 10.125 (Conflict-preserving end selection). *Where a practical end is selected under unresolved value conflict, the orientation should preserve the materially relevant grounds of disagreement, the affected positions, the basis of provisional priority, and the revision conditions associated with that priority.*

This proposition parallels the conflict-preserving judgment architecture of Section 10.5. It also prepares later analysis of participation, accountability, and justice,

where the authority to define and prioritize values becomes part of the practical problem itself.

10.6.9 Revisability of Ends

Ends can require revision because the practical situation evolves. New evidence can change the expected consequence structure. Participation can reveal an affected position that the original end omitted. An intervention can generate capacities that make a more ambitious end feasible. An emergency end can lose priority after stabilization. A long-standing institutional objective can become misaligned with the conditions from which it originally arose. Revisability therefore belongs to practical orientation from the beginning rather than appearing only after failure.

Definition 10.126 (End revision). *End revision* is the traceable reformulation, reprioritization, expansion, contraction, sequencing, suspension, or retirement of a practical end in response to materially changed knowledge, values, affected positions, capabilities, constraints, consequences, authority, or temporal conditions.

End revision differs from simple implementation adjustment. Changing a delivery mechanism while preserving the valued direction can be a revision of means. Changing who counts as an affected subject, what condition is sought, how values are prioritized, or which future horizon governs the decision constitutes a deeper revision of orientation. Distinguishing these levels supports accountability because a project can otherwise claim continuity while its effective purpose has shifted substantially.

Definition 10.127 (End revision record). An *end revision record* is a traceable account of the prior end, the evidence and judgments that supported it, the conditions that triggered reconsideration, the values and positions implicated by the change, the revised orientation, residual disagreement, and the consequences expected from the revision.

Revisability should also preserve practical continuity. Constantly changing ends can make coordinated action impossible, erode trust, and prevent learning from sufficiently stable interventions. The relevant architecture therefore combines commitment with reopening conditions. An end can remain stable while uncertainty is monitored, and revision can be triggered when specified thresholds or qualitative changes become material.

Definition 10.128 (End-revision condition). An *end-revision condition* is a specified evidential, normative, relational, institutional, temporal, or consequence-related change whose occurrence is sufficient to reopen the current practical orientation for reconsideration.

Typical revision conditions can include evidence that the intended end is unattainable under current relations, discovery of serious unrepresented burdens, transformation of the underlying problem, emergence of a materially affected group, erosion of legitimacy, creation of new capabilities, crossing of an irreversibility threshold, or evidence that the pursuit of one end is destroying the conditions required for other protected values.

Proposition 10.129 (Commitment with revisability). *Application-dominant praxis can combine practical commitment with revisability by specifying ends strongly enough*

to coordinate action while preserving explicit conditions under which their content, priority, or continuation should be reconsidered.

This proposition completes the transition from judgment to action architecture. Section 10.5 established how a practical orientation can become supportable under heterogeneous judgments. The present section has specified the valued directions, conflicts, temporal extensions, and revision conditions through which such orientation acquires content. The next task is to examine the set of actions through which these ends can be pursued. Section 271 therefore turns to the *action space*: available actions, latent actions, foreclosed actions, generated actions, constraints, capacities, unequal practical possibility, and the expansion or contraction of what can be done.

10.7 Action Space

Section 10.6 developed the ends and practical orientations through which application-dominant praxis acquires valued direction. The present section turns from practical orientation to the structure of practical possibility. Its role is to clarify how a situated actor, institution, collective, or distributed configuration encounters a field of actions that is neither fixed in advance nor reducible to a list of formally imaginable alternatives. The objective is to distinguish actions that are presently available, latent, foreclosed, or generated; to specify how constraints and capacities shape their practical reachability; and to examine how action spaces differ among positions and change through praxis. The discussion proceeds from available actions to latent, foreclosed, and generated actions, then analyzes constraints, capacities, unequal action spaces, expansion, and contraction. The method is relational and dynamic. Action space is treated as a historically formed, position-sensitive, and revisable configuration whose structure can itself become an object of intervention.

Practical orientation does not determine what can be done. An end can be normatively compelling while remaining institutionally unreachable. A technically feasible intervention can remain unavailable to actors who lack authority, resources, coordination, or access. A response that appears absent from an initial menu can become possible after learning, alliance formation, institutional redesign, technological development, or recombination of existing capacities. Conversely, prior commitments, deteriorating conditions, lost capabilities, legal changes, or irreversible transformations can remove options that once existed. Application-dominant praxis therefore requires an account of possibility that distinguishes imagination from reachability and current reachability from future generability.

Definition 10.130 (Practical action space). A *practical action space* is the historically and relationally situated configuration of actions, response sequences, commitments, delays, withdrawals, coordination forms, and option-preserving moves that can be meaningfully considered or made reachable by a specified actor or distributed agency configuration within a defined practical situation, temporal horizon, and set of capacities and constraints.

The definition deliberately treats an action space as structured rather than merely enumerated. Actions can differ in cost, accessibility, authority requirements, reversibility, timing, informational demands, coordination burden, and consequences

for later options. Some can be undertaken immediately. Some require preparatory action. Some become reachable only through collective organization. Some are formally permitted yet practically inaccessible. Some appear available only because burdens have been displaced onto actors whose capacities are absent from the decision frame. A practically useful action space must therefore represent more than nominal alternatives.

Definition 10.131 (Effective action space). An *effective action space* is the subset and relational structure of a practical action space whose elements are reachable, activatable, or realistically generable under the capacities, constraints, authority relations, temporal conditions, information, and coordination arrangements materially relevant to the present stage of praxis.

Definition 10.131 distinguishes effective possibility from nominal possibility. An organization can possess a formal power that cannot be exercised within the required time. A person can possess a legal entitlement that remains unusable because access conditions are prohibitive. A collective can lack any single actor with sufficient capacity while possessing a realizable option through coordination. These differences matter because practical judgment becomes distorted when the apparent choice set is detached from the relational conditions that make choice effective.

Table 10.7 summarizes the principal dimensions of action-space analysis developed in this section. The categories are analytically distinct while remaining dynamically connected. A latent action can become available; an available action can become foreclosed; an earlier intervention can generate a new action; and expansion for one position can coincide with contraction for another.

10.7.1 Available Actions

Available actions form the most immediately visible region of a practical action space. They include interventions, coordination moves, information-gathering activities, temporary measures, reversible trials, withdrawals, pauses, or commitments that can be activated under presently recognized conditions. Availability is therefore relational and time-indexed. An action can be available to one actor and unavailable to another, available today and unavailable after a deadline, available formally and inaccessible materially, or available only if several actors coordinate.

Definition 10.132 (Available practical action). An *available practical action* is an action or response sequence that a specified actor or distributed agency configuration can presently activate within the relevant temporal horizon using materially accessible capacities, permissions, relations, information, and coordination arrangements.

Availability contains several dimensions. Material availability concerns access to physical, financial, technological, spatial, or ecological conditions required for action. Institutional availability concerns authority, permission, jurisdiction, procedural access, and organizational compatibility. Epistemic availability concerns whether actors possess enough knowledge to identify and enact the option. Relational availability concerns whether necessary cooperation, trust, representation, or coordination can be mobilized. Temporal availability concerns whether the option can be activated before its practical window closes.

Table 10.7: Analytical dimensions of practical action space.

Dimension	Primary condition	Practical significance	Characteristic transition
Available action	Present reachability	Identifies responses that can be activated within current capacities, authority, access, and time	Loss or gain of resources, permission, coordination, information, or timing
Latent action	Potential reachability	Preserves options that require discovery, recombination, preparation, or relation formation	Learning, coordination, reinterpretation, mobilization, or capability development
Foreclosed action	Lost or blocked reachability	Makes visible options removed by prior commitment, constraint, degradation, exclusion, or elapsed time	Repair, institutional change, renewed access, or irreversible loss
Generated action	Praxis-created possibility	Identifies actions that become possible because earlier action changes capability, relation, knowledge, or institution	Capacity formation, infrastructure, trust, learning, alliance, or rule change
Constraint	Restriction on activation or reachability	Specifies where practical possibility is narrowed and through which relation	Relaxation, substitution, displacement, intensification, or removal
Capacity	Enabling condition for action	Specifies who can activate which possibilities and under what conditions	Acquisition, coordination, maintenance, transfer, erosion, or capture
Inequality	Positional difference in reachability	Reveals asymmetry in effective options, costs, exit possibilities, and option preservation	Redistribution of capability, authority, burden, or access
Expansion	Enlargement or deepening of reachable possibility	Can increase adaptability, agency, experimentation, and future revisability	New capacities, relations, institutions, knowledge, resources, or preserved options
Contraction	Reduction of reachable possibility	Can protect valued constraints or intensify dependence, vulnerability, and lock-in	Prohibition, depletion, commitment, coercion, loss, or deliberate narrowing

These dimensions can diverge. A technically straightforward action can remain institutionally unavailable. A legally authorized action can remain materially infeasible. A well-resourced institution can possess the means to act yet lack the relational legitimacy needed for cooperation. A response can be available in principle while its preparation time exceeds the interval in which it would matter. Application-dominant praxis should therefore avoid treating the formal menu of options as equiv-

alent to the effective action space.

Definition 10.133 (Availability profile). An *availability profile* is a traceable account of the material, institutional, epistemic, relational, temporal, and coordination conditions that determine whether a candidate action is presently reachable and at what practical cost.

The cost component is important because extreme activation costs can make nominal availability practically misleading. An actor can technically exit a relation while doing so would destroy access to essential resources. A community can formally participate in a procedure while participation requires time, language, travel, or expertise unavailable to many members. A public body can possess emergency authority whose use would consume institutional trust or narrow later cooperation. Effective availability therefore includes the burdens required to exercise an option.

Available actions also possess different degrees of reversibility and commitment. Some preserve later choice; others commit resources, establish precedents, create dependencies, or alter relations before their ultimate consequences become known. Availability alone does not establish desirability. It identifies a reachable region that later decision analysis must evaluate through evidence, values, risk, and consequence.

Proposition 10.134 (Situated availability). *The practical availability of an action depends on the situated relation among actor position, capacity, authority, access, coordination, timing, and activation cost; formal permission or abstract feasibility alone is therefore insufficient to establish effective availability.*

Proposition 10.134 links action-space analysis to the practical-situation architecture of Section 10.3. What can be done is partly a property of the situation as reconstructed from a particular position. A change in situation can change availability even when the nominal action remains conceptually unchanged.

10.7.2 Latent Actions

Practical possibility often exceeds the set of actions visible at the moment of decision. Some options are latent because the required elements already exist but have not yet been connected. Others require modest capability development, institutional interpretation, alliance formation, knowledge acquisition, or reconfiguration of existing resources. Latency is therefore a form of potential reachability rather than simple absence.

Definition 10.135 (Latent practical action). A *latent practical action* is an action or response configuration that is not presently available in effective form yet can become reachable through plausible recombination, preparation, learning, coordination, reinterpretation, resource mobilization, or capability development within the relevant practical horizon.

Latent actions matter because an apparently narrow choice set can reflect limited search rather than genuine structural necessity. An institution can perceive only established procedures while adjacent organizations possess complementary capabilities. A local group can lack formal authority while being able to create a coalition that changes access. A technical intervention can appear infeasible until an existing

infrastructure is repurposed. A conflict framed as a binary choice can acquire additional options after the underlying ends are decomposed and recombined.

The recognition of latency nevertheless requires discipline. An imagined action becomes practically relevant only when the pathway from current conditions to reachability is sufficiently plausible. Vague appeals to future innovation, unspecified coordination, or hypothetical resources can inflate the action space and conceal present constraints. Latent action analysis should therefore identify the intermediate transformations required for activation.

Definition 10.136 (Activation pathway). An *activation pathway* is a specified sequence of preparatory changes through which a latent action could become available, including the capacities, relations, permissions, knowledge, resources, time, and coordination required at each materially relevant stage.

An activation pathway can itself contain branching possibilities. Initial inquiry can reveal that an assumed constraint is weaker than expected. A pilot can generate knowledge needed for wider implementation. Negotiation can create permission. Training can create capability. Infrastructure repair can reopen an option. In this sense, some practical actions are best understood as pathways whose early stages alter the later action space.

Latency also has an epistemic dimension. Actors cannot deliberately select an option they have not recognized. Problem formulation, comparative analysis, historical reconstruction, participation, simulation, analogy, and aesthetic exploration can all reveal options that were previously outside the active decision frame. The expansion of recognized possibility can therefore precede any material change in capacity.

Proposition 10.137 (Latent-option preservation). *When plausible latent actions could materially improve future practical orientation, early-stage praxis should preserve the capacities, relations, time, and option conditions required for their activation unless stronger practical reasons justify their foreclosure.*

This proposition does not establish a general preference for maximal optionality. Preserving every possibility can be costly or impossible. Its function is narrower: where a latent option may become materially important, application-dominant praxis should recognize the consequences of destroying its activation pathway before the option has been adequately considered.

10.7.3 Foreclosed Actions

Action spaces are shaped as strongly by lost possibilities as by visible ones. An action can be foreclosed because a resource has been depleted, a legal window has closed, a relation has deteriorated, infrastructure has failed, an irreversible commitment has been made, a capability has disappeared, or an institution excludes the actor from the relevant process. Foreclosure therefore records the historical structure of practical possibility.

Definition 10.138 (Foreclosed practical action). A *foreclosed practical action* is an action or response pathway that was previously reachable, plausibly activatable, or structurally conceivable within the relevant practical field but has become materially unavailable because required capacities, relations, permissions, resources, temporal

windows, environmental conditions, or institutional pathways have been removed, exhausted, blocked, or irreversibly transformed.

Foreclosure differs from mere non-selection. An available action that actors decide not to choose remains part of the action space unless the decision itself removes it. Foreclosure also differs from current latency. A latent option retains a plausible activation pathway. A foreclosed option lacks such a pathway under the present configuration, though some forms of foreclosure can later be repaired.

Several forms are analytically useful. Temporal foreclosure occurs when delay closes a window. Material foreclosure follows depletion or destruction of necessary conditions. Institutional foreclosure follows rules, jurisdictional changes, procedural barriers, or exclusion from authority. Relational foreclosure follows collapse of cooperation, trust, access, or recognition. Capability foreclosure follows the loss of skills, infrastructure, knowledge, health, organizational memory, or coordination capacity required for action. Commitment foreclosure occurs when earlier decisions create dependencies, contracts, sunk structures, precedents, or irreversible transformations that remove later alternatives.

Definition 10.139 (Foreclosure profile). *A foreclosure profile is a traceable account of the action possibilities that have become unavailable, the relations and events through which foreclosure occurred, the positions differently affected, the degree of reversibility, and any remaining pathway of repair or substitution.*

Foreclosure profiles are useful because current constraint can otherwise appear natural or inevitable. Historical reconstruction can reveal that a narrow action space was produced through earlier decisions. An institution can appear to possess only one feasible path because alternative capabilities were systematically neglected. A community can appear unable to participate because prior arrangements removed access to information or decision channels. A technical system can appear locked into one architecture because interoperability was abandoned at an earlier stage.

Foreclosure can also be legitimate. Safety rules can remove dangerous options. Rights protections can exclude otherwise feasible forms of coercion. Ecological limits can justify withdrawing destructive pathways. The fact that an option has been closed therefore does not itself indicate injustice or practical failure. Analysis must distinguish protective or normatively justified closure from coercive, accidental, extractive, or capacity-destroying foreclosure.

Proposition 10.140 (Historical legibility of foreclosure). *Where a present action space is materially narrowed by earlier decisions or relational transformations, practical analysis should reconstruct the history of foreclosure sufficiently to distinguish current necessity from historically produced constraint and to identify any remaining possibilities for repair, substitution, or institutional redesign.*

This proposition links action-space analysis to the historical architecture of Sections 10.3 and 10.4. The practical present includes absences whose causes can remain invisible unless lost possibilities are treated as part of the situation.

10.7.4 Generated Actions

Praxis can create possibilities that did not previously exist in usable form. Learning can produce a new technique. Repeated cooperation can generate trust. Institutional reform can create authority. Infrastructure can connect previously separated actors or resources. A pilot can reveal an unanticipated pathway. Collective organization can make an action feasible that no participant could undertake individually. Generated actions therefore express the productive dimension of action-space dynamics.

Definition 10.141 (Generated practical action). A *generated practical action* is an action or response configuration whose practical reachability emerges because prior or ongoing praxis creates, combines, or transforms capacities, relations, knowledge, institutions, resources, authority, infrastructure, or coordination conditions that were previously absent or insufficient.

Generated actions differ from latent actions by degree and pathway. A latent action can often be activated through recombination or preparation within an already sufficient underlying structure. A generated action depends on praxis that substantively changes the structure of possibility. The boundary is contextual, and some options move gradually from latent to generated as preparatory activity becomes constitutive rather than merely activating.

The generative relation can be direct. Training creates a skill; infrastructure creates access; a new legal procedure creates authority. It can also be indirect. A transparent process can generate trust that later permits coordination. A small reversible trial can generate evidence that makes wider adoption supportable. A successful repair can restore confidence and thereby enable a more ambitious intervention. A conflict-resolution process can generate a relation through which future problems can be addressed differently.

Definition 10.142 (Action-generating intervention). An *action-generating intervention* is a practical intervention whose relevant consequence includes the creation, strengthening, recombination, or redistribution of capacities and relations that make additional actions reachable at a later stage.

This concept connects action space with the generative practical value developed in Section 10.6. An intervention can be valuable partly because it accomplishes an immediate end and partly because it changes what actors can subsequently do. The two dimensions can diverge. A rapid centralized response can achieve an immediate target while weakening local capability. A slower participatory process can initially accomplish less while generating durable coordination capacity. Neither pattern is universally preferable; their practical significance depends on the situation, values, urgency, and consequence structure.

Generated actions can also widen harmful capability. A technology can create new forms of surveillance. An institution can generate stronger extraction capacity. A coordination infrastructure can improve both care and coercion. Action-space expansion therefore remains normatively ambivalent. The creation of possibility requires judgment about who gains capability, for what purposes, under which governance, and with what consequences for others.

Proposition 10.143 (Generative consequence of action). *When an intervention materially changes later capacities, relations, authority, knowledge, or coordination, evalu-*

ation of that intervention should include the action possibilities it generates or removes in addition to its immediate intended outcome.

Proposition 10.143 prepares later treatment of intervention design. It also reinforces a central GR commitment: action participates in the production of the future field within which later action becomes possible.

10.7.5 Constraints on Action

Constraints delimit practical reachability. Section 10.3 introduced practical constraints within the broader constitution of the practical situation. The present subsection examines them specifically through their effect on action space. A constraint can raise the cost of action, slow activation, require coordination, exclude an option, redirect a pathway, or make one actor dependent on another. Constraint analysis therefore concerns structure rather than a simple inventory of obstacles.

Definition 10.144 (Action constraint). An *action constraint* is a materially relevant relational, institutional, material, epistemic, temporal, normative, ecological, technological, or capability condition that restricts the reachability, timing, scale, form, distribution, or continuation of one or more practical actions for a specified position.

Some constraints are hard within the present horizon. A physical limit, a binding legal prohibition, an exhausted resource, or a missed temporal window can remove an option. Others are soft or transformable. A budget constraint can be relaxed through reallocation. A knowledge constraint can be reduced through inquiry. A coordination constraint can be addressed through organization. An institutional constraint can change through authorization or redesign. The distinction is practical rather than metaphysical because the same condition can be fixed at one horizon and transformable at another.

Constraints can also be coupled. Relaxing one can activate another. Additional funding can expose a shortage of trained personnel. New authority can reveal weak implementation capacity. Faster technical deployment can create participation or legitimacy problems. Increased information can expand the set of recognized options while also increasing coordination burden. Constraint analysis should therefore examine dependency among constraints rather than assume that removal is additive.

Definition 10.145 (Constraint configuration). A *constraint configuration* is the structured relation among the materially relevant constraints affecting a practical action space, including their dependencies, positional distribution, temporal behavior, substitutability, and degree of transformability.

Normative constraints deserve special attention. Rights, duties, safety conditions, ecological limits, professional standards, and protections for affected subjects can restrict action while constituting part of what makes praxis legitimate. Application-dominant praxis should therefore avoid treating every constraint as a defect to be removed. Some constraints preserve valued relations or prevent the action space of one actor from expanding through the domination of another.

The location of a constraint can also differ from the location of its effects. A procurement rule in one institution can determine what local practitioners can do elsewhere. A technical standard can shape access for users who never participated in its design.

A funding condition can narrow the action space of organizations downstream. Constraint analysis therefore benefits from tracing the relation through which limitation is transmitted.

Proposition 10.146 (Relational constraint analysis). *A constraint is practically intelligible when analysis identifies the positions it limits, the relations through which limitation is transmitted, the actions affected, the degree of transformability, and the consequences of relaxing, preserving, or redistributing the constraint.*

This proposition prevents the language of constraint from becoming a purely technical vocabulary. A constraint can be materially efficient, normatively protective, politically imposed, historically inherited, or unequally distributed. Its practical role depends on these relations.

10.7.6 Capacities for Action

If constraints narrow action space, capacities make action reachable. Capacity includes more than resources held by an isolated actor. It can reside in skills, knowledge, health, authority, organization, trust, infrastructure, institutional memory, legitimacy, attention, time, communication, representation, coordination, and access to other actors' capabilities. Some capacities are individual; many are relational or collective.

Definition 10.147 (Action capacity). An *action capacity* is a materially relevant ability, resource, relation, permission, competence, infrastructure, organizational arrangement, or coordination capability through which a specified actor or distributed agency configuration can activate, sustain, adapt, or revise practical action.

Capacity is therefore distinct from possession. A resource can exist without being usable. Knowledge can exist without being accessible to the people who must act. Authority can exist without implementation infrastructure. A network can exist without sufficient trust for coordination. An institution can have personnel yet lack time, attention, or procedural flexibility. Effective capacity depends on configuration.

Definition 10.148 (Capacity configuration). A *capacity configuration* is the structured relation among the abilities, resources, permissions, knowledge, relations, infrastructures, and coordination arrangements whose combination determines which actions can be initiated, sustained, adapted, and reviewed from a specified practical position.

Capacities can complement one another. Knowledge becomes actionable when paired with authority. Authority becomes effective when paired with implementation capability. Material resources become usable when paired with logistical coordination. Participation becomes consequential when voice is connected to decision pathways. Such complementarity means that increasing one capacity can have little effect when another remains binding.

Capacities also require maintenance. Institutional memory can erode through turnover. Infrastructure can decay. Trust can be depleted by repeated unilateral action. Skills can disappear when they are unused. Emergency capability can weaken during long periods without investment. A practical action space can therefore contract gradually even when formal structures remain unchanged.

Capacity development can itself be an end. An intervention can be designed partly

to strengthen the ability of affected actors to respond, learn, coordinate, revise, or govern later situations. This form of capability-oriented praxis is especially important when repeated dependence on external intervention would reproduce vulnerability. Yet capacity development can also redistribute power, create new dependencies, or standardize practices in ways that narrow other forms of agency. Its practical value remains relational and contestable.

Proposition 10.149 (Configured capacity). *The practical effect of a capacity depends on its configuration with complementary capacities, access conditions, authority, relations, maintenance requirements, and the specific actions for which it is relevant.*

Proposition 10.149 supports a move away from aggregate capacity scores when these would obscure practical bottlenecks. Action-space analysis asks which configurations permit which actions for which actors under which conditions.

10.7.7 Unequal Action Spaces

Practical action spaces are distributed unevenly. Actors can face the same nominal situation while possessing very different effective possibilities. One actor can delay with limited cost while another bears immediate harm. One institution can exit a relation while another depends on continued access. One group can transform a rule while another can only adapt to it. One participant can preserve several alternatives while another must commit early because resources are scarce. These differences make action-space inequality a constitutive feature of many practical situations.

Definition 10.150 (Action-space inequality). *Action-space inequality* is a materially relevant difference among actors or positions in the reachability, cost, timing, reversibility, authority, option preservation, exit possibility, or capacity-generation associated with practical action.

Action-space inequality differs from unequal outcomes. Actors can receive similar immediate outcomes while possessing very different abilities to revise, refuse, exit, appeal, or shape what happens next. Conversely, unequal resources do not always translate directly into unequal practical possibility if institutions redistribute authority, provide collective capability, or protect access. The relevant object is the structured field of what different positions can effectively do.

Several dimensions are important. Reach inequality concerns the number and diversity of accessible options. Cost inequality concerns the burden required to activate them. Temporal inequality concerns who can afford to wait and who faces immediate thresholds. Reversibility inequality concerns who can recover after a failed choice. Voice inequality concerns who can alter the collective action space. Exit inequality concerns who can withdraw without catastrophic loss. Generative inequality concerns whose actions create future capabilities and whose actions mainly consume scarce options.

Definition 10.151 (Positional action-space profile). *A positional action-space profile* is a comparative representation of the available, latent, and foreclosed actions, activation costs, constraints, capacities, reversibility, exit possibilities, and option-preservation conditions associated with a specified practical position.

Comparing positional profiles can reveal asymmetries hidden by a single aggregate

action set. A collective decision can appear to offer three options while only one is realistically available to vulnerable participants. A formal right to refuse can coexist with material dependence that makes refusal prohibitively costly. A consultation can offer voice while leaving participants unable to affect implementation. Such patterns connect action-space analysis to later sections on power, participation, responsibility, and justice.

Action-space inequality also changes the meaning of consent and choice. A decision selected from a severely constrained set can remain intentional while reflecting dependence or structural limitation. Practical analysis should therefore preserve both agency and constraint rather than reducing constrained choice either to full voluntariness or to complete absence of agency.

Proposition 10.152 (Positional comparison of practical possibility). *Where consequential action depends on actors with materially unequal capacities, dependencies, or exit conditions, the practical action space should be analyzed positionally so that nominally shared options do not conceal unequal reachability, activation cost, reversibility, or capacity to shape later possibilities.*

This proposition gives action-space inequality a diagnostic role. It does not by itself determine what redistribution is justified. It makes the asymmetry visible for the later judgments of power, participation, responsibility, and justice.

10.7.8 Expansion of Action Space

Application-dominant praxis can seek to expand practical possibility. Expansion can occur by creating resources, knowledge, authority, infrastructure, coordination, trust, institutional pathways, skills, representation, or time. It can also occur by reducing activation costs, reopening foreclosed pathways, preserving reversible options, or making latent actions visible. Expansion therefore concerns the structure and quality of possibility, not only the number of nominal choices.

Definition 10.153 (Action-space expansion). *Action-space expansion* is a practical transformation that increases the reachability, diversity, quality, reversibility, adaptability, or distributive accessibility of materially relevant actions for one or more positions within a specified horizon.

The definition includes quality because a larger choice set can remain practically poor. Ten inaccessible options do not necessarily provide more agency than two robust ones. Expansion can be especially significant when it introduces qualitatively different pathways, creates an exit option, reduces dependency, increases reversibility, or enables affected actors to participate in shaping future action.

Expansion can take several forms. Capacity expansion increases what actors can implement. Epistemic expansion increases what they can recognize and evaluate. Institutional expansion creates new channels of authorization or contestation. Relational expansion creates coordination possibilities. Temporal expansion preserves time for deliberation or staged action. Reversibility expansion lowers the cost of learning from error. Generative expansion builds conditions through which additional possibilities can emerge later.

Definition 10.154 (Action-space expansion profile). *An action-space expansion profile*

is a traceable account of which practical possibilities have become newly reachable or more robust, for which positions, through which capacities or relations, at what cost, across what horizon, and with what consequences for others' action spaces.

The final clause is essential because expansion is relationally distributed. Greater discretion for one actor can reduce protection for another. Expanded institutional authority can narrow local autonomy. Greater technological capability can increase both service capacity and surveillance capacity. Additional exit options for powerful actors can transfer risk to those who remain. Expansion should therefore be assessed together with its distribution and governance.

Practical orientation can also value option preservation independently of immediate use. A reversible intervention can keep several future pathways open. Modular design can reduce lock-in. Diverse capabilities can improve adaptation under uncertainty. Maintaining institutional redundancy can appear inefficient under stable conditions while preserving response capacity under disruption. These forms of expansion connect directly to decision-making under incomplete knowledge because uncertainty can increase the value of preserving future revision.

Proposition 10.155 (Qualified action-space expansion). *Action-space expansion becomes a practically relevant achievement when it improves materially valuable reachability, adaptability, reversibility, or distributed agency without relying on unexamined contraction, burden transfer, or domination elsewhere in the practical field.*

Proposition 10.155 avoids treating freedom of action as a simple maximand. The relevant question concerns the kind of possibility created, its distribution, its governing relations, and its contribution to the practical ends identified in Section 10.6.

10.7.9 Contraction of Action Space

Action spaces also contract. Contraction can follow resource depletion, institutional closure, time pressure, capability loss, coercion, path dependence, infrastructure failure, ecological degradation, conflict, surveillance, dependence, or irreversible commitment. It can also be deliberately produced through safety rules, rights protections, ecological limits, professional standards, or collective agreements that exclude actions judged unacceptable. The practical meaning of contraction therefore depends on what is removed, from whose action space, through which authority, and with what consequences.

Definition 10.156 (Action-space contraction). *Action-space contraction* is a practical transformation that reduces the reachability, diversity, quality, reversibility, adaptability, or distributive accessibility of materially relevant actions for one or more positions within a specified horizon.

Contraction can be abrupt or cumulative. A prohibition can immediately remove an option. A series of minor commitments can gradually create lock-in. Repeated underinvestment can erode capability until an action becomes infeasible. A deteriorating relation can progressively raise coordination costs. Environmental damage can remove future uses long after the original action. The temporal form of contraction matters because gradual losses can remain less visible than discrete decisions.

Definition 10.157 (Contraction pathway). A *contraction pathway* is the sequence of

decisions, omissions, relational changes, capability losses, institutional transformations, material degradations, or temporal thresholds through which previously available or latent actions become more costly, less reversible, or practically foreclosed.

Contraction can sometimes be protective. Prohibiting a dangerous practice can reduce one actor's action space while preserving the safety and agency of others. Establishing a right can remove previously available forms of interference. Ecological constraints can withdraw destructive uses in order to preserve future generative capacity. Practical analysis should therefore distinguish *protective narrowing* from *deprivational contraction*. The first deliberately removes actions because their availability threatens protected values or others' agency. The second reduces practical possibility through loss, exclusion, domination, degradation, or capability erosion.

A contraction can also shift rather than eliminate possibility. Restricting one pathway can stimulate alternative methods. Removing a harmful option can generate incentives for redesign. Conversely, a protective rule can become excessively rigid and eliminate valuable adaptive capacity. The analysis therefore requires attention to substitute pathways and to whether affected actors retain meaningful means of revision, appeal, or collective redesign.

Definition 10.158 (Action-space transition record). An *action-space transition record* is a traceable account of materially relevant expansions, contractions, generated possibilities, and foreclosures, including their causal or constitutive relations, affected positions, authority basis, distributional effects, and implications for future revisability.

Such a record makes action-space change available for accountability and learning. It can reveal that an intervention succeeded according to its immediate outcome while leaving affected actors with fewer future options. It can also reveal that a restrictive intervention created protective conditions that later widened meaningful agency. The same immediate action can therefore have different practical significance when evaluated through the action space it leaves behind.

Proposition 10.159 (Action-space consequence principle). *Where consequential praxis materially changes what actors can later do, refuse, revise, coordinate, or recover from, those changes in action space belong to the consequence structure of the intervention and should remain visible in practical evaluation and reopening decisions.*

The present section has developed action space as a dynamic relational structure rather than a fixed menu of alternatives. Available actions identify present reachability; latent actions preserve potential reachability; foreclosed actions reveal lost possibility; generated actions show how praxis creates new pathways; constraints and capacities shape the effective field; positional analysis reveals unequal practical possibility; and expansion and contraction track how action transforms the future space of action itself. This architecture prepares the next problem without selecting among the possibilities it has identified. Section 272 therefore turns to *decision under incomplete knowledge*: the conditions under which one or more actions can become sufficiently supportable for provisional commitment while uncertainty remains materially unresolved.

10.8 Decision under Incomplete Knowledge

Section 10.7 developed the action space within which application-dominant praxis operates, including available, latent, foreclosed, and generated possibilities and the unequal capacities through which those possibilities become reachable. The present section examines the transition from practical possibility to provisional commitment when knowledge remains incomplete. Its role is to specify the epistemic and practical conditions under which an action, sequence, restraint, or further inquiry can become sufficiently supportable for decision without treating uncertainty as eliminated. The objective is to distinguish epistemic sufficiency, residual uncertainty, decision thresholds, precaution, urgency, delay, provisional decision, robustness, and revisability as related but analytically distinct components of decision under incomplete knowledge. The discussion is conceptual and relational. Decision is treated as a situated practical commitment whose warrant depends on the consequences at stake, the positions affected, the quality and limits of available knowledge, the structure of the action space, and the capacity to monitor and revise what follows.

Application-dominant praxis rarely reaches a point at which every materially relevant relation is known, every consequence is predictable, every value conflict is settled, and every affected position is represented. A requirement of complete knowledge would therefore convert epistemic humility into practical paralysis. An unrestricted willingness to decide under ignorance would create the opposite failure by detaching action from warranted understanding. The practical problem lies between these poles. Praxis requires a standard of knowledge sufficient for the decision at hand, together with an explicit account of what remains uncertain and how that uncertainty should alter the form, scale, timing, monitoring, and revisability of commitment.

Definition 10.160 (Decision under incomplete knowledge). A *decision under incomplete knowledge* is a situated practical commitment made while one or more materially relevant features of the problem, action space, consequence structure, affected positions, or future conditions remain uncertain, partially observed, contested, or open to revision.

The definition does not identify incomplete knowledge with arbitrary choice. A decision can be strongly warranted while residual uncertainty remains. Conversely, abundant information can fail to support a decision when it is poorly matched to the action, omits affected relations, or leaves decisive mechanisms unresolved. The relevant question concerns the relation between what is known and what the contemplated commitment can generate.

Table 10.8 presents decision as a layered practical architecture rather than a single moment of choice. The dimensions are mutually dependent. Epistemic sufficiency is judged relative to a threshold; the threshold depends partly on urgency, reversibility, and consequence; precaution changes the form of exposure; delay can generate knowledge while also creating costs; robustness concerns the stability of practical support; and revisability governs what happens when the decision encounters a changing field. No single dimension substitutes for the others.

Table 10.8: Analytical dimensions of decision under incomplete knowledge.

Dimension	Practical function	Primary question	Characteristic adjustment
Epistemic sufficiency	Relates available knowledge to a contemplated commitment	Is the present knowledge adequate for this action, scale, horizon, and consequence structure?	Additional inquiry, narrower scope, staged action, stronger monitoring, or abstention
Residual uncertainty	Makes unresolved conditions visible	Which uncertainties remain materially relevant after the present inquiry?	Classification, sensitivity analysis, contingency planning, participation, or explicit uncertainty retention
Decision threshold	Specifies a level of support required for commitment	How strong must the practical warrant be before this action becomes admissible?	Threshold change with stakes, reversibility, urgency, distribution, and alternatives
Precaution	Governs exposure where serious consequence remains uncertain	Which protections, limits, or option-preserving measures are warranted before wider commitment?	Reversible trial, protective constraint, modularity, monitoring, or reduced exposure
Urgency	Relates timing to consequence	How does the cost of waiting alter the decision problem?	Faster inquiry, staged commitment, temporary protection, or accelerated review
Delay	Uses time as a practical and epistemic resource	Can waiting materially improve orientation without imposing greater consequential loss?	Information acquisition, consultation, preparation, or time-bounded deferral
Provisional decision	Converts warranted orientation into bounded commitment	What can be committed now, for how long, at what scale, and under which review conditions?	Scope limits, expiration, monitoring, rollback, and reopening criteria
Robustness	Tests support across plausible variation	Does the decision remain supportable across materially plausible assumptions, models, and conditions?	Option redesign, diversification, contingency, or preference for less fragile pathways
Revisability	Preserves correction after commitment	What changes should trigger reconsideration, modification, suspension, or withdrawal?	Review rules, trigger conditions, provenance, and authority for revision

10.8.1 Epistemic Sufficiency for Action

Epistemic sufficiency concerns the amount and quality of knowledge required for a specific practical commitment. The standard is action-relative. A low-cost reversible

probe can be supportable under a thinner evidential basis than an irreversible intervention affecting many subjects across a long horizon. A familiar intervention in a stable setting can require different knowledge from an unfamiliar intervention near a possible threshold. A narrow administrative adjustment can depend on different evidence from a structural transformation that changes institutions, capabilities, or future action spaces. Sufficiency therefore cannot be defined independently of what is to be done.

Definition 10.161 (Epistemic sufficiency for action). *Epistemic sufficiency for action* is the condition in which the available warranted knowledge, together with an explicit account of its limits, is adequate to support a specified practical commitment at its proposed scale, duration, reversibility, distribution, and consequence profile.

The definition treats sufficiency as relational rather than absolute. The same body of knowledge can be sufficient for one commitment and insufficient for another. Evidence supporting a small trial can fail to justify population-wide implementation. Knowledge adequate for a temporary protective measure can be inadequate for permanent institutional closure. Evidence sufficient to choose among several reversible procedures can be insufficient to justify foreclosing alternatives whose loss would be difficult to repair.

Epistemic sufficiency also depends on the kinds of uncertainty that remain. A precisely estimated average effect can coexist with poor knowledge of distribution across affected positions. A well-understood immediate mechanism can coexist with uncertainty about long-term institutional adaptation. Strong quantitative evidence can coexist with unresolved category problems. Rich local understanding can coexist with uncertain transfer to another setting. A decision standard focused only on aggregate confidence can therefore miss the dimension of ignorance most relevant to consequence.

Practical sufficiency should also be distinguished from theoretical completeness. An intervention can be supportable before the entire generative structure is known when the relevant mechanism is sufficiently bounded, the downside is limited, monitoring is strong, and revision remains available. Conversely, theoretical sophistication can fail to produce practical sufficiency if the model omits implementation capacity, affected subjects, institutional conditions, or distributional consequences.

Definition 10.162 (Decision-relevant knowledge). *Decision-relevant knowledge* is warranted knowledge whose content bears materially on the admissibility, selection, timing, scale, sequencing, monitoring, or revision of a contemplated practical commitment.

This concept helps avoid an accumulation model of evidence. More information does not always improve decision quality. Some additional information is redundant, weakly connected to the decision, or too slow to matter. Other information can be decisive because it changes whether a vulnerable group is exposed, whether an action is reversible, whether a critical constraint has been misidentified, or whether a supposedly available option is actually unreachable. Inquiry should therefore be oriented partly by the practical consequences of being wrong about particular features of the situation.

Proposition 10.163 (Action-relative epistemic sufficiency). *Epistemic sufficiency*

should be assessed relative to the contemplated commitment, the consequences of error, the affected positions, the available alternatives, and the capacity for detection and revision rather than by a context-independent quantity of evidence.

Proposition 10.163 establishes a bridge between epistemology and practical judgment without reducing one to the other. Evidence remains subject to epistemic standards, yet the amount and type of knowledge required for action depend on the practical structure within which that evidence will be used.

10.8.2 Residual Uncertainty

A decision supported by sufficient knowledge can still contain material uncertainty. Residual uncertainty is the uncertainty that remains after the inquiry judged feasible and proportionate for the current decision stage has been conducted. Its presence is normal in application-dominant praxis. The practical requirement is to keep it visible enough that commitment can be shaped around it.

Definition 10.164 (Residual practical uncertainty). *Residual practical uncertainty* is materially relevant uncertainty that remains after the current cycle of inquiry, interpretation, participation, and model assessment has reached its provisional epistemic stopping point for a specified decision.

Residual uncertainty can concern parameters, mechanisms, boundaries, categories, implementation, institutional response, behavioral adaptation, future conditions, affected positions, value interpretation, interaction among interventions, or the possibility of previously unrecognized consequences. These forms should not be treated as interchangeable. A narrow parameter range can sometimes be handled through sensitivity analysis. Uncertainty about who is affected can require broader participation. Uncertainty about the problem boundary can require reframing. Uncertainty about system response can favor smaller or more reversible interventions. Uncertainty about normative interpretation can require deliberation rather than more measurement.

The distribution of uncertainty also matters. Decision-makers can experience low uncertainty about organizational feasibility while affected communities experience high uncertainty about safety, access, or long-term consequences. Technical experts can understand a mechanism while lacking knowledge of local implementation relations. Local actors can understand situated effects while lacking visibility into system-wide constraints. A residual uncertainty profile should therefore record whose uncertainty is represented and whose knowledge has been excluded or remains difficult to access.

Definition 10.165 (Residual uncertainty profile). A *residual uncertainty profile* is a traceable account of the materially relevant uncertainties remaining at a decision point, including their object, source, affected positions, temporal horizon, practical significance, detectability, and possible means of reduction or containment.

Some residual uncertainty can be reduced before action. Some can be learned only through action. Some cannot be substantially reduced within the relevant horizon. The third case is especially important because a demand for further evidence can become performative delay without changing the practical uncertainty that matters. A

mature decision architecture therefore distinguishes reducible uncertainty from uncertainty that must be governed through precaution, robustness, option preservation, monitoring, or explicit acceptance.

Unknown unknowns create a further limit. A residual uncertainty profile can document recognized uncertainty; it cannot enumerate what has not entered the field of recognition. This limitation strengthens the importance of heterogeneity in participation, anomaly detection, reversible design, and reopening conditions. These practices do not reveal every unknown in advance. They can increase the capacity to detect and respond when unexpected manifestations emerge.

Proposition 10.166 (Visibility of residual uncertainty). *Where residual uncertainty remains materially relevant to a consequential decision, its object, distribution, and practical treatment should remain visible in the decision record rather than being absorbed into a single statement of confidence.*

The proposition protects uncertainty from disappearing at the moment of commitment. A decision can be warranted and still carry unresolved epistemic obligations.

10.8.3 Decision Thresholds

A decision threshold specifies how strong the practical warrant must become before a contemplated commitment is treated as admissible. Threshold language can suggest a single numerical boundary. In application-dominant praxis, many thresholds are composite. They can include minimum evidential support, acceptable uncertainty, procedural conditions, participation requirements, capability readiness, reversibility conditions, and protections for affected positions. Their structure should match the decision rather than imitate a universal decision rule.

Definition 10.167 (Decision threshold). A *decision threshold* is a provisionally specified set of epistemic, practical, normative, institutional, and protective conditions that a contemplated commitment should satisfy before it becomes admissible for action at a given scale and horizon.

Thresholds can be asymmetric. The support required to initiate a reversible pilot can differ from the support required to make the pilot permanent. The support required to pause an intervention after credible evidence of serious harm can differ from the support required to prove the entire causal pathway. The support required to preserve an option can differ from the support required to foreclose it. Such asymmetries can be justified when the consequences of false acceptance and false rejection differ materially.

The threshold should also respond to distribution. A decision whose benefits accrue broadly while severe downside is concentrated on a small group raises a different threshold problem from one whose uncertainty and benefits are similarly distributed. The practical importance of a consequence does not disappear because it affects a minority position. Threshold design should therefore preserve visibility of concentrated burdens and limited exit possibilities.

Thresholds can change through the decision process. New evidence can raise concern. A newly available reversible option can lower the warrant required for learning-oriented action. Deteriorating conditions can increase the cost of waiting.

Improved monitoring can make a staged commitment more supportable. A loss of rollback capacity can make the same intervention require stronger prior support. Threshold revision is therefore part of practical reasoning rather than evidence of inconsistency.

Definition 10.168 (Threshold provenance). *Threshold provenance* is the traceable record of why a decision threshold was selected, which consequences and affected positions informed it, which uncertainties it was designed to govern, and what later conditions justify its revision.

A threshold without provenance can appear technical while embedding unexamined value judgments. Threshold provenance makes visible whether a standard was shaped primarily by administrative convenience, safety, rights protection, cost, urgency, professional convention, political authority, or another practical consideration.

Proposition 10.169 (Consequence-sensitive thresholds). *Decision thresholds should vary with the consequence structure of commitment, including scale, reversibility, burden distribution, option foreclosure, urgency, monitoring capacity, and the consequences of both action and non-commitment.*

This proposition does not determine a universal direction of adjustment. High urgency can support earlier protective action while high irreversibility can support stronger prior scrutiny. The practical task is to articulate how these conditions jointly shape the threshold in the specific situation.

10.8.4 Precaution

Precaution governs action when uncertainty remains material and some plausible consequences would be difficult to tolerate, reverse, or repair. It is often misunderstood as a general preference for inaction. Within the present framework, precaution is better understood as a design orientation toward limiting exposure while preserving the capacity to learn and revise.

Definition 10.170 (Precautionary practical orientation). *A precautionary practical orientation* is an approach to consequential action that adjusts commitment, exposure, monitoring, reversibility, participation, or option preservation in response to materially plausible adverse consequences whose probability, pathway, or magnitude remains incompletely known.

Precaution can support several forms of praxis. An intervention can begin at smaller scale. A commitment can be time-limited. A protective constraint can be imposed before wider deployment. A modular design can isolate failure. Monitoring can be intensified. Independent review can be added. A vulnerable group can be excluded from early exposure. A fallback capacity can be retained. Additional alternatives can be preserved while evidence develops. These responses differ from blanket refusal because they seek to govern uncertainty through the structure of action.

Precaution also has costs and distributions. Delaying a beneficial intervention can prolong harm. Restricting an option can protect one group while limiting another's agency. Intensive monitoring can impose surveillance burdens. Maintaining redun-

dant systems can consume scarce capacity. Small trials can shift experimentation onto subjects with less power to refuse. Precaution therefore requires the same relational and normative analysis as other practical orientations.

A further distinction concerns plausibility. Precaution should not be triggered by every imaginable scenario equally. Application-dominant praxis needs a disciplined account of why a consequence is practically plausible, which relations could generate it, and what signs would make it more or less concerning. Where mechanisms are poorly understood, structural analogy, historical cases, early warning manifestations, or vulnerability analysis can still matter, but their epistemic status should remain explicit.

Definition 10.171 (Precautionary burden profile). *A precautionary burden profile is an account of the protections created by a precautionary measure together with the costs, restrictions, exposures, delays, and distributive effects that the measure imposes on differently situated actors.*

Proposition 10.172 (Precaution through action design). *Under material uncertainty, precaution can be expressed through the design of commitment—including scale, sequencing, reversibility, monitoring, protective limits, and option preservation—rather than through a binary choice between unrestricted action and complete inaction.*

This proposition prepares the later treatment of action and non-action in Section 273 and risk in Section 274. The present concern is narrower: precaution changes what counts as a supportable decision under incomplete knowledge.

10.8.5 Urgency

Section 10.5 introduced urgency as a judgment about how timing affects consequence, option space, and reversibility. The present subsection examines its epistemic effect on decision. Urgency compresses the time available for inquiry, consultation, option development, and validation. It can therefore make the search for additional certainty costly. At the same time, rapid action under compressed conditions can increase the chance that consequential assumptions remain unexamined. Urgency changes the decision architecture; it does not make epistemic requirements disappear.

Definition 10.173 (Decision urgency profile). *A decision urgency profile is a traceable account of how delay over relevant time intervals changes expected harm, opportunity, reversibility, option availability, information value, coordination conditions, and the feasibility of alternative responses.*

Urgency can be heterogeneous across components of the same problem. Immediate stabilization can be urgent while structural redesign can remain deliberative. Temporary protection can be urgent while permanent institutional change requires slower participation. A crisis can justify rapid procurement while leaving long-term governance arrangements open. Decomposing urgency prevents a compressed timetable in one component from spreading automatically across the entire practical programme.

Urgency can also change the value of information. When a condition is deteriorating quickly, information arriving after the relevant window can have little practical

value. When an early action can preserve time or prevent irreversible loss, the best epistemic strategy can include action that stabilizes the situation while further inquiry continues. Conversely, where a rapid intervention itself creates long-term lock-in, urgency in the presenting problem can increase the importance of distinguishing temporary stabilization from permanent commitment.

Proposition 10.174 (Temporal decomposition of urgent decisions). *Where urgency affects different components of a practical problem unevenly, decision architecture should separate immediate protective or stabilizing commitments from longer-horizon commitments whose evidential, participatory, and revisability requirements remain distinct.*

This proposition preserves both responsiveness and epistemic discipline. It allows praxis to act quickly where timing materially matters while resisting the conversion of emergency timing into a general suspension of review.

10.8.6 Delay

Delay can function as an epistemic resource when additional time permits meaningful learning, consultation, capability development, option generation, or reduction of uncertainty. It can also become a consequential intervention when waiting allows harm to continue, options to disappear, dependencies to deepen, or future action to become more difficult. Decision analysis under incomplete knowledge should therefore treat delay as a temporally structured practical choice rather than as the absence of choice.

The present subsection focuses on the epistemic function of delay. Section 273 will examine delay more broadly within the architecture of action and non-action. Here the question is whether waiting materially improves the warrant or design of a later decision relative to the consequences created during the waiting period.

Definition 10.175 (Epistemic value of delay). The *epistemic value of delay* is the practical significance of information, interpretation, participation, option development, or capability improvement that can reasonably be obtained through waiting before commitment and that could materially change the admissibility, selection, design, or monitoring of later action.

Not every opportunity for more research creates meaningful epistemic value. Additional studies can repeat known patterns without affecting the decision. Consultation can be prolonged without changing the relevant conflict. Data can become more precise around a quantity whose practical significance remains secondary. Delay is epistemically valuable when the expected learning bears on a live decision margin.

The cost of delay is similarly multidimensional. It can include continuing harm, missed opportunity, declining trust, capability erosion, expiration of legal or seasonal windows, increasing cost, option foreclosure, and transfer of burden to actors with less ability to wait. The ability to delay is itself unequally distributed. An organization with reserves can wait for better information while households, patients, workers, ecosystems, or local institutions absorb the consequences of postponement.

Definition 10.176 (Decision-delay profile). A *decision-delay profile* is an account of the expected learning obtainable through waiting, the consequences produced dur-

ing that interval, the distribution of those consequences, the options preserved or lost, and the conditions under which delay should end.

Delay can be structured rather than open-ended. A decision can be deferred for a specified period while targeted evidence is collected. A trigger can end delay if a condition worsens. A temporary measure can protect affected subjects while a more consequential decision remains open. A latent option can be activated during the waiting period. These designs convert time into an active component of praxis.

Proposition 10.177 (Qualified epistemic delay). *Delay is epistemically supportable when the decision-relevant learning or option development it is expected to generate materially improves practical orientation and when the consequences of waiting remain acceptable relative to available alternatives.*

The proposition avoids treating information acquisition as automatically preferable. Inquiry competes with time, capacity, and consequence. Its practical value depends on whether it can change what should be done.

10.8.7 Provisional Decision

Because knowledge remains incomplete and situations continue to change, many decisions in application-dominant praxis should be understood as provisional. Provisionality does not imply indecision. A provisional decision can authorize real expenditure, create binding responsibilities, alter institutions, expose actors to consequence, and close some options. Its provisional character concerns the retained possibility and obligation of reconsideration under specified conditions.

Definition 10.178 (Provisional practical decision). *A provisional practical decision is a consequential commitment whose scope, duration, assumptions, uncertainty, monitoring requirements, and revision conditions are explicitly specified so that the commitment can be reassessed as the practical field changes.*

A strong provisional decision should state what is authorized, for whom, by whom, at what scale, for what period, toward which ends, under which assumptions, and with what monitoring and reopening conditions. It should also distinguish elements that are intentionally temporary from elements that will create durable change. This distinction matters because a nominally temporary action can generate infrastructure, expectations, dependencies, legal precedent, or sunk costs that make later reversal difficult.

Provisionality can be implemented through expiration dates, staged authorization, pilot status, review gates, conditional continuation, modular deployment, bounded geographic scope, or explicit performance and harm triggers. The specific form depends on the action. The underlying principle is that uncertainty should be reflected in the architecture of commitment rather than acknowledged only in accompanying prose.

Definition 10.179 (Provisional decision record). *A provisional decision record is a traceable account of the decision's evidential basis, practical rationale, threshold, residual uncertainties, affected positions, authorized scope, expected consequences, monitoring plan, revision triggers, responsible authority, and conditions for continuation, modification, suspension, or closure.*

The record preserves provenance across time. Later actors can determine whether a decision was reasonable given what was known then, whether assumptions changed, whether warning signals were ignored, and whether revision obligations were fulfilled. This reduces the temptation to evaluate earlier decisions solely through outcomes known only retrospectively.

Proposition 10.180 (Structured provisionality). *Where materially relevant uncertainty remains, provisionality is practically meaningful when it is expressed through the scope, duration, monitoring, authority, and revision structure of the commitment rather than through a general statement that the decision may later change.*

Structured provisionality turns revisability into institutional and practical capacity. It also creates the bridge from decision to monitoring and learning that later sections of Part IV will develop in greater methodological detail.

10.8.8 Robustness

Robustness concerns the stability of practical support when plausible assumptions, models, observations, future conditions, or value interpretations vary. A decision can be highly attractive under one precise forecast and fragile under small changes. Another can perform acceptably across a wider range of plausible conditions. Under incomplete knowledge, the second type of option can deserve attention even when it is not locally optimal under a favored model.

Definition 10.181 (Practical robustness). *Practical robustness* is the degree to which a decision, action pathway, or protective arrangement remains sufficiently supportable across materially plausible variation in relevant assumptions, models, observations, implementation conditions, value interpretations, and future states.

Robustness differs from certainty. An option can be robust precisely because uncertainty remains. It also differs from invariance. The same action need not produce identical outcomes across conditions. Practical robustness concerns whether the option remains within an acceptable region of performance, harm, legitimacy, and revisability despite variation.

Different dimensions of robustness can conflict. An option can be technically robust but institutionally fragile. It can maintain aggregate performance while distributing failure onto the same vulnerable group in every scenario. It can be resilient to parameter variation while depending on a contested value assumption. Robustness analysis should therefore preserve the dimension across which stability is being claimed.

Definition 10.182 (Robustness profile). A *robustness profile* is an account of the range of materially plausible epistemic, institutional, relational, temporal, and normative conditions across which a practical commitment remains acceptable, together with the conditions under which its support deteriorates or fails.

Robustness can be increased through diversification, redundancy, modularity, contingency planning, staged commitment, adaptive pathways, fallback options, distributed capability, and preserved exit. Each strategy has costs. Redundancy consumes resources; modularity can reduce integration; diversification can increase coordination burden; fallback systems can become obsolete. Robustness should

therefore be treated as a practical property to be designed and evaluated rather than an unconditional maximand.

Proposition 10.183 (Robust support under incomplete knowledge). *Where several materially plausible representations of the practical situation remain unresolved, a decision gains practical support when its acceptability depends less heavily on assumptions whose failure would produce serious and difficult-to-repair consequences.*

The proposition links robustness to epistemic humility. It does not eliminate the need to choose among models or interpretations. It reduces dependence on unjustified precision where the practical cost of such dependence would be high.

10.8.9 Revisability

Revisability completes the architecture of decision under incomplete knowledge. A decision made under uncertainty enters a field that will generate new manifestations, evidence, reactions, capabilities, and consequences. Revisability concerns whether the practical system can recognize these changes and alter its commitments accordingly. It is therefore both an epistemic and institutional capacity.

Definition 10.184 (Decision revisability). *Decision revisability* is the practical capacity to reconsider, modify, suspend, redirect, scale, or withdraw a prior commitment in response to materially relevant changes in knowledge, consequences, values, affected positions, capabilities, institutional conditions, or the action space.

Decision revisability should be distinguished from action reversibility. A decision can remain open to revision even when some consequences of the action cannot be undone. An institution can stop an intervention after irreversible harm has already occurred. It can change policy after a habitat has been lost, a relationship damaged, or a dependency created. Revisability is therefore necessary under incomplete knowledge but cannot substitute for caution where actions are materially irreversible. Section 274 will develop that distinction further.

Revision requires detection. Monitoring must be capable of observing the manifestations that matter. It requires authority. Someone must possess the legitimate capacity to reopen or change the decision. It requires memory. The original assumptions, evidence, and reasons must remain accessible. It requires procedural pathways. A concern must be able to reach the actors capable of responding. It also requires practical slack. If all resources, institutions, and expectations have been locked into one pathway, formal authority to revise can have little effective meaning.

Definition 10.185 (Decision revision trigger). A *decision revision trigger* is a pre-specified or subsequently recognized change in evidence, consequence, value, affected position, capability, institutional condition, or practical possibility that is sufficient to require reconsideration of an existing commitment.

Triggers can be quantitative or qualitative. A monitored indicator can cross a threshold. A previously excluded affected group can become visible. A new causal mechanism can be identified. An alternative can become available. An implementation capacity can fail. A side effect can emerge. A value conflict can intensify. A legal or institutional condition can change. The relevant trigger is any change that materially alters the practical warrant on which the decision rests.

Revisability is vulnerable to path dependence. Organizations can defend prior commitments because of sunk cost, identity, reputational investment, legal entrenchment, bureaucratic incentives, contractual lock-in, or fear of admitting error. A technically revisable decision can therefore become practically sticky. Designing revisability requires attention to these relations before commitment deepens them.

Definition 10.186 (Revision capacity). *Revision capacity* is the distributed set of epistemic, institutional, material, relational, and procedural resources that enables a practical system to detect decision-relevant change and translate that recognition into an effective alteration of prior commitment.

Proposition 10.187 (Revisability as a condition of warranted provisionality). *When a decision is justified partly by its provisional character, the practical warrant for that decision depends on the existence of credible revision capacity proportionate to the consequences and uncertainties that remain.*

Proposition 10.187 prevents provisionality from becoming rhetorical. An organization cannot rely on future correction if it lacks the means, authority, monitoring, or institutional willingness to revise.

The present section has developed decision under incomplete knowledge as a disciplined relation among epistemic sufficiency, residual uncertainty, thresholds, precaution, urgency, delay, provisional commitment, robustness, and revisability. Its central claim is that incomplete knowledge changes the architecture of decision rather than suspending the possibility of warranted action. Knowledge can be sufficient without being complete; uncertainty can remain visible without preventing commitment; thresholds can respond to consequence; precaution can be designed into the form of action; urgency and delay can be temporally decomposed; decisions can be genuinely consequential while remaining provisional; robustness can reduce dependence on fragile assumptions; and revision capacity can keep later evidence practically effective. Section 273 now turns from the warrant for commitment to the forms that commitment can take, including action, non-action, waiting, delay, refusal, withdrawal, exit, and the generative consequences of inaction itself.

10.9 Action and Non-Action

Section 10.8 developed the conditions under which a provisional decision can become practically supportable while knowledge remains incomplete. The present section examines the forms through which such a decision can enter, remain outside, or alter an ongoing relational field. Its role is to distinguish action, non-action, waiting, delay, refusal, withdrawal, and exit as practically different modes of response rather than compressing them into a binary distinction between intervention and passivity. The objective is to clarify how each mode changes relations, capacities, temporal horizons, burdens, and future possibilities, and to make visible the opportunity costs and generative consequences that arise when a course of action is pursued, deferred, withheld, discontinued, or left unrealized. The discussion is conceptual and relational. Practical response is treated as historically situated participation in a changing field whose consequences can arise through commission, omission, temporal positioning, selective participation, and alteration of the possibilities available to others.

The distinction between action and non-action becomes difficult when a practical situation is dynamic. A decision-maker who declines a proposed intervention still occupies a position within relations that continue to develop. Existing institutions continue to allocate authority and resources. Material processes continue to unfold. Other actors adapt. Capacities can accumulate or erode. Opportunities can appear or close. A choice to wait can create information while also transferring the cost of waiting onto affected positions. A refusal can protect an actor from participation while changing the feasibility of collective action. Withdrawal can terminate one commitment while leaving dependencies created by that commitment in place. Exit can reduce direct exposure while redistributing burdens to those who remain. Practical analysis therefore requires a vocabulary that follows the relational effects of different response forms through time.

Definition 10.188 (Practical response form). A *practical response form* is a situated mode through which an actor, organization, or coordinated set of actors alters, preserves, defers, withholds, reduces, or terminates participation in a practical relation, action pathway, or institutional configuration.

Definition 10.188 places action and non-action within a common analytical field. The relevant unit is the practical relation between an actor and an evolving situation. Some response forms introduce new operations into that relation. Others withhold participation, preserve an existing configuration, postpone commitment, or alter the actor's position relative to the configuration. Their consequences depend on timing, authority, affected positions, available alternatives, and the generative dynamics of the field.

Table 10.9 summarizes the main response forms developed in this section. The entries overlap in practice. Waiting can contain preparatory action. Delay can result from institutional incapacity rather than deliberate choice. Refusal can lead to withdrawal or exit. Exit can itself require substantial action. The analytical value of the distinctions lies in identifying the principal practical operation and its characteristic consequence structure rather than assigning each event to a single permanent category.

10.9.1 Action as Relational Intervention

Action becomes analytically significant in Generative Relational Theory when it is understood as intervention in an already structured field. An actor rarely acts on an empty background. The intervention enters relations, institutions, material arrangements, interpretations, expectations, histories, and capability distributions that condition both what can be attempted and what the attempt can generate. The same nominal action can therefore produce different consequences across situations because the receiving relational configuration differs.

Definition 10.189 (Relational intervention). A *relational intervention* is a practically organized operation that changes, sustains, activates, suppresses, redirects, or recombines one or more relations, conditions, capabilities, institutions, material arrangements, or action pathways within a practical situation.

The definition includes interventions whose immediate purpose is preservation. Maintaining a protective institution, continuing a care relation, renewing an agree-

Table 10.9: Practical response forms and their characteristic relational effects.

Response form	Primary practical operation	Characteristic relational question	Characteristic consequence concern
Action	Introduces or sustains an intervention in the field	Which relations, capacities, conditions, or pathways are changed through participation?	Direct and indirect effects, adaptation, dependency, path formation, and future option change
Non-action	Withholds a contemplated intervention or commitment	What continues, changes, or becomes possible when the contemplated intervention is absent?	Persistence, drift, accumulation, omission effects, and distributed exposure
Waiting	Maintains a temporally bounded open position	What can be learned, prepared, coordinated, or preserved during the waiting interval?	Cost of waiting, option preservation, unequal burden, and horizon change
Delay	Shifts an otherwise feasible response to a later time	What produces the temporal displacement and how does timing alter practical consequences?	Escalation, lost windows, improved readiness, and redistributed timing costs
Refusal	Withholds consent, compliance, participation, or contribution	Which relation is declined and what practical standing supports the refusal?	Protection, contestation, blocked coordination, burden transfer, and institutional response
Withdrawal	Reduces or terminates participation after prior involvement	Which prior commitments, dependencies, and responsibilities remain after participation recedes?	Transition costs, stranded obligations, capability gaps, and residual effects
Exit	Leaves or terminates membership in a practical arrangement	Who can leave, on what terms, and what happens to those who remain?	Exposure reduction, burden redistribution, lock-in, and loss of voice or capacity
Opportunity cost	Records foregone reachable alternatives	Which practical possibilities become unavailable because resources, attention, time, or commitment are allocated elsewhere?	Lost learning, deferred capability, foreclosed pathways, and displaced benefits
Inaction consequences	Tracks change generated without the contemplated intervention	Which relations and trajectories develop through continuity, omission, or field dynamics?	Entrenchment, adaptation, erosion, autonomous recovery, and future action-space change

ment, or sustaining an infrastructure can require active intervention even when the desired outcome is continuity. Action therefore cannot be identified solely with visible novelty. Some forms of action preserve a valued relation against forces that would otherwise transform or erode it.

The relational view also broadens the consequence field. An intervention has a

target, yet its effects can propagate through relations that are not themselves the declared target. A training programme can change capability, status, network access, expectations, and later bargaining relations. A technical system can reorganize workflows and authority. A legal or administrative intervention can alter classification, visibility, and access. A physical intervention can change material conditions together with the social coordination built around them. These examples differ substantively, while sharing the property that action enters a field and participates in its later organization.

Definition 10.190 (Intervention footprint). An *intervention footprint* is the provisional set of direct, mediated, distributed, and temporally extended relations through which a practical action can materially affect actors, conditions, capabilities, institutions, interpretations, or future possibilities.

An intervention footprint is a research and governance object rather than a claim of complete causal knowledge. It identifies the relations that merit practical attention given present evidence and stakes. The footprint can expand when new affected positions become visible or contract when an initially suspected pathway lacks support. Its value lies in discouraging a narrow identification of consequence with the action's immediate target.

Action also possesses a temporal structure. A discrete decision can inaugurate a pathway that persists through maintenance requirements, expectations, sunk investments, institutional commitments, and learning effects. Conversely, a long programme can consist of many revisable episodes rather than one indivisible commitment. The unit of action should therefore be chosen relative to the practical question being studied.

Definition 10.191 (Action pathway). An *action pathway* is a temporally ordered sequence of interventions, responses, adaptations, reviews, and possible revisions through which a practical commitment develops within a changing relational field.

The pathway concept connects action to the revisability developed in Section 10.8. A provisional decision becomes practically meaningful when its pathway contains monitoring, authority, and feasible points of reconsideration. The same concept also clarifies cumulative consequences. A series of individually modest actions can generate substantial lock-in, dependence, legitimacy, or capability change through accumulation.

Action is therefore both event and participation in a trajectory. Its practical evaluation concerns more than whether the immediate operation succeeds. It also concerns the relations through which success is produced, the burdens required to sustain it, the capabilities it leaves behind, and the future action space it helps create or foreclose.

Proposition 10.192 (Relational consequence of action). *The practical consequence of an intervention includes materially relevant changes to the relational field through which later action, interpretation, capability, and consequence become possible, in addition to the intervention's immediate target effect.*

Proposition 10.192 supplies the baseline against which the remaining response forms can be understood. Non-action, waiting, refusal, withdrawal, and exit differ in operation, yet each can also alter the later relational field.

10.9.2 Non-Action as Practical Choice

Non-action requires careful treatment because several distinct conditions can appear externally similar. An actor can deliberately withhold a contemplated intervention. An actor can lack the capacity to act. An institution can prevent action. A problem can remain unrecognized. Responsibility can be fragmented so that no actor reaches commitment. A decision can be deferred through procedure without anyone explicitly selecting inaction. These conditions can all result in the absence of a contemplated intervention, while differing substantially in agency, justification, and responsibility.

Definition 10.193 (Practical non-action). *Practical non-action* is the situated absence or withholding of a contemplated intervention during a consequential interval in which the practical field continues to develop.

The definition is intentionally descriptive. It does not presume that the absence is voluntary, justified, negligent, protective, or avoidable. Those judgments require additional information about agency, capacity, authority, knowledge, alternatives, and consequence.

A first distinction therefore concerns deliberate forbearance and constrained non-action. Deliberate forbearance occurs when an actor with sufficient practical capacity and authority chooses to withhold an intervention. Constrained non-action occurs when relevant action is unavailable, blocked, unaffordable, unauthorized, unrecognized, or otherwise outside the actor's effective action space. The distinction matters because the same outward absence can carry different responsibility structures.

Definition 10.194 (Forbearance). *Forbearance* is a deliberate and practically feasible withholding of intervention, undertaken because restraint is judged preferable to one or more presently available actions.

Forbearance can be highly active in its conditions. It may require resisting pressure to intervene, preserving resources, maintaining observation, communicating restraint, protecting boundaries, or sustaining readiness. A decision to avoid unnecessary escalation can involve extensive coordination even though the focal intervention is withheld. The practical form is defined by what is withheld relative to the decision problem, not by the total absence of activity.

Non-action also interacts with the existing baseline. A practical situation rarely remains fixed while an intervention is withheld. Institutional routines continue. Ecological and material processes continue. Relationships strengthen or decay. Markets, organizations, communities, or technical systems adapt. A baseline can therefore be dynamic, and preserving the current intervention level can still permit substantial transformation.

Definition 10.195 (Dynamic non-action baseline). A *dynamic non-action baseline* is a representation of the materially relevant processes expected to continue, accumulate, adapt, recover, or deteriorate during the absence of a contemplated intervention.

The dynamic baseline guards against a common practical simplification in which action is associated with change and non-action with stasis. Sometimes non-action permits recovery. Sometimes it permits harm to compound. Sometimes it allows actors to self-organize. Sometimes it entrenches an incumbent relation. The baseline must therefore be reconstructed rather than assumed.

Agency also affects whether non-action can be described as choice. Where an actor lacks relevant capability, information, authority, or practical access, the absence of intervention is better analyzed first as a feature of the action space. Where an actor could act yet delegates, ignores, or withholds response, the practical analysis shifts toward judgment and responsibility. The boundary can remain uncertain where institutional agency is distributed across many positions.

Proposition 10.196 (Agency-sensitive interpretation of non-action). *The practical interpretation of non-action depends on the relation among effective capacity, authority, knowledge, feasible alternatives, and the temporal consequences of withholding intervention.*

Proposition 10.196 avoids assigning the same meaning to inaction produced by incapacity and inaction produced by deliberate restraint. It also prepares the later analysis of responsibility, where causal contribution, practical capacity, authority, and foreseeability can diverge.

10.9.3 Waiting

Waiting is a temporally structured response in which commitment remains open while the practical situation continues to evolve. Section 10.8 examined delay primarily as an epistemic resource. The present subsection treats waiting more broadly as a form of practical organization. Waiting can preserve options, allow observation, create time for participation, permit coordination, support recovery, or synchronize action with a more favorable moment. It can also impose burdens on those who remain exposed during the interval.

Definition 10.197 (Practical waiting). *Practical waiting* is a temporally bounded mode of praxis in which one or more commitments remain open while actors observe, prepare, coordinate, recover, negotiate, or preserve options within an evolving practical situation.

Practical waiting differs from simple inactivity because it contains an orientation toward a future decision, condition, or transition. The waiting period can be actively structured. Actors can gather evidence, maintain capabilities, consult affected positions, negotiate authority, prepare contingencies, build infrastructure, or define trigger conditions. The quality of waiting therefore depends partly on what the interval is used to generate.

Definition 10.198 (Waiting horizon). A *waiting horizon* is the temporal interval over which a practical commitment remains intentionally open, together with the conditions expected to justify continuation, termination, acceleration, or conversion of waiting into another response form.

A waiting horizon prevents open-ended postponement from being disguised as temporary restraint. It can be defined by clock time, event occurrence, threshold crossing, completion of inquiry, institutional readiness, seasonal conditions, or changes in risk. The horizon can itself be revised when the practical situation changes, provided that the reason for revision remains explicit.

Waiting is often distributed asymmetrically. One actor may experience waiting as preserved flexibility while another experiences the same interval as continued

exposure, uncertainty, deprivation, or inability to plan. An organization can defer a decision at low institutional cost while individuals bear accumulating consequences. A powerful actor can afford strategic patience that a vulnerable actor cannot. The practical evaluation of waiting therefore requires a burden profile.

Definition 10.199 (Waiting burden profile). A *waiting burden profile* is an account of how the costs, risks, uncertainties, opportunities, and capability effects of a waiting interval are distributed across materially affected positions.

The burden profile can reveal why the same amount of time has different practical meaning across positions. It also connects waiting to justice and participation. Actors bearing the greatest cost of delay can have strong reasons to contest a decision-making timetable established by actors whose exposure is lower.

Waiting can be valuable because it preserves reversibility and permits learning. It can also reduce future capacity by allowing expertise to disperse, infrastructure to decay, trust to erode, or political windows to close. Evaluation should therefore compare what the interval is expected to generate with what it is expected to consume or expose.

Proposition 10.200 (Productive waiting). *Waiting gains practical support when the interval preserves or generates decision-relevant capability, knowledge, coordination, legitimacy, or optionality at a burden proportionate to the consequences of acting earlier.*

The proposition treats waiting as a designed practical interval. It provides no presumption that slower action is intrinsically more prudent. In some situations, the burden of waiting dominates its informational or coordinative value.

10.9.4 Delay

Delay concerns temporal displacement relative to an earlier feasible or expected response. It overlaps with waiting while carrying a different analytical emphasis. Waiting describes a mode of organized openness. Delay identifies the relation between a response and a prior temporal possibility. An actor can wait without a meaningful earlier opportunity to act; a response can also be delayed through congestion, institutional procedure, conflict, incapacity, strategic obstruction, or coordination failure without anyone having designed a waiting period.

Definition 10.201 (Practical delay). A *practical delay* is the displacement of a materially relevant action, decision, review, or transition from an earlier feasible or expected time to a later time within a changing practical situation.

The definition makes the reference point explicit. Calling something delayed presupposes a relation to an earlier feasible or normatively relevant time. That reference point can be contested. Actors may disagree about when evidence became sufficient, when authority existed, when consequences became foreseeable, or when coordination became practically possible. Delay analysis should therefore state the temporal benchmark rather than treating lateness as self-evident.

Delay can arise from several mechanisms. Epistemic delay seeks additional knowledge. Procedural delay follows required review, consultation, or authorization. Capability delay reflects missing resources, expertise, infrastructure, or coordination.

Conflict-generated delay arises when actors contest the problem, end, authority, or action. Strategic delay occurs when an actor benefits from postponement. Systemic delay can emerge from distributed processes in which no single actor controls the overall timetable.

Definition 10.202 (Delay mechanism). A *delay mechanism* is the relational process through which a practically relevant response is displaced from an earlier feasible or expected time.

Identifying the mechanism matters because different delays require different responses. More evidence can address epistemic delay while doing little about absent authority. Streamlined procedure can reduce administrative delay while undermining participation if procedural time performs a legitimacy function. Additional funding can improve capability while leaving strategic obstruction untouched. A generic demand for speed can therefore misdiagnose the relation producing delay.

The consequences of delay are also path-dependent. A short delay near a threshold can matter more than a long delay during a stable period. Postponement can allow a harmful process to compound or permit a temporary disturbance to resolve without intervention. It can preserve options or allow them to disappear. It can reduce implementation error or increase transition cost. Practical evaluation requires attention to the trajectory that develops during the displacement.

Definition 10.203 (Delay consequence profile). A *delay consequence profile* is an account of the materially relevant changes in exposure, capability, uncertainty, legitimacy, option availability, and future intervention conditions generated during a period of practical delay.

Delay therefore has both cause and consequence. The mechanism explains why the response moved in time; the consequence profile explains what the displacement generated. Keeping these analytically separate allows a delay to be understandable in origin while costly in effect, or institutionally burdensome in origin while beneficial in consequence.

10.9.5 Refusal

Refusal is a response form in which an actor explicitly or effectively withholds consent, compliance, participation, endorsement, information, labor, resources, or another contribution expected by a practical arrangement. It differs from general non-action because the withheld relation is more determinate. Refusal responds to an invitation, demand, requirement, norm, institutional role, or proposed course of action and thereby alters the relational conditions under which collective praxis can proceed.

Definition 10.204 (Practical refusal). A *practical refusal* is the withholding of a specified form of consent, compliance, participation, endorsement, or contribution from a practical relation or proposed course of action.

Refusal can perform several functions. It can protect an actor from unacceptable exposure. It can contest the legitimacy of an end or procedure. It can signal that a burden distribution is rejected. It can prevent an institution from treating silence as consent. It can also obstruct coordination needed to address a shared problem.

The practical meaning therefore depends on the relation refused, the standing of the refusing actor, the consequences for affected positions, and the alternatives available.

The possibility of refusal is itself unevenly distributed. Some actors can refuse without losing livelihood, status, safety, care, residence, access, or future opportunity. Others face substantial penalties for declining participation. Formal permission to refuse can therefore coexist with severe practical coercion. Analysis should distinguish the nominal right of refusal from the effective capacity to exercise it.

Definition 10.205 (Effective refusal capacity). *Effective refusal capacity* is the practical ability to withhold a specified form of participation or consent without facing consequences so severe that the nominal option becomes materially inaccessible.

Effective refusal capacity connects this subsection to the unequal action spaces developed in Section 10.7. It also prepares later analysis of power. The actor able to impose terms can sometimes present acceptance as voluntary even where refusal is practically unavailable.

Refusal can reshape collective action. One actor's refusal may protect a legitimate boundary while increasing the burdens borne by others. A refusal can induce renegotiation, redesign, substitution, or institutional learning. It can also trigger exclusion, retaliation, or replacement. The consequence field therefore extends beyond the refusing actor.

Definition 10.206 (Refusal consequence profile). A *refusal consequence profile* is an account of how withholding participation changes the positions, burdens, capacities, legitimacy, and available pathways of the refusing actor and other materially affected participants.

A refusal can therefore be both self-regarding and field-transforming. Its evaluation requires attention to the practical standing for refusal together with the consequences generated through the relation from which participation is withheld.

10.9.6 Withdrawal

Withdrawal occurs after participation has begun. An actor reduces, suspends, or terminates involvement in an ongoing relation, programme, institution, commitment, or action pathway. This temporal position distinguishes withdrawal from refusal at entry. Prior participation can create expectations, dependencies, responsibilities, sunk investments, knowledge asymmetries, and capabilities whose effects persist after involvement recedes.

Definition 10.207 (Practical withdrawal). A *practical withdrawal* is the partial or complete reduction of an actor's ongoing participation in an established practical relation, commitment, institution, or action pathway.

Withdrawal can be planned from the beginning. Temporary missions, pilot programmes, emergency measures, rotating responsibilities, and time-limited collaborations can include explicit withdrawal conditions. Such design can preserve autonomy and prevent indefinite dependency. Withdrawal can also be reactive, following failure, changed evidence, unacceptable consequences, exhausted capability, loss of legitimacy, or changed priorities.

The practical quality of withdrawal depends on transition. Sudden termination

can create capability gaps, stranded users, abandoned infrastructure, unresolved obligations, or abrupt redistribution of risk. Gradual withdrawal can allow handover, local capability development, alternative provision, documentation, repair, and renegotiation. Gradualism itself can impose continuing costs where the underlying relation has become harmful. Transition design must therefore remain consequence-sensitive.

Definition 10.208 (Withdrawal transition). A *withdrawal transition* is the organized process through which participation is reduced or terminated while residual responsibilities, dependencies, capabilities, material arrangements, and affected positions are identified and addressed.

Residual effects are especially important. Ending an intervention does not necessarily return the practical field to its prior state. Expectations may have changed. Local alternatives may have disappeared. Institutions may have reorganized around the intervention. Skills and dependencies may have developed. Trust can have been gained or lost. Material infrastructure can remain. Withdrawal should therefore be evaluated relative to the transformed field produced through prior participation.

Definition 10.209 (Residual commitment profile). A *residual commitment profile* is an account of the obligations, dependencies, repair requirements, knowledge-transfer needs, and continuing consequences that remain materially relevant after participation is reduced or terminated.

The profile does not imply indefinite obligation. Its purpose is to make transition consequences explicit. Some responsibilities can reasonably terminate with the relation; others can persist because prior action generated dependencies or harms that remain practically attributable to the withdrawing actor or institution.

Proposition 10.210 (Withdrawal from a transformed field). *Withdrawal should be evaluated in relation to the field produced through prior participation, including dependencies, capabilities, expectations, and risks that did not exist in the same form before the commitment began.*

Withdrawal analysis should therefore avoid treating the pre-intervention situation as an automatically recoverable baseline (Proposition 10.210). The same result connects withdrawal to irreversibility, which Section 274 develops in greater detail.

10.9.7 Exit

Exit is a more encompassing change of position in which an actor leaves, terminates membership in, or materially separates from a practical arrangement. Withdrawal can reduce participation while a relation remains. Exit changes the actor's membership, exposure, or attachment to the arrangement itself. The distinction is contextual: leaving a programme can be withdrawal from one perspective and exit from the programme from another. The analytical question concerns the degree to which the actor's relational position is terminated or relocated.

Definition 10.211 (Practical exit). A *practical exit* is the termination or substantial relocation of an actor's membership, attachment, or exposure within a practical arrangement such that the actor ceases to occupy a previously operative position in that arrangement.

Exit can protect actors from continuing harm, coercion, exploitation, or unacceptable dependency. It can also remove expertise, resources, participation, solidarity, or voice from a collective arrangement. Where exit is easy for powerful actors and difficult for vulnerable actors, the availability of exit can intensify asymmetry. Those able to leave can avoid the costs of deterioration while those with fewer alternatives remain exposed.

Definition 10.212 (Exit capacity). *Exit capacity* is the practical ability to leave or substantially relocate from a relation or institutional arrangement, considering material resources, legal and institutional permission, social dependence, information, timing, alternative positions, and the consequences of departure.

Exit capacity therefore belongs to the effective action space. A formal ability to resign, relocate, switch provider, leave a platform, terminate a contract, or cease participation can carry little practical meaning where viable alternatives are absent or departure costs are prohibitive.

Exit also creates a remainder. The arrangement continues for those who stay, often with altered resources, composition, legitimacy, and burden distribution. A skilled participant's exit can reduce collective capability. A major funder's exit can transfer financial pressure. The departure of highly mobile actors can weaken incentives to repair an institution that less mobile actors must continue to inhabit. Conversely, credible exit can discipline institutions by making persistent mistreatment costly.

Definition 10.213 (Exit remainder). An *exit remainder* is the set of materially relevant changes in burden, capability, legitimacy, resource distribution, and future possibility experienced by the practical arrangement and the actors who remain after an exit occurs.

The remainder makes exit relational. Its consequences cannot be assessed solely through the welfare or freedom of the departing actor. Practical evaluation also concerns what departure generates for the remaining field, especially where prior participation created dependencies or where exit opportunities are unequally distributed.

Exit can also interact with voice, reform, and repair. Leaving an arrangement can preserve personal agency while reducing the departing actor's future capacity to influence that arrangement. Remaining can preserve voice while maintaining exposure. The practical choice depends on stakes, alternatives, power, responsibility, and the possibility of collective transformation. Chapter 10 later returns to these relations through power, participation, and responsibility.

10.9.8 Opportunity Cost

Every practical commitment allocates scarce elements of the action space. Time, attention, organizational capacity, authority, material resources, political capital, trust, learning capacity, and opportunities for coordination can be directed toward one pathway while becoming less available for others. Opportunity cost provides a general language for these foregone possibilities. Within the present chapter, the concept is used beyond monetary calculation. Its function is to make displaced practical possibilities visible.

Definition 10.214 (Practical opportunity cost). A *practical opportunity cost* is the

value, capability, learning, protection, relation, or future possibility foregone because a scarce practical resource, temporal window, commitment, or institutional capacity is allocated to one pathway rather than another reachable alternative.

The concept depends on reachability. A hypothetical alternative outside the actor's effective action space should not automatically be treated as a meaningful opportunity cost. Section 10.7 distinguished nominal possibility from effective reachability; the same discipline applies here. Opportunity-cost analysis should compare practical alternatives that were materially available, plausibly activatable, or could have become available through a specified activation pathway.

Opportunity cost can be distributed. An institution can gain from concentrating resources on one objective while another population bears the consequence of an unattended problem. A government, firm, community, laboratory, household, or international organization can direct scarce attention toward one domain while reducing readiness elsewhere. The foregone value can therefore accrue to actors different from those who chose the allocation.

Definition 10.215 (Distributed opportunity-cost profile). A *distributed opportunity-cost profile* is an account of which materially affected positions bear the foregone benefits, capabilities, protections, learning, or future options associated with a practical commitment.

Opportunity cost can also be generative. Choosing one pathway can build specialized infrastructure, expertise, standards, identities, and expectations that make continuation easier while making alternatives increasingly expensive. The initial opportunity cost can therefore evolve into path dependence. Conversely, an action that builds general-purpose capability can reduce future opportunity costs by making several later pathways more reachable.

The temporal horizon matters. A pathway with high immediate opportunity cost can create capabilities that expand later action space. A low-cost immediate choice can consume a rare window and impose a large future cost. Practical comparison should therefore distinguish short-horizon displacement from long-horizon generative effects.

Definition 10.216 (Opportunity-cost horizon). An *opportunity-cost horizon* is the temporal range over which foregone practical possibilities and the capability effects of a commitment are assessed.

The concept also applies to non-action. Resources held in reserve, attention withheld, decisions deferred, and capacities left unused can preserve future flexibility while foregoing present benefits or protections. Opportunity cost therefore belongs to the analysis of action and non-action alike.

Proposition 10.217 (Opportunity cost as action-space transformation). *Where a practical commitment changes which alternatives remain reachable, its opportunity cost includes the transformation of the later action space in addition to the immediate value of foregone alternatives.*

Proposition 10.217 connects opportunity cost to the broader Generative Relational concern with future possibility. The cost of choosing a pathway can include options that disappear because the choice changes capabilities, institutions, expectations, or material conditions.

10.9.9 Generative Consequences of Inaction

The final subsection brings the preceding response forms into a generative analysis of inaction. The absence of a contemplated intervention does not create a causal vacuum. Existing relations continue to generate manifestations and constraints. Other actors respond to the absence. Institutions reproduce routines. Material systems develop. Knowledge changes. Capabilities accumulate or erode. The practical field can therefore move along a trajectory partly constituted by what is left undone.

Definition 10.218 (Generative consequence of inaction). A *generative consequence of inaction* is a materially relevant change in relations, capabilities, institutions, conditions, exposures, interpretations, or future action possibilities that develops during the absence or withholding of a contemplated intervention and is practically attributable, in part, to that response configuration.

The qualification “in part” is important. The field contains processes that would develop independently of the actor’s choice. Attribution therefore requires a counterfactual comparison between plausible trajectories under the contemplated intervention and under its absence, together with attention to uncertainty and interacting causes. The concept should not turn every later event into a consequence of whoever failed to intervene.

Several patterns are especially relevant. Inaction can permit an incumbent relation to become entrenched. A temporary disparity can become institutionalized. Infrastructure can deteriorate. Skills can atrophy. Trust can erode. Harm can accumulate. A window for low-cost intervention can close. These are generative effects because the later field differs in its capacities, dependencies, and possibilities.

Inaction can also permit beneficial processes. An overmanaged system can recover through restraint. Local actors can develop capabilities when external intervention is withheld. Uncertainty can resolve. A transient disturbance can dissipate. Premature standardization can be avoided. Actors can retain autonomy that an intervention would have narrowed. Generative analysis therefore evaluates the trajectory rather than assuming that intervention is intrinsically superior to restraint.

Definition 10.219 (Inaction trajectory). An *inaction trajectory* is a provisional reconstruction of the relational, material, institutional, epistemic, and capability changes expected or observed during a consequential interval without the contemplated intervention.

The trajectory can include waiting, deliberate forbearance, incapacity, institutional omission, fragmented responsibility, or strategic delay. These mechanisms should remain distinguishable because they carry different implications for responsibility and future design.

A further issue concerns invisibility. Consequences of action are often easier to associate with a discrete intervention because the intervention supplies a visible event. Consequences of inaction can emerge gradually and be attributed to background conditions, especially where responsibility is distributed. Practical records should therefore preserve the decision context, the alternatives considered, the capacities available, and the reasons for withholding intervention when those facts are materially relevant.

Definition 10.220 (Inaction consequence record). An *inaction consequence record* is a traceable account of the contemplated intervention, the reasons and conditions associated with its absence, the relevant capacities and alternatives, the expected baseline, the affected positions, and the consequences that later became visible during the interval of non-intervention.

Such a record supports learning without presuming blame. It allows later inquiry to compare expectations with actual trajectories and to revise models of both intervention and restraint. It can reveal, for example, that a feared deterioration did not occur, that a self-organizing capacity was underestimated, or that a supposedly stable baseline contained accumulating harm.

The distribution of inaction consequences is especially important. The actor deciding to withhold intervention can be relatively insulated from the resulting exposure. Those bearing the consequences may have little influence over the decision. Conversely, an intervention demanded by distant decision-makers can impose greater risk on local actors than continued restraint. The practical comparison must therefore follow positions as well as aggregate outcomes.

Proposition 10.221 (Relational symmetry of practical consequence). *For purposes of practical evaluation, materially consequential changes generated through intervention and materially consequential changes generated during its withholding both belong to the consequence structure of the decision problem, subject to the same requirements of evidence, attribution, distributional analysis, and uncertainty disclosure.*

The proposition establishes an analytical symmetry rather than a causal equivalence. Action and inaction operate through different mechanisms and can carry different responsibility structures. The point is that withholding intervention cannot serve as an automatic zero-consequence baseline.

Definition 10.222 (Response-form consequence profile). A *response-form consequence profile* is a comparative account of the expected or observed direct, relational, temporal, distributional, and generative consequences associated with feasible forms of action, waiting, delay, refusal, withdrawal, exit, and non-action within a practical situation.

The profile integrates the section. It encourages comparison across response forms without forcing them onto a single metric. A refusal can protect autonomy while reducing collective capacity. Waiting can improve knowledge while extending exposure. Exit can protect one actor while weakening those who remain. Intervention can solve an immediate problem while narrowing future options. Non-action can preserve optionality while allowing harm to accumulate. Practical judgment must retain these heterogeneous consequences rather than compressing them into a binary choice between doing something and doing nothing.

The present section has developed action and non-action as a family of relational response forms. Action intervenes in an already structured field and leaves an intervention footprint. Non-action occurs within a dynamic baseline and requires agency-sensitive interpretation. Waiting organizes an open temporal interval; delay identifies displacement relative to an earlier feasible or expected response. Refusal withholds a specified relation of participation, withdrawal changes an established commitment, and exit relocates or terminates membership in an arrangement. Oppor-

tunity cost records the reachable possibilities displaced by commitment, while generative analysis follows the trajectories that develop when intervention is withheld. Across these forms, practical consequence includes changes in relations, capacities, burdens, timing, and future action spaces. Section 274 develops the next dimension of this architecture by examining risk and irreversibility: the possibility that action or non-action generates losses, exposures, and foreclosures whose probability, distribution, and recoverability vary across practical positions and temporal horizons.

10.10 Risk and Irreversibility

Section 10.9 treated action and non-action as relational response forms whose consequences develop within an already changing field. The present section examines a further dimension of practical commitment: the possibility that action, restraint, delay, withdrawal, or continued participation exposes differently situated actors and systems to losses whose likelihood, pathway, magnitude, distribution, or recoverability remains partly uncertain. Its role is to develop a domain-general Generative Relational account of risk and irreversibility that can later support the analysis of power, responsibility, justice, and concrete intervention methodology. The objective is to distinguish known risk, uncertain risk, relational risk, systemic risk, risk distribution, tail risk, and different degrees of reversibility, and then to connect them to the preservation and foreclosure of future options. The discussion is conceptual and relational. Risk is treated as a property of situated consequence structures rather than as a single scalar attached to an isolated choice, while irreversibility is treated as a matter of practical recoverability across relevant relations, positions, and temporal horizons.

Application-dominant praxis frequently proceeds under conditions in which some adverse consequences are well characterized, others remain poorly specified, and still others can emerge through interactions that become visible only after intervention. Risk therefore cannot be reduced to a known probability multiplied by a known loss. Such a representation can be useful in restricted settings, but the broader practical field can include uncertain causal pathways, unequal exposure, cascading effects, delayed manifestations, institutional fragility, capability loss, and the foreclosure of later alternatives. These features are especially important where action changes the structure through which future consequences are generated.

Definition 10.223 (Practical risk). *Practical risk* is a situated relation among one or more possible adverse consequences, the actors or systems exposed to them, the mechanisms or pathways through which they may arise, the uncertainty surrounding their likelihood or magnitude, and the practical capacity to prevent, absorb, repair, or revise what follows.

This definition gives risk both an epistemic and a relational structure. The same physical event can represent very different practical risks for actors with different exposure, reserves, legal protection, mobility, voice, or recovery capacity. Likewise, the same estimated probability can carry different practical meaning when consequences differ in reversibility, distribution, duration, or future option loss. Risk analysis should therefore preserve the relations through which exposure and recovery

Table 10.10: Analytical dimensions of risk and irreversibility in application-dominant praxis.

Dimension	Primary object	Characteristic practical concern	Typical analytical response
Known risk	Characterized adverse consequence and exposure	Comparison among materially understood consequence pathways	Estimation, mitigation, allocation, insurance, reserve, or monitoring
Uncertain risk	Partly unknown likelihood, magnitude, or mechanism	False precision and omitted pathways	Scenario variation, sensitivity, staged exposure, learning, and uncertainty retention
Relational risk	Dependence, asymmetry, interaction, and position	Risk generated through relations rather than isolated actors	Mapping dependencies, transmission paths, bargaining positions, and recovery capacities
Systemic risk	Interconnected structures and propagation	Cascades, common-mode failure, feedback, and threshold effects	Network and system mapping, containment, redundancy, modularity, and stress analysis
Risk distribution	Allocation of exposure and recovery capacity	Separation between decision authority, benefit, and burden	Positional analysis, participation, compensation, protection, and accountability
Tail risk	Extreme or weakly observed adverse consequence	Large loss under sparse evidence or structural uncertainty	Precaution, stress cases, reserve, exposure limits, and preservation of fallback options
Reversibility	Capacity to restore or reconstruct valued conditions	Cost, delay, incompleteness, and asymmetry of recovery	Rollback design, repair pathways, modularity, staged commitment, and review
Irreversibility	Loss of practically reachable return pathways	Lock-in, path creation, capability loss, and durable foreclosure	Higher thresholds, narrower exposure, stronger participation, and option preservation
Option preservation	Retention of meaningful future alternatives	Future agency and revisability after present commitment	Diversity, slack, interoperability, modularity, exit capacity, and delayed closure
Option foreclosure	Loss or severe degradation of later alternatives	Distribution of future constraint and dependence	Foreclosure tracing, justification, compensation, repair, and reopening where feasible

are produced.

Table 10.10 organizes the section around two connected questions. The first concerns exposure: what adverse consequences can arise, how well are they understood, through which relations can they propagate, and who bears them? The second concerns recoverability: if an adverse consequence occurs or a commitment later proves poorly oriented, which aspects of the prior practical field can be restored, which can only be partly repaired, and which future possibilities have been lost? Risk and irreversibility intersect because the significance of an adverse consequence depends partly on what recovery remains possible after it occurs.

10.10.1 Known Risk

Known risk concerns adverse consequence structures that are sufficiently characterized for disciplined comparison. The relevant consequence classes are identifiable, important exposure pathways are reasonably understood, and the available evidence supports some bounded assessment of frequency, likelihood, magnitude, or range. The degree of knowledge can still be imperfect. The category indicates that the practical architecture of the risk is understood well enough for explicit estimation and mitigation to be meaningful.

Definition 10.224 (Known practical risk). A *known practical risk* is an adverse consequence structure for which the principal consequence classes, exposed positions, and causal or transmission pathways are sufficiently characterized to support a bounded assessment of likelihood, magnitude, or frequency for the practical decision at hand.

The phrase “for the practical decision at hand” preserves the action-relative structure developed in Section 10.8. A risk can be adequately characterized for a small reversible trial while remaining insufficiently characterized for system-wide deployment. A short-horizon failure rate can be well understood while long-horizon capability effects remain uncertain. A known average exposure can coexist with poorly understood distributional extremes. Known risk therefore refers to a bounded practical object rather than complete knowledge of the future.

Several familiar tools become meaningful under these conditions. Frequency estimates can inform reserve requirements. Probabilistic ranges can support comparison among alternatives. Failure data can inform maintenance intervals. Historical variability can help specify operating envelopes. Expected-loss calculations can contribute to resource allocation. These methods are useful when their assumptions and reference classes remain explicit and when their outputs are connected to the positions actually exposed.

Known risk also supports targeted mitigation. An identifiable failure pathway can be isolated. A known exposure can be capped. Redundancy can be introduced around a recurrent failure point. Protective capacity can be placed where consequence is concentrated. Monitoring can be matched to a known precursor. The practical advantage of characterization lies in the possibility of designing response around a reasonably specified mechanism.

Definition 10.225 (Risk characterization profile). A *risk characterization profile* is a traceable account of the adverse consequence classes, exposure pathways, affected positions, available likelihood or frequency information, magnitude ranges, temporal horizons, and mitigation capacities relevant to a practical decision.

The profile should preserve uncertainty inside the known-risk category. A probability interval, a confidence bound, a range of plausible severity, or an explicitly limited reference class can be more informative than a single point estimate. The purpose is practical orientation rather than numerical closure.

Known risk can also be historically unstable. A risk characterized under one institutional arrangement, technology, ecology, or social practice can change when the surrounding relations change. A familiar probability can cease to travel well across contexts. Risk records should therefore preserve the conditions under which characterization was established.

Proposition 10.226 (Contextual dependence of characterized risk). *A risk estimate remains practically informative only to the extent that the relations, exposure pathways, reference conditions, and recovery capacities supporting the estimate remain sufficiently comparable to the situation in which the estimate is applied.*

Proposition 10.226 prevents known risk from becoming an unqualified claim of stability. Characterization is valuable because it makes disciplined action possible, while its scope remains relationally bounded.

10.10.2 Uncertain Risk

Uncertain risk arises when one or more practically important elements of the adverse consequence structure remain poorly characterized. The uncertainty can concern probability, magnitude, timing, mechanism, affected positions, interaction effects, or even the relevant consequence categories. The practical challenge is therefore different from ordinary estimation. The task is partly to act while the structure being estimated remains incomplete.

Definition 10.227 (Uncertain practical risk). *An uncertain practical risk is an adverse consequence structure in which materially relevant likelihoods, magnitudes, mechanisms, exposure pathways, affected positions, or consequence classes remain insufficiently characterized for stable probabilistic comparison.*

Uncertain risk can take several forms. A consequence can be understood while its frequency is poorly known. A failure frequency can be estimated while downstream effects remain uncertain. Mechanisms can be contested. Long-run consequences can depend on institutional adaptation that has not yet occurred. A novel intervention can generate categories of consequence that existing monitoring was not designed to observe. In these settings, numerical precision can conceal rather than reduce uncertainty.

The appropriate response is therefore often structural. Praxis can diversify assumptions, examine alternative causal pathways, stress boundary conditions, identify vulnerable positions, limit exposure, preserve rollback capacity, and stage commitment so that learning occurs before wider expansion. Qualitative evidence and historical analogy can be especially important where event counts are sparse but mechanisms or vulnerabilities are visible.

Definition 10.228 (Uncertain-risk profile). *An uncertain-risk profile is an account of which components of an adverse consequence structure are well characterized, weakly characterized, contested, unobserved, or potentially emergent, together with the practical implications of those differences for commitment and monitoring.*

This profile prevents a broad label of “uncertainty” from obscuring where uncertainty actually lies. Uncertainty about event frequency calls for a different response from uncertainty about who is exposed. Uncertainty about mechanism differs from uncertainty about normative significance. Uncertainty about recovery capacity can be especially important when a consequence is difficult to reverse.

A further issue concerns uncertainty generated by action itself. Intervention can change reporting incentives, behavior, institutions, or interaction patterns in ways that alter the future risk structure. Early estimates can become obsolete because the

practical field adapts to the intervention. Risk governance therefore needs revision conditions, not merely an initial assessment.

Proposition 10.229 (Uncertain risk and commitment design). *Where materially relevant features of a risk structure remain uncertain, practical warrant can be strengthened by designing commitment so that exposure, learning, monitoring, and revisability are proportionate to the unresolved uncertainty.*

The proposition extends the precautionary architecture of Section 10.8. It does not imply that uncertain risk always requires reduced action. In some situations, inaction carries greater uncertain risk than intervention. The relevant comparison concerns the uncertain consequence structures of the feasible response forms.

10.10.3 Relational Risk

Relational risk concerns adverse consequences generated, amplified, transferred, or concentrated through relations among actors, institutions, technologies, infrastructures, and environments. The unit of analysis is therefore broader than an isolated actor or event. Dependence, asymmetry, coordination, trust, contractual structure, information flow, authority, and interconnection can all become parts of the risk-generating mechanism.

Definition 10.230 (Relational risk). *Relational risk* is risk whose likelihood, magnitude, distribution, or recoverability depends materially on the structure and evolution of relations among actors, institutions, material systems, or environments.

A relation can generate risk in several ways. Dependence on a single supplier can make disruption consequential. Information asymmetry can allow one actor to externalize exposure onto another. Centralized authority can accelerate coordinated response while also creating common-mode failure. Dense trust can support rapid cooperation while making betrayal or misinformation more consequential. A contractual arrangement can shift liability away from the actor best positioned to prevent harm. A social norm can distribute coping costs toward actors with less power to refuse them.

Relational risk also concerns the difference between risk production and risk bearing. The actor creating an exposure can be different from the actor absorbing the consequence. Decision authority can sit elsewhere again. These separations matter because mitigation incentives, knowledge, and responsibility can become misaligned.

Definition 10.231 (Risk-generation relation). *A risk-generation relation* is a relation through which an actor, institution, process, or material configuration materially alters the exposure, vulnerability, consequence magnitude, or recovery capacity of another position.

The concept does not presume wrongful conduct. A relation can generate risk even when all participants act within accepted rules. The analytical task is to identify how the configuration produces exposure and which positions have capacity to change it.

Relational risk can also be reciprocal. Two actors can create mutual dependence. Coordination failure can expose all participants. A shared infrastructure can create joint vulnerability. Reciprocal exposure, however, should not be confused with symmetric exposure. One actor can possess reserves, exit options, legal protection, or

political influence that another lacks.

Definition 10.232 (Relational exposure profile). A *relational exposure profile* maps how dependence, authority, information, coordination, access, and recovery capacity distribute risk across positions connected within a practical situation.

This profile prepares the later treatment of power in Section 275. A relation can be economically, technically, or administratively efficient while also placing one actor in a position of concentrated exposure. The risk analysis should retain both features rather than allowing aggregate performance to erase positional vulnerability.

Proposition 10.233 (Relational production of vulnerability). *Where exposure and recovery capacity are materially shaped by relations of dependence, authority, information, access, or coordination, practical risk cannot be adequately assessed from actor-level probabilities alone.*

10.10.4 Systemic Risk

Systemic risk arises when adverse consequences can propagate across interconnected components and alter the operation, stability, or generative capacity of the wider system. The concern is therefore not only the failure of one component but the possibility that interdependence changes the scale and form of consequence.

Definition 10.234 (Systemic practical risk). *Systemic practical risk* is the possibility that a disturbance, failure, adaptation, or intervention propagates through interdependent relations and produces consequential change across multiple components, scales, or functions of a practical system.

Systemic risk can develop through cascading failure, common dependencies, reinforcing feedback, threshold effects, synchronization, institutional imitation, shared standards, or concentration around critical nodes. The same connectivity that supports coordination and efficiency can therefore create pathways for propagation. Generative Relational analysis treats this ambivalence as structural. Connectivity can generate capacity and vulnerability at the same time.

A system can also appear locally stable while becoming globally fragile. Individual actors can satisfy local requirements while shared dependence accumulates at system level. Conversely, local failures can be tolerated when the wider system contains redundancy, substitutability, modularity, or reserve capacity. Risk analysis therefore needs multiple scales.

Definition 10.235 (Propagation pathway). A *propagation pathway* is a relational sequence through which an initial disturbance can alter the state, capacity, exposure, or behavior of connected components and thereby transmit or transform consequence across a system.

Propagation does not need to be linear. Feedback can amplify or dampen an initial disturbance. Actors can adapt strategically. Institutions can change rules. A technical failure can become a coordination failure, which then becomes a legitimacy problem. The identity of the consequence can change as it moves through the field.

Systemic risk also has a temporal structure. Slow accumulation can create a threshold that becomes visible only when a later disturbance triggers rapid change. A temporary emergency response can create dependencies that become permanent. A pro-

protective intervention can shift risk into another subsystem or future period. Systemic analysis should therefore include both immediate propagation and longer-horizon structural transformation.

Definition 10.236 (Systemic fragility profile). A *systemic fragility profile* is an account of critical dependencies, propagation pathways, feedback relations, concentration points, redundancy, substitutability, recovery capacity, and plausible threshold conditions within a practical system.

Systemic risk can be governed through several architectures: modularity can limit propagation; redundancy can maintain function after failure; diversity can reduce common-mode exposure; reserves can absorb disturbance; interoperability can enable substitution; monitoring can identify early propagation; and decentralized capacity can prevent dependence on a single point of coordination. These design properties can also carry costs, including duplication, slower coordination, or reduced standardization. Their value is situation-dependent.

Proposition 10.237 (Systemic consequence beyond local optimization). *Where practical consequences propagate through interdependent relations, locally attractive actions can increase system-level fragility, and locally redundant or costly capacities can contribute to system-level robustness.*

This proposition reinforces the need to evaluate action beyond its immediate local objective. It also prepares the later discussion of collective and institutional praxis in Section 279.

10.10.5 Distribution of Risk

Risk is distributed through the practical field. Some actors benefit from an action while others bear its downside exposure. Some possess authority to decide while others possess limited capacity to refuse. Some can absorb a loss, repair damage, or exit the arrangement, while others face durable consequences. Aggregate risk measures can therefore conceal practically decisive positional differences.

Definition 10.238 (Risk distribution). *Risk distribution* is the allocation across practical positions of exposure to adverse consequences, uncertainty, prevention burdens, monitoring burdens, recovery costs, residual harm, and the capacities available to avoid, transfer, absorb, repair, or exit those consequences.

Distribution concerns more than expected loss. Two actors can face the same expected monetary loss while differing greatly in resilience, irreversibility, or future option loss. A small absolute loss can eliminate a fragile actor's capacity to continue while a larger loss is absorbable elsewhere. A temporary disruption can be recoverable for one actor and permanently displacing for another. The practical meaning of risk depends on positional consequence.

Risk distribution can also be temporally separated. Present actors can obtain benefits while future actors inherit maintenance burdens, environmental exposure, institutional lock-in, debt, degraded capability, or narrowed options. Intergenerational risk therefore belongs within the same architecture even before the explicit justice analysis developed later in the chapter.

Definition 10.239 (Risk-bearing position). A *risk-bearing position* is a practical posi-

tion characterized by a particular combination of exposure, consequence sensitivity, recovery capacity, voice, exit possibility, and temporal horizon in relation to a contemplated action or non-action.

A further issue concerns risk transfer. Insurance, contracting, outsourcing, delegation, regulation, or technical design can redistribute exposure. Transfer can improve practical resilience when risk moves toward actors better able to absorb or manage it. It can also obscure responsibility when exposure is shifted toward actors with less information or bargaining power. The analysis should therefore trace both formal allocation and effective burden.

Definition 10.240 (Risk-transfer pathway). A *risk-transfer pathway* is a relational mechanism through which exposure, liability, recovery cost, or uncertainty is shifted from one practical position to another without necessarily changing the underlying probability of the adverse event.

The distinction between probability reduction and burden transfer is important. A policy can make one actor appear safer by relocating exposure elsewhere. A contract can reduce one institution's liability without reducing system-level harm. A technical safeguard can protect a core function by sacrificing a peripheral subsystem. Distributional analysis prevents these changes from being misidentified as unconditional risk reduction.

Proposition 10.241 (Positional adequacy of risk assessment). A *practical risk assessment* is *distributionally incomplete* when it reports aggregate or average exposure without preserving materially different risk-bearing positions, recovery capacities, and future option losses.

10.10.6 Tail Risk

Tail risk concerns adverse consequences located toward the extreme end of a consequence distribution or outside the range where empirical frequency is well established. The practical importance of tail risk increases when consequences are severe, propagation is possible, recovery is limited, or exposure is concentrated on actors with little capacity to absorb loss.

Definition 10.242 (Tail risk). *Tail risk* is a materially significant possibility of extreme adverse consequence whose likelihood is low, sparsely observed, structurally uncertain, or difficult to estimate relative to the consequence magnitude and practical stakes involved.

Tail risk can be statistical, structural, or both. In a well-observed system, rare events can occupy the extreme tail of a reasonably stable distribution. In a changing system, the tail itself can be poorly known because mechanisms, dependencies, or boundary conditions are shifting. The latter case requires particular caution with numerical extrapolation.

Extreme events also reveal model boundaries. A model calibrated around ordinary variation can perform well in the center of a distribution while failing under conditions that activate different mechanisms. Historical absence of a catastrophe therefore has limited evidential force when the system has changed or when the relevant event is intrinsically rare.

Definition 10.243 (Tail-exposure profile). A *tail-exposure profile* is an account of plausible extreme consequence classes, the mechanisms or structural conditions that could generate them, the positions exposed, the evidence supporting or limiting likelihood estimates, and the available capacities for containment and recovery.

Tail analysis should preserve plausibility discipline. Treating every imaginable catastrophe as equally decision-relevant would make practical orientation impossible. The analytical task is to identify materially plausible pathways, structural vulnerabilities, historical analogues, stress conditions, or failure combinations that justify attention even when frequency is poorly estimated.

The appropriate response can include exposure caps, reserves, containment, fallback systems, modularity, geographic or institutional diversification, independent monitoring, staged commitment, and explicit crisis authority. These measures often appear inefficient under ordinary conditions because they preserve capacity that may rarely be used. Their value lies partly in preventing extreme consequence from becoming unrecoverable.

Proposition 10.244 (Tail consequence and practical threshold). *Where a materially plausible adverse consequence is extreme and recovery capacity is limited, practical decision thresholds can reasonably depend on consequence severity and irreversibility in addition to estimated likelihood.*

The proposition connects tail risk to reversibility. A low estimated probability can still deserve substantial practical attention when the consequence would eliminate essential capacities or foreclose recovery pathways.

10.10.7 Reversible Action

Reversibility concerns the practical capacity to restore, reconstruct, or recover valued conditions after an intervention, commitment, or consequence. A reversible action therefore does not mean an action without cost or residue. It means that a sufficiently close practical return or alternative recovery pathway remains reachable within the relevant horizon and with acceptable burdens.

Definition 10.245 (Practical reversibility). *Practical reversibility* is the capacity to restore, reconstruct, or recover materially relevant relations, capabilities, conditions, rights, options, or functions after a practical commitment or consequence, within a specified temporal horizon and at burdens considered acceptable for the positions affected.

The definition is multidimensional. An action can be technically reversible while socially persistent. A software setting can be restored while trust remains damaged. A contract can be terminated while a displaced capability takes years to rebuild. A physical intervention can be repaired while ecological or cultural effects remain. Reversibility should therefore be assessed across the dimensions that matter to the practical situation.

Definition 10.246 (Recoverability profile). A *recoverability profile* is an account of which material, relational, institutional, epistemic, normative, and capability conditions can be restored after a practical commitment, by whom, over what time, at what cost, and with what residual change.

Reversible action is especially important under uncertainty because it can permit learning through bounded exposure. A pilot, temporary rule, modular installation, revocable authorization, or staged contract can generate information while preserving a pathway toward correction. The practical value of reversibility therefore includes epistemic value.

Reversibility also depends on governance. A technically reversible intervention can become practically irreversible if no actor has authority to reverse it, if institutional incentives resist rollback, if data needed for restoration are absent, or if beneficiaries of the new arrangement can block change. Reversibility is therefore partly a property of decision architecture.

Definition 10.247 (Rollback capacity). *Rollback capacity* is the effective combination of authority, knowledge, resources, procedures, records, and operational means required to reverse or materially repair a practical commitment after implementation.

A credible rollback plan should exist before the need for rollback emerges when the intervention is consequential and uncertainty is material. Otherwise, reversibility can become a nominal promise unsupported by practical capacity.

Proposition 10.248 (Reversibility as an epistemic resource). *Where bounded action can generate decision-relevant learning, practical reversibility can increase the warrant for experimentation by limiting the consequence of error while preserving the capacity to revise orientation.*

10.10.8 Partially Reversible Action

Many practical actions are neither fully reversible nor fully irreversible. Some dimensions can be restored while others persist. Recovery can be possible for some actors and unavailable to others. Reversal can become more difficult as time passes. A decision can restore formal rules while leaving material investments, expectations, capabilities, or relationships altered. Partial reversibility is therefore likely to be a common condition in application-dominant praxis.

Definition 10.249 (Partial reversibility). *Partial reversibility* is the condition in which some materially relevant consequences of a practical commitment can be restored or repaired within the relevant horizon while others remain persistent, costly, asymmetric, delayed, or inaccessible to one or more affected positions.

Partial reversibility can be dimensional. A technical system can be removed while data already disclosed remain outside control. A temporary institutional rule can expire while organizational routines persist. A land-use change can be physically altered while biodiversity recovery remains incomplete. A social decision can be formally reversed while reputational effects endure. These differences matter because a single label of “reversible” can hide durable consequences.

Partial reversibility can also be positional. An institution can recover financially while individuals exposed to the intervention cannot restore lost time, health, livelihood, trust, or opportunity. The decision-maker’s ability to reverse its own commitment therefore does not establish reversibility for everyone affected.

Definition 10.250 (Reversibility asymmetry). *Reversibility asymmetry* is a difference among affected positions in their capacity to recover, repair, exit, or reconstruct ma-

terially relevant conditions after the same practical commitment or consequence.

Temporal decay is another important feature. An action can be reversible during an early window and become increasingly difficult to reverse as complementary investments, dependencies, habits, standards, or expectations accumulate. Monitoring should therefore include changes in rollback cost and recoverability, not merely changes in performance.

Definition 10.251 (Reversibility window). A *reversibility window* is a temporally bounded interval during which restoration or redirection remains materially more feasible than it is expected to become after additional commitment, adaptation, or path formation.

This concept connects reversibility to urgency. Sometimes the urgent action is not expansion of the intervention but preservation of the ability to reverse it before the window closes.

Proposition 10.252 (Heterogeneous reversibility). *Where the dimensions, positions, or temporal windows of recovery differ materially, practical assessment should represent reversibility as a profile rather than classify the intervention through a single binary label.*

10.10.9 Irreversible Action

Irreversible action changes the practical field in ways for which a materially adequate return pathway is unavailable within the relevant horizon. Irreversibility can concern physical conditions, institutional commitments, lost lives or capabilities, ecological transformation, disclosure, destruction of records, elapsed opportunities, path-dependent infrastructures, or social relations whose prior form cannot be reconstructed. The concept therefore extends beyond permanence in a narrow physical sense.

Section 10.2.7 introduced practical irreversibility as the degree to which an action commits a relational configuration to consequences, dependencies, losses, or foreclosed possibilities that cannot be restored within the relevant horizon at acceptable practical cost. The present subsection extends that earlier formulation by making the dimensions and positions of irreversibility explicit.

Definition 10.253 (Irreversibility profile). An *irreversibility profile* is an account of which materially relevant consequences resist restoration or adequate compensation, the temporal horizon over which recovery is assessed, the positions affected, the practical capacities available for repair, and the future options altered by the commitment.

Irreversibility is horizon-dependent. Some ecological, institutional, or social changes may be reversible over centuries but effectively irreversible for the actors living through the relevant decision period. A lost opportunity can become irreversible when a deadline passes even though similar opportunities may later emerge. A destroyed record can be irrecoverable even when the institution that destroyed it continues to function. Practical analysis should therefore identify the horizon and the object of irreversibility.

Definition 10.254 (Irreversibility horizon). An *irreversibility horizon* is the temporal

and practical boundary within which restoration, reconstruction, or adequate compensation would need to remain reachable for a consequence to count as reversible for the decision under consideration.

Irreversibility raises the required quality of practical justification because later correction becomes constrained. This does not imply a universal prohibition on irreversible action. Many valuable actions involve irreversible commitments: building institutions, protecting endangered systems, ending harmful practices, making promises, or acting within time-sensitive emergencies. The relevant issue is the relation among stakes, knowledge, participation, distribution, available alternatives, and the consequences of both acting and withholding action.

Irreversible action can also be path-creating. It can alter standards, expectations, infrastructures, competencies, identities, or dependencies so that later decisions occur within a transformed action space. The initial decision thereby shapes which future problems are visible and which solutions remain feasible.

Definition 10.255 (Path-creating commitment). A *path-creating commitment* is a practical commitment that materially changes the costs, capacities, institutions, expectations, or relations governing later action and thereby makes some future trajectories more reachable and others less reachable.

Path creation can be desirable when it establishes durable rights, protections, capabilities, or cooperative institutions. It can also generate harmful lock-in. The normative status cannot be inferred from irreversibility alone.

Proposition 10.256 (Irreversibility and practical justification). *As materially relevant recovery pathways narrow, practical justification should give increasing attention to epistemic sufficiency, affected positions, participation, tail consequences, alternative pathways, distribution of burden, and the consequences of foreclosing later revision.*

The proposition expresses a graded relation rather than a fixed threshold. Greater irreversibility generally increases the importance of justification because error becomes harder to repair, while urgency or severe consequences of inaction can still support decisive commitment.

10.10.10 Option Preservation and Foreclosure

The final subsection connects risk and reversibility to the action-space architecture developed in Section 10.7. Practical decisions do more than produce immediate outcomes. They preserve some future possibilities, generate others, and foreclose alternatives. Option preservation is therefore a way of governing uncertainty through the future structure of agency.

Definition 10.257 (Option preservation). *Option preservation* is the practical maintenance of materially meaningful future alternatives, together with the capacities, knowledge, rights, resources, and institutional pathways required to keep those alternatives effectively reachable.

Preservation requires more than leaving a nominal choice formally open. An option can disappear through capability erosion, incompatible infrastructure, depleted resources, legal commitment, knowledge loss, institutional closure, or the expiration of a temporal window. Effective preservation therefore includes maintenance of the

conditions needed to exercise the option later.

Several practical designs can preserve options. Modular systems can allow components to be changed without replacing the whole. Interoperable standards can reduce dependence on one pathway. Redundant capability can retain alternatives during disruption. Time-limited commitments can prevent provisional arrangements from becoming permanent by inertia. Data portability, archival continuity, transferable skills, diversified relationships, and preserved exit rights can all support later revision.

Definition 10.258 (Option-preservation profile). An *option-preservation profile* is an account of which future alternatives remain effectively reachable after a contemplated commitment, what capacities are required to maintain them, what costs preservation imposes, and which actors possess practical access to the preserved options.

Option preservation is not automatically desirable. Maintaining every possible alternative can consume resources, fragment coordination, delay beneficial commitment, or preserve harmful practices. Some options deserve deliberate foreclosure. Safety rules can remove dangerous actions. Rights can prohibit coercive pathways. Ecological limits can close exploitative possibilities. Institutions can stabilize cooperation by making certain defections costly. The practical question concerns which options are preserved or foreclosed, for whom, through which authority, and with what future consequences.

Definition 10.259 (Option foreclosure). *Option foreclosure* is the loss, prohibition, practical inaccessibility, or severe degradation of a future action pathway through present commitment, elapsed time, capability change, institutional design, material transformation, or relational restructuring.

Foreclosure can be explicit or emergent. A contract can formally prohibit an alternative. A technology can become so embedded that alternatives are prohibitively costly. A capability can disappear because it is no longer practiced. An ecosystem can cross a threshold. A population can lose trust required for later cooperation. The practical record should therefore trace both formal closure and structural erosion.

Definition 10.260 (Foreclosure record). A *foreclosure record* is a traceable account of the future alternatives expected to become less reachable or inaccessible through a practical commitment, the mechanism and horizon of that change, the positions affected, and the justification for accepting or pursuing the resulting closure.

The distribution of option preservation matters as much as the total number of options retained. An institution can preserve strategic flexibility for itself by transferring rigidity to workers, communities, suppliers, or future administrations. A wealthy actor can retain exit while others become locked in. The practical evaluation should therefore ask whose future agency is preserved.

Option preservation also creates a bridge between uncertainty and generativity. Under incomplete knowledge, maintaining several viable pathways can support learning and adaptation. Under stable conditions, sustained openness can become costly and coordination can require commitment. Praxis therefore moves between openness and closure rather than maximizing either one universally.

Proposition 10.261 (Option-sensitive practical commitment). *Where uncertainty, re-*

versibility, and future agency are materially relevant, practical evaluation should include the options that a commitment preserves, generates, degrades, or forecloses and the distribution of effective access to those options across affected positions.

The proposition integrates the section. Known risk supports bounded estimation where the consequence structure is sufficiently characterized. Uncertain risk requires explicit retention of unresolved pathways and often a different architecture of commitment. Relational risk follows dependence, authority, information, and recovery across positions. Systemic risk traces propagation, feedback, and fragility across interconnected structures. Distributional analysis identifies who bears exposure, uncertainty, recovery cost, and option loss, while tail analysis gives practical attention to extreme consequences under sparse or unstable evidence. Reversibility then asks which consequences can be restored or repaired, for whom, and within which horizon. Partial reversibility preserves the heterogeneity of recovery, and irreversibility identifies consequences for which adequate return pathways are unavailable. Option preservation and foreclosure finally extend consequence analysis into the future action space.

This architecture prepares Section 275. Risk is never distributed independently of practical power. Actors differ in their capacity to define which risks count, to authorize exposure, to select protective thresholds, to transfer burdens, to shape measurements, to command recovery resources, and to preserve exit for themselves or others. The next section therefore examines power in praxis as a set of relational capacities that influence problem definition, end selection, decision, action, measurement, evaluation, withholding, and exit.

10.11 Power in Praxis

Sections 10.4–10.10 developed practical problem formation, judgment, ends, action spaces, decision under incomplete knowledge, action and non-action, risk, and irreversibility. Each of these structures can be distributed unevenly across the actors and institutions that compose a practical situation. The present section examines that unevenness through the concept of power. Its role is to identify the points at which some positions can shape the constitution, direction, execution, interpretation, and revision of praxis more strongly than others. The objective is to distinguish power to define the problem, select the end, decide, act, withhold action, measure, evaluate, and exit, and then to explain how broader asymmetries can become practically consequential power. The discussion remains domain-general. Power is treated relationally and positionally, with attention to the mechanisms through which capacities become effective in a particular practical field.

Power enters application-dominant praxis before any visible intervention occurs. It can influence which conditions receive attention, whose descriptions become authoritative, which ends are treated as legitimate, which options enter the action space, which uncertainties receive protection, which risks are accepted, which measurements become official, and which consequences trigger revision. Power can also operate through absence: an actor may possess the capacity to delay, veto, withdraw resources, withhold cooperation, decline measurement, or exit while others remain

exposed to the consequences. These capacities can be formal, informal, material, institutional, epistemic, symbolic, infrastructural, or relational.

Definition 10.262 (Practical power). *Practical power* is a situated capacity of an actor, collective, institution, or relational position to alter the constitution, direction, execution, interpretation, or revision of consequential praxis, including the practical possibilities available to other positions.

The definition emphasizes capacity and practical effect. Formal authority can contribute to practical power, while authority alone does not establish that an intended effect can be realized. Material resources can support power, while resources become practically powerful only through usable pathways of access, coordination, legitimacy, knowledge, or enforcement. Dependency can increase one actor's leverage over another, while its practical effect depends on available alternatives, exit capacity, and the temporal structure of the relation. Practical power therefore belongs to a relational configuration rather than to an isolated possession.

Power also has a generative dimension. An exercise of power can alter later capabilities, dependencies, categories, expectations, institutions, and action spaces. A decision can create a standard that later actors must follow. Control over infrastructure can shape future access. A measurement regime can stabilize categories through which later decisions are made. An exit by one actor can reorganize the bargaining position of those who remain. Practical power is therefore relevant both to immediate action and to the production of future conditions of action.

Table 10.11 separates several loci that are frequently compressed into a single image of decision authority. Their separation matters because power can be distributed differently at each locus. One actor can define the problem while another formally decides. A third can control implementation. A fourth can determine what counts as success. A fifth can exit if the arrangement becomes unfavorable, leaving others to absorb residual costs. Practical analysis therefore benefits from mapping the sequence through which influence becomes consequential.

Definition 10.263 (Practical power profile). A *practical power profile* is a stage- and relation-specific account of which positions can shape problem formation, ends, decisions, implementation, withholding, measurement, evaluation, exit, and the future distribution of these capacities.

A power profile is indexed to a practical situation. It can change when institutions, resources, knowledge, alliances, infrastructures, legal competences, or exit possibilities change. It can also differ by stage. A community can possess strong problem-recognition capacity and weak decision authority. A regulator can possess formal decision power while depending on information generated by the actors it regulates. An organization can control implementation but lack authority to redefine the end. Such distributions are central to later questions of participation, responsibility, and justice.

10.11.1 Power to Define the Problem

Section 10.4 treated a practical problem as a revisable representation formed from a wider practical situation. Power enters this process through the capacity to influence

Table 10.11: Principal loci of power in application-dominant praxis.

Locus	Practical object	Characteristic mechanism	Characteristic concern
Problem definition	Boundary, salience, category, causal account	Agenda control, classification, expertise, recognition, omission	Some conditions or positions become central while others remain peripheral or invisible
End selection	Valued direction of praxis	Mandate, priority setting, agenda formation, value authorization	Particular values and futures acquire coordinating force
Decision	Commitment among alternatives	Formal authority, veto, procedure, delegation, emergency competence	Decision rights can diverge from exposure to consequences
Action	Implementation and transformation	Resources, infrastructure, access, coordination, enforcement, capability	Formal decisions can have unequal practical executability
Withholding	Delay, veto, non-cooperation, resource retention	Refusal, budget control, non-authorization, procedural delay, abstention	Absence of action can preserve or intensify existing relations
Measurement	Visibility and comparability	Indicator design, data access, category definition, sampling, standards	What is measurable can shape what becomes actionable
Evaluation	Interpretation of consequence and success	Benchmarks, attribution rules, review authority, audit, narrative control	Evaluation can stabilize or reopen prior commitments
Exit	Continuation of relation	Mobility, portability, substitution, legal right, resource independence	Exit capacity can redistribute bargaining power and residual burden
Asymmetry conversion	Unequal position within the practical field	Dependence, scarcity, coordination, legitimacy, information, timing	An asymmetry becomes power when a usable pathway connects it to practical consequence

what receives salience, how boundaries are drawn, which histories are considered relevant, whose categories become authoritative, and which causal accounts structure the response. The power to define the problem is therefore an upstream form of practical power. It can shape later ends and decisions before alternatives are formally compared.

Definition 10.264 (Problem-definition power). *Problem-definition power* is the situated capacity to influence the salience, boundaries, categories, causal accounts, affected positions, temporal horizon, and response-relevant representation through which a practical condition becomes organized as a problem.

Problem-definition power can operate through agenda setting. Some conditions enter meetings, reports, budgets, and public deliberation while others remain outside the practical agenda. It can operate through categorization. A condition described as a technical malfunction invites a different response architecture from the same condition described as an institutional coordination failure, a capability deficit, a rights concern, or a historical dependency. It can operate through scale selection. A local framing can obscure system-level propagation, while a system-wide framing can flatten local differences. It can operate through temporal framing when short-horizon stabilization receives attention while slow accumulation remains peripheral.

The capacity to define a problem is distributed across multiple sites. Affected actors can introduce experiences unavailable to formal decision-makers. Technical specialists can characterize mechanisms and constraints. Institutions can determine official categories. Data systems can make some populations visible while leaving others weakly represented. Media, professional communities, legal procedures, and organizational routines can affect salience. The practical field can therefore contain several competing centers of problem-definition power rather than one sovereign source.

Problem-definition power is especially consequential when later action is path-dependent. Early framing can determine what evidence is collected, which interventions are funded, and which actors are treated as relevant participants. These choices can produce feedback. Once measurement systems, institutional mandates, or professional routines are organized around a formulation, alternative formulations may become more costly to introduce. The initial problem representation can thereby acquire persistence beyond the evidence that originally supported it.

Definition 10.265 (Problem-framing leverage). *Problem-framing leverage* is the degree to which influence over an early problem representation shapes later evidence collection, end selection, option generation, institutional attention, or resource commitment.

High framing leverage increases the practical importance of contestability and revision. A formulation with large downstream consequences warrants explicit provenance: who introduced it, which evidence and experiences supported it, which alternatives were considered, and what would justify reopening it. This requirement does not imply that every practical problem admits unlimited framing. Some formulations can be poorly supported, internally inconsistent, or materially insensitive to observed consequences. Contestability is compatible with disciplined evaluation of competing formulations.

Proposition 10.266 (Upstream leverage of problem definition). *Where problem formulation materially shapes evidence collection, end selection, and option generation, unequal capacity to define the problem can generate downstream practical power even when formal decision rights are distributed elsewhere.*

The proposition prepares Section 10.12, where participation and representation are examined as responses to distributed agency. For the present section, the analytical requirement is narrower: a power analysis should identify who can make a condition practically legible and whose accounts require additional effort, translation, authorization, or evidence before entering the decision process.

10.11.2 Power to Select the End

Section 10.6 treated ends as provisionally specified valued conditions, relations, capabilities, processes, or transformations toward which praxis is organized. Power enters when some actors possess greater capacity to determine which of several values or futures acquires coordinating force. The power to select the end concerns practical orientation rather than implementation alone.

Definition 10.267 (End-selection power). *End-selection power* is the situated capacity to establish, prioritize, rank, sequence, or exclude practical ends in ways that materi-

ally orient subsequent decision and action.

End-selection power can arise from formal mandate. A governing body can possess authority to adopt a mission or policy objective. It can arise from ownership or resource control when funding is conditional on a specified end. It can arise from expertise when technical feasibility determines which aspirations are treated as realistic. It can arise from institutional tradition when inherited goals possess default legitimacy. It can also arise through agenda control when one value enters formal deliberation while another remains represented only indirectly.

The selection of ends can redistribute future agency. An end centered on rapid completion can compress opportunities for participation. An end centered on standardization can reduce local discretion. An end centered on resilience can justify redundancy that would appear inefficient under a narrower objective. An end centered on preserving future option space can favor staged commitment. These differences illustrate why ends are practically constitutive: they organize which consequences count as success, which trade-offs become visible, and which capabilities receive investment.

Power over ends also operates through the specification of their level of abstraction. Broad ends such as safety, dignity, learning, sustainability, or institutional reliability require interpretation before they guide action. More operational ends specify thresholds, populations, timescales, or institutional responsibilities. Actors who control this translation can shape praxis even when the higher-level value is widely shared.

Definition 10.268 (End-specification leverage). *End-specification leverage* is the capacity to translate a broadly accepted value or orientation into operational ends, priorities, thresholds, and temporal horizons that guide concrete action.

End-selection power therefore deserves separate analysis from normative agreement. A group can agree that a value matters while disagreeing about which practical end expresses it. Likewise, actors can endorse the same end in language while attaching different temporal horizons, burden distributions, or revision conditions. Recording these specifications helps prevent apparent consensus from obscuring materially different orientations.

The revisability of ends introduced in Section 10.6 also has a power dimension. Some actors can reopen ends when consequences change, while others can only adapt within an inherited objective. A practical power profile should therefore include both the capacity to establish ends and the capacity to trigger their revision.

Proposition 10.269 (Power through end specification). *Where broad values require operational translation, influence over the specification, sequencing, and revision of practical ends can shape later action even when the underlying value commitment is widely shared.*

10.11.3 Power to Decide

Decision power concerns the capacity to convert a set of considered possibilities into an authorized commitment. Section 10.8 treated decision as provisional commitment under incomplete knowledge. The present subsection adds a positional question:

who can make, approve, veto, ratify, delegate, or reopen that commitment?

Definition 10.270 (Decision power). *Decision power* is the situated capacity to authorize, block, ratify, delegate, condition, or reopen a practical commitment among available or generated alternatives.

Decision power is often institutionally explicit. Constitutions, contracts, organizational charters, professional rules, emergency procedures, and delegated mandates can specify who decides. Practical decision power, however, can diverge from formal allocation. An actor with nominal authority can depend on another actor for information, implementation, budget, legal interpretation, or political support. Conversely, an actor without formal authority can acquire effective veto power through indispensability, control of a critical resource, or capacity to impose high coordination costs.

This distinction can be recorded through a decision-authority profile.

Definition 10.271 (Decision-authority profile). A *decision-authority profile* maps formal decision rights, effective veto points, delegation relations, information dependencies, approval requirements, emergency competences, and reopening pathways for a practical commitment.

The profile also clarifies the relation between authority and exposure. The actors authorized to decide can differ from those who bear the principal risks described in Section 10.10. This divergence does not by itself determine legitimacy, because practical arrangements can require representation, expertise, delegation, or division of labor. It does create a question that later sections on participation, responsibility, and justice must address: how are decision rights related to affected positions, knowledge, accountability, and capacity for revision?

Decision power can also be temporal. Emergency authority can concentrate decision capacity for a limited period. Sunset clauses can return authority after stabilization. Sequential approval can distribute power across stages. Pilot authorization can permit limited commitment while reserving later expansion to another body. These structures show that decision power can be designed rather than treated as a fixed possession.

Definition 10.272 (Decision-power temporality). *Decision-power temporality* is the distribution of decision authority across stages, durations, triggering conditions, review points, and reopening events within a practical process.

A decision system can therefore balance speed and distributed control in several ways. Urgent stabilization may require concentrated authority, while durable structural commitment may require broader review. Reversible pilots can be authorized at a lower threshold than irreversible expansion. The appropriate architecture depends on consequence, uncertainty, urgency, and reversibility rather than on one universal model of decision.

Proposition 10.273 (Decision power and consequence exposure). *Where decision authority and consequence exposure occupy different practical positions, analysis of the decision should preserve both the authorization structure and the distribution of risk, recovery capacity, and revision rights.*

10.11.4 Power to Act

The power to decide does not guarantee the power to act. Implementation requires effective capacities: resources, knowledge, infrastructure, access, coordination, legal competence, organizational routines, labor, technology, and often the cooperation of other actors. Section 10.7 described effective action space as a function of reachability. Power to act concerns unequal capacity to convert authorized possibilities into material or relational transformation.

Definition 10.274 (Action power). *Action power* is the situated capacity to mobilize the resources, capabilities, access, coordination, authority, and infrastructures required to transform an authorized or intended practical possibility into consequential intervention.

Action power can be concentrated even when decision power is distributed. A collective body can formally authorize an intervention while a small operational unit controls execution. It can also be fragmented. Several actors may each control a necessary component, making action dependent on coordination. In such cases practical power can arise from complementarity: an actor becomes powerful because its contribution is difficult to substitute within the relevant time window.

Implementation also contains discretion. Written decisions rarely specify every local adjustment, sequence, exception, or interpretation. Front-line actors, technical operators, contractors, administrators, and coordinating institutions can therefore exercise power through implementation choices. Their discretion can improve adaptation when local knowledge is important. It can also reshape the intervention away from the assumptions under which it was authorized. A power analysis should therefore preserve the translation from decision to action.

Definition 10.275 (Implementation discretion). *Implementation discretion* is the practical latitude available to actors who translate an authorized commitment into concrete sequences, allocations, classifications, exceptions, and interactions.

Action power includes the capacity to sustain intervention through time. A short mobilization can be easier than maintaining staffing, financing, infrastructure, monitoring, and repair. Durable power therefore depends partly on maintenance capability. This temporal dimension is especially important when interventions create dependencies that outlast the initial decision.

Action power can also generate future power. Infrastructure built for one purpose can become a platform for later intervention. Organizational learning can increase coordination capacity. Successful implementation can create legitimacy, standards, or network position. Conversely, failed implementation can erode trust, resources, or authority. Power is therefore dynamically generated and depleted through praxis.

Definition 10.276 (Power-generating implementation). *Power-generating implementation* is an intervention whose execution materially changes the later capacity of one or more positions to define, decide, act, withhold, measure, evaluate, or exit.

This definition prepares the later analysis of institutional and collective praxis. It also prevents action power from being treated as a static stock. Practical capabilities can accumulate, decay, diffuse, or become dependent on infrastructures and relations created by earlier interventions.

Proposition 10.277 (Implementation as a locus of power). *Where concrete execution requires interpretation, sequencing, coordination, and local adaptation, the distribution of implementation capacity can materially reshape an authorized decision and its later power structure.*

10.11.5 Power to Withhold Action

Section 10.9 developed non-action as a family of practical forms. Power analysis adds a further distinction: the capacity to withhold action can itself be unevenly distributed. Some actors can delay approval, retain resources, refuse cooperation, suspend service, decline information, or preserve optionality while others continue to bear the consequences of the existing situation.

Definition 10.278 (Withholding power). *Withholding power* is the situated capacity to alter a practical process by delaying, declining, suspending, retaining, or conditioning an action, resource, authorization, cooperation, or contribution whose absence is consequential for other positions.

Withholding power can be formal, as with a veto or approval requirement. It can be material, as when an actor controls a scarce resource. It can be informational, as when necessary data or expertise are not supplied. It can be organizational, as when participation in coordination is indispensable. It can also arise from temporal asymmetry. An actor able to wait can possess leverage over an actor facing urgent loss.

This temporal dimension deserves explicit attention.

Definition 10.279 (Temporal leverage). *Temporal leverage* is practical power generated by unequal capacities to wait, absorb delay, accelerate commitment, or impose time costs within a consequential relation.

Temporal leverage connects power to urgency. Section 10.8 treated urgency as a property of how delay changes consequences and option spaces. When actors experience different costs of delay, the actor with greater temporal resilience can often demand concessions, defer commitment, or preserve alternatives unavailable to others. The resulting power does not require explicit coercion; it can arise from the structure of time-sensitive dependence.

Withholding power also has a collective form. Coordinated refusal can interrupt a process that individual refusal would barely affect. Conversely, fragmented actors may possess little individual leverage even when their combined contribution is essential. Organization and coordination can therefore convert diffuse capacity into practical power.

The consequences of withholding require the same distributional analysis used for action. Withholding can protect against poorly warranted intervention. It can preserve rights, autonomy, or safety. It can also prolong exposure, entrench an existing asymmetry, or transfer costs toward actors with weaker reserves. Its practical meaning depends on the relation, the reasons for withholding, available alternatives, and who bears the consequences of delay.

Proposition 10.280 (Power through consequential absence). *Where the absence of an actor's authorization, resource, cooperation, information, or contribution materi-*

ally changes another position's practical possibilities, capacity to withhold that contribution constitutes a form of practical power.

10.11.6 Power to Measure

Measurement is a locus of power because application-dominant praxis depends on representations of conditions, performance, risk, burden, progress, and consequence. The capacity to determine what is measured, how categories are defined, where data are collected, which populations are represented, and which uncertainties remain visible can shape what later actors treat as practically real.

Definition 10.281 (Measurement power). *Measurement power* is the situated capacity to shape the categories, indicators, data-generating procedures, standards, observation boundaries, and evidential infrastructures through which a practical situation and its consequences become quantitatively or qualitatively represented.

Measurement power begins with category formation. Categories can determine which differences become visible and which are aggregated. It continues through indicator choice. A proxy can foreground one dimension of performance while leaving another weakly represented. It operates through sampling and access, because some actors, events, or spaces can be easier to observe than others. It also operates through technical standards, metadata, interoperability, and archival practices that determine which observations can travel across institutions and time.

Measurement power should be distinguished from fabrication or manipulation. A measurement regime can be technically competent and still exercise power because every practical representation selects dimensions, resolutions, categories, and boundaries. The relevant question is therefore how these selections are made, whose positions they represent, which uncertainties they retain, and how readily the system can be revised when consequences escape its categories.

Definition 10.282 (Measurement regime). A *measurement regime* is the organized configuration of categories, indicators, instruments, observation practices, data access, standards, validation procedures, and reporting conventions through which a practical field becomes evidentially represented.

Measurement regimes can acquire path dependence. Once budgets, targets, contracts, audits, and professional routines depend on an indicator, revision becomes costly. Actors can adapt their behavior to what is measured. The measure can thereby participate in changing the practical situation it represents. This generative feedback is especially important when performance indicators influence resource allocation or legitimacy.

Measurement also affects distribution. Actors with strong data infrastructure can make their conditions visible in forms readily accepted by institutions. Actors whose experiences are difficult to encode can require additional translation or advocacy before their conditions enter formal analysis. Qualitative testimony, local knowledge, and interpretive evidence can therefore be practically important complements where standardized metrics have limited reach.

Definition 10.283 (Measurement contestability). *Measurement contestability* is the practical capacity to question, supplement, reinterpret, or revise the categories, in-

dicators, data boundaries, and validation procedures used to represent a practical situation.

Contestability does not require permanent instability of measurement. Stable measures are often necessary for coordination and comparison. The aim is to preserve pathways for revision when the measure systematically omits consequential dimensions or begins to govern behavior in ways that undermine the practical end.

Proposition 10.284 (Measurement as practical intervention). *Where measurement structures attention, resource allocation, accountability, or behavior, the design and maintenance of the measurement regime form part of application-dominant praxis rather than a neutral stage external to it.*

10.11.7 Power to Evaluate

Measurement provides representations; evaluation assigns practical significance to those representations. Evaluation power concerns the capacity to determine whether an intervention is treated as successful, acceptable, harmful, incomplete, or in need of revision. It therefore influences continuation, scaling, termination, compensation, institutional learning, and historical memory.

Definition 10.285 (Evaluation power). *Evaluation power* is the situated capacity to shape the criteria, benchmarks, attribution rules, evidential interpretations, temporal horizons, and review procedures through which practical consequences are judged and prior commitments are continued, revised, or closed.

Evaluation power begins with criteria. An intervention can look successful under one criterion and problematic under another. Immediate output can improve while long-horizon capability declines. Aggregate benefit can rise while burdens concentrate. A target can be met while the underlying problem representation becomes obsolete. The choice of evaluative criteria therefore connects directly to the ends specified in Section 10.6.

Evaluation power also operates through attribution. Consequences emerge from multiple interacting processes. Evaluators decide, explicitly or implicitly, which changes count as effects of the intervention, which are attributed to external conditions, and which remain uncertain. These choices affect responsibility and learning. Over-attribution can exaggerate effectiveness; under-attribution can obscure harm or contribution. A disciplined evaluation should preserve uncertainty about causal contribution where the evidence remains incomplete.

Temporal horizon is another locus of evaluative power. Early evaluation can privilege immediate effects. Late evaluation can miss harms borne by actors who have already exited or disappeared from the data. Short review cycles can favor interventions with rapid measurable outputs over slower capability formation. Long-horizon analysis can reveal path dependence and maintenance burdens that initial assessments could not observe.

Definition 10.286 (Evaluation frame). An *evaluation frame* is the specified combination of evaluative criteria, comparison baselines, attribution rules, affected positions, evidence standards, temporal horizons, and revision triggers used to judge practical consequence.

Evaluation frames can themselves be contested and revised. Independent review, plural indicators, affected-subject testimony, counterfactual comparison, longitudinal observation, and explicit uncertainty records can broaden the evaluative field. The appropriate combination depends on the practical problem and the consequence structure.

Evaluation power is especially consequential when it feeds back into legitimacy and resource allocation. An institution that evaluates its own success can possess strong incentives and informational advantages. External evaluators can increase independence while lacking local knowledge. Participatory evaluation can broaden experience while introducing coordination and representation challenges. The problem is therefore architectural: how should evaluation authority, evidence access, and contestability be distributed for the practical stakes at issue?

Definition 10.287 (Evaluation-revision power). *Evaluation-revision power* is the capacity to use evaluative findings to trigger continuation, scaling, redesign, suspension, repair, compensation, or reopening of a practical commitment.

This concept distinguishes evaluative voice from practical consequence. An actor can produce a critical evaluation while lacking authority to alter the intervention. Conversely, a decision-maker can possess reopening authority while lacking direct access to the evidence needed to recognize failure. Effective accountability later in the chapter will require connection between evaluation, traceability, and revision capacity.

Proposition 10.288 (Evaluation power and practical memory). *Where evaluations determine which consequences are officially recorded, attributed, and carried forward into later decisions, evaluation power contributes to the practical memory through which future praxis is organized.*

10.11.8 Power to Exit

Section 10.9 treated exit as termination or substantial severance of participation in a relation, institution, process, or arrangement. Power analysis focuses on unequal capacities to exercise exit and on the effects that credible exit can have before departure occurs. Exit power therefore includes both realized departure and bargaining leverage generated by the practical availability of departure.

Definition 10.289 (Exit power). *Exit power* is the situated capacity to leave, substitute away from, or materially reduce dependence on a practical relation in ways that alter one's own exposure or the bargaining and consequence structure of the relation.

Exit power depends on more than formal permission. Effective exit can require mobility, portable rights, alternative providers, independent resources, transferable credentials, information, social support, legal status, technical interoperability, or recoverable assets. A right of exit with prohibitive transition cost can provide little practical leverage. Section 10.7 therefore remains relevant: exit belongs to the effective action space only where it is reachable under the actor's actual conditions.

The credibility of exit can affect negotiation without being exercised. An actor with multiple alternatives can resist unfavorable terms. An actor whose departure would remove a scarce capability can obtain concessions. Conversely, actors with

high switching costs or few substitutes can become locked into relations even when formal exit remains available.

Definition 10.290 (Exit asymmetry). *Exit asymmetry* is a difference between practical positions in the cost, feasibility, timing, or consequence of leaving a relation or replacing the counterpart on which the relation depends.

Exit asymmetry can generate dependency power. A relation in which one actor can leave easily while another cannot can produce bargaining leverage even in the absence of explicit threat. This leverage is especially strong when the dependent actor faces urgent needs, limited substitutes, or irreversible loss during transition.

Exit also redistributes residual burden. When a powerful actor leaves, maintenance costs, liabilities, knowledge gaps, infrastructure, or risk can remain with those who cannot exit. Exit can therefore improve one position's action space while contracting another's. A practical assessment should record who inherits residual obligations and whether the departing actor retains responsibility for consequences already generated.

Exit capacity can also be protective. The availability of exit can reduce domination, create competition, enable experimentation, and discipline institutions that otherwise face weak feedback. Yet some collective goods depend on durable cooperation, and easy exit by advantaged actors can undermine shared capacities. The practical value of exit therefore depends on the relation and on the institutional architecture surrounding departure.

Definition 10.291 (Residual-burden profile of exit). A *residual-burden profile of exit* records the liabilities, maintenance duties, risks, capability losses, stranded resources, and coordination burdens that remain distributed among other positions after an actor leaves or materially reduces participation.

Proposition 10.292 (Exit capacity and bargaining structure). *Where dependence is asymmetric, differences in feasible exit and substitution can alter bargaining power before exit occurs and can redistribute substantial burdens if exit is exercised.*

10.11.9 Conversion of Asymmetry into Practical Power

The preceding subsections identify several loci at which practical power can operate. They also reveal a more general question: how does an asymmetry become power? Actors differ in resources, information, legal status, organizational position, legitimacy, mobility, expertise, visibility, time horizon, network centrality, and access to infrastructure. These differences can matter greatly, yet an asymmetry becomes practically powerful only when a conversion pathway connects the difference to the capacity to shape consequential praxis.

Definition 10.293 (Practical asymmetry). A *practical asymmetry* is a consequential difference between positions in resources, capabilities, information, authority, dependence, access, timing, legitimacy, mobility, visibility, coordination, or another condition relevant to praxis.

Definition 10.294 (Power-conversion pathway). A *power-conversion pathway* is a relational mechanism through which a practical asymmetry becomes effective capacity to shape problem definition, ends, decisions, action, withholding, measurement, eval-

uation, exit, or the future action spaces of other positions.

The conversion requirement matters because possession and effect are distinct. Expertise becomes power when institutions defer to expert categories, when alternatives require technical certification, or when specialist knowledge controls access to action. Wealth becomes power when resources can purchase scarce capability, sustain delay, finance organization, secure alternatives, or condition participation. Network centrality becomes power when coordination depends on passage through a node. Legal authority becomes power when rules are enforceable and institutional actors recognize the competence. Social legitimacy becomes power when it mobilizes cooperation or constrains what decision-makers can sustain.

Power conversion is therefore mediated by institutions and relations. The same asymmetry can have different effects across settings. Information advantage can matter little where independent verification is cheap and rapid, while becoming decisive where verification is costly and decisions are urgent. Resource advantage can matter less where essential services are guaranteed, while becoming powerful where access depends on private provision. Formal authority can weaken where implementation is fragmented, while informal coordination capacity becomes decisive.

Definition 10.295 (Conversion condition). A *conversion condition* is a relational, institutional, material, temporal, or epistemic feature that enables, amplifies, constrains, redirects, or blocks the transformation of a practical asymmetry into effective power.

Several recurrent conversion conditions can be distinguished. *Dependence* increases the consequence of another actor's choices. *Scarcity* reduces substitutability. *Urgency* can increase the value of immediate access. *Coordination centrality* can make one position necessary for collective action. *Legitimacy* can transform claims into compliance. *Opacity* can protect informational advantage. *Standardization* can make control over a standard consequential across many actors. *Lock-in* can increase the cost of switching. *Institutional recognition* can convert formal status into enforceable authority. These conditions often interact.

Power conversion can also be cumulative. An initial advantage can generate resources that strengthen later advantages. Control over measurement can shape evaluation; favorable evaluation can increase legitimacy; legitimacy can expand decision authority; authority can direct resources; resources can increase implementation capacity. Such sequences create reinforcing power trajectories. Other architectures can interrupt them through independent review, interoperability, distributed capability, transparency, redundancy, contestability, or protected exit.

Definition 10.296 (Power-conversion chain). A *power-conversion chain* is a temporally ordered sequence in which one practical asymmetry is converted into a form of power that generates or amplifies additional asymmetries and later power capacities.

The possibility of conversion chains gives power a historical structure. Present power can contain accumulated effects of earlier decisions, infrastructures, classifications, property arrangements, institutional mandates, educational access, or technological standards. A snapshot of current authority can therefore understate the generative history through which the position became powerful. Conversely, present asymmetry need not be durable when conversion conditions are changing.

Practical power can also remain latent. An actor may possess a capacity that be-

comes relevant only under specific conditions: emergency authority activates after a threshold; a supplier's leverage increases when inventories fall; exit power rises when alternatives become available; data control becomes consequential when a new reporting regime is introduced. The relevant analysis should therefore identify both exercised power and plausible activation pathways.

Definition 10.297 (Latent practical power). *Latent practical power* is a presently unexercised capacity whose conversion into consequential influence becomes reachable under specified changes in dependence, scarcity, authority, coordination, timing, information, or institutional conditions.

The conversion perspective also helps distinguish asymmetry from domination. Unequal capacity deserves analysis whenever it shapes practical possibility, while normative assessment depends on how that capacity is constituted, constrained, exercised, contested, and distributed. Some asymmetries are functionally useful: specialized expertise, emergency coordination, or delegated authority can increase collective capacity. Their practical acceptability depends partly on scope, accountability, contestability, reversibility, and the relation between authority and affected positions. These questions are developed more directly in Sections 10.12–10.14.

Proposition 10.298 (Conversion of asymmetry into power). *A practical asymmetry becomes effective power when a relational pathway connects that asymmetry to consequential influence over the constitution, direction, execution, interpretation, revision, or future possibility structure of praxis.*

Caution 10.299 (Power inference from observable advantage). Observable advantage provides evidence about possible power while leaving the conversion pathway to be established. Analysis should identify the mechanism through which the advantage changes practical possibilities, dependence, authority, or consequence rather than inferring effective power from the advantage alone.

This section has treated power as distributed across the practical sequence rather than concentrated only at the moment of formal decision. Power can shape what becomes a problem, which ends organize action, whose decision becomes binding, which interventions are executable, who can impose delay, what becomes visible through measurement, how consequence is evaluated, and who can leave while others remain. It can also reshape its own future distribution by generating new dependencies, infrastructures, capabilities, standards, and action spaces.

The resulting architecture raises an immediate question of agency. Once practical power is recognized as distributed across problem formation, knowledge, decision, implementation, evaluation, and exit, application-dominant praxis must determine how affected subjects and other relevant actors enter those processes. Participation cannot be treated solely as attendance at a decision point, because practical agency is exercised across the entire sequence. Section 10.12 therefore turns to participation and distributed agency, examining affected subjects, stakeholders, representation, voice, collective agency, unequal participation, and contestability.

10.12 Participation and Distributed Agency

Section 10.11 showed that practical power can be exercised throughout the sequence of application-dominant praxis: in problem definition, end selection, formal decision, implementation, withholding, measurement, evaluation, and exit. The present section develops the corresponding architecture of participation and agency. Its role is to specify how subjects, collectives, and institutions enter consequential praxis when affectedness, knowledge, authority, capability, and exposure are distributed across different positions. The objective is to distinguish affected subjects, stakeholders, participation, representation, voice, distributed decision-making, collective agency, unequal participation, and contestability, and to clarify the relations among these categories. The analysis remains domain-general and relational. Participation is treated as a stage-specific practical relation whose meaning depends on what participants can contribute, influence, authorize, contest, implement, observe, and revise.

Application-dominant praxis frequently involves actors whose practical relations to an intervention differ substantially. Some positions bear direct consequences. Others possess relevant knowledge. Some provide resources or implementation capacity. Some exercise delegated authority. Others maintain infrastructure, represent absent positions, or absorb residual burdens after a decision. These relations can overlap within one actor and can change over time. A useful participation architecture therefore begins with relational position rather than with a single undifferentiated category of participant.

Participation also has a generative dimension. A participatory arrangement can change later knowledge, trust, coordination capacity, institutional memory, bargaining position, representational categories, and the action spaces described in Section 10.7. It can generate collective capabilities that were initially absent. It can also consume scarce time, expose participants to risk, stabilize particular representatives, or create procedural dependencies. Participation is therefore part of the practical intervention itself whenever it materially changes the relations through which later action is organized.

Definition 10.300 (Participation architecture). A *participation architecture* is the organized configuration of affected positions, stakeholders, representational relations, voice pathways, decision rights, collective capacities, participation burdens, and contestability mechanisms through which actors enter, influence, enact, observe, and revise application-dominant praxis.

Table 10.12 summarizes the main elements developed below. Their separation matters because a practical system can be strong in one dimension and weak in another. A process can invite broad participation while preserving concentrated decision rights. It can provide representation while leaving voice weakly heard. It can distribute decision authority while lacking collective capacity to coordinate implementation. It can permit objections while making review practically inaccessible. Participation analysis therefore benefits from following the entire architecture rather than counting participants or procedural opportunities alone.

Table 10.12: Principal elements of participation and distributed agency in application-dominant praxis.

Element	Practical relation	Characteristic contribution	Characteristic concern
Affected subjects	Exposure to consequence	Experience, situated knowledge, articulation of burden, benefit, capability, and option change	Some affected positions may be weakly visible, temporally distant, or unable to participate directly
Stakeholders	Consequential relation to praxis	Knowledge, authority, resources, responsibility, implementation, maintenance, dependence, or affectedness	Stakeholder status can differ in kind and does not by itself establish equal standing over every practical question
Participation	Entry into practical stages	Information, interpretation, value articulation, proposal, decision, implementation, monitoring, or revision	Formal access can diverge from effective influence and from the burdens of participation
Representation	Acting or speaking for other positions	Aggregation, delegation, continuity, translation, coordination, advocacy	Mandate, accountability, feedback, substitution, and representational distance require explicit treatment
Voice	Communicable practical expression with uptake pathways	Experience, claim, objection, proposal, warning, dissent, local knowledge	Expression can remain practically weak when reception, translation, protection, or response capacity is absent
Distributed decision-making	Allocation of decision rights across positions, stages, or scales	Local adaptation, differentiated expertise, shared authority, redundancy, staged commitment	Fragmentation, conflict, unclear escalation, and responsibility gaps can impair coordination
Collective agency	Coordinated capacity to form and sustain joint praxis	Shared orientation, coordination, memory, implementation, learning, revision	Collective capacity can vary across stages and can obscure internal asymmetries when treated as unitary
Unequal participation	Uneven practical capacity to enter and influence praxis	Reveals differences in time, safety, resources, language, expertise, recognition, and procedural access	Equal formal invitation can coexist with sharply unequal costs, risks, and effective influence
Contestability	Capacity to challenge and reopen practical arrangements	Correction, alternative evidence, dissent, appeal, review, reframing, reopening	Contestability requires usable pathways, protection, response conditions, and consequences for justified challenge

10.12.1 Affected Subjects

The first positional category concerns subjects whose conditions are materially altered by praxis. Section 10.10 showed that exposure to risk, reversibility, and recovery capacity can be distributed unevenly. Section 10.11 further showed that decision authority and exposure can occupy different positions. The concept of an affected subject identifies this consequence-bearing relation without presuming that the sub-

ject possesses formal authority, recognized stakeholder status, or direct access to the process through which the consequence is produced.

Definition 10.301 (Affected subject). An *affected subject* is a person, collective, community, organization, or other practically relevant subject-position whose capabilities, relations, burdens, benefits, risks, rights, dependencies, environments, future options, or conditions of action are materially altered by an intervention, non-action, institutional arrangement, or practical trajectory.

Affectedness can arise through direct contact with an intervention, through propagation across relations, or through slower generative effects. A person can be affected because a service changes immediately. A community can be affected through altered access to infrastructure. A later population can inherit environmental, institutional, or technological consequences. An organization can absorb maintenance duties created by an earlier decision. A subject can also be affected through loss of an option, increased dependency, changed classification, or altered capacity to exit. The category therefore extends beyond immediate recipients of an intervention.

The degree and form of affectedness are also multidimensional. Magnitude matters, but so do duration, reversibility, dependence, voluntariness, substitutability, distribution, and recovery capacity. A modest persistent burden can matter differently from a large transient burden. A reversible inconvenience differs from a loss that closes future options. A benefit that can be declined differs from one whose receipt creates dependency. These dimensions can be recorded without reducing them to one scalar measure.

Definition 10.302 (Affectedness profile). An *affectedness profile* is a stage- and horizon-specific account of the kinds, magnitudes, durations, reversibility conditions, dependencies, option changes, and recovery capacities through which a subject-position is exposed to the consequences of praxis.

Affected subjects can be difficult to identify prospectively. Some consequences emerge only after implementation. Some propagate through relations that were initially outside the practical boundary. Some affect subjects who are institutionally unregistered or whose experiences are weakly represented by available categories. Some concern future subjects who cannot presently articulate claims. The practical task is therefore partly anticipatory. Problem formation, scenario analysis, local knowledge, historical reconstruction, monitoring, and revisable boundary setting can all contribute to identifying affected positions before and after commitment.

Affectedness can also be relationally asymmetric. An intervention can improve the action space of one position while narrowing another's. A procedure can reduce aggregate risk while concentrating residual risk among actors with weaker recovery capacity. A technological system can create convenience for users while increasing monitoring or maintenance burdens elsewhere. Such cases connect affectedness to the distributional analysis developed in Sections 10.10 and 10.11.

The category of affected subject has an epistemic function as well. Affected positions can possess situated knowledge unavailable to designers, decision-makers, or evaluators. They can encounter implementation details, cumulative burdens, practical frictions, or emergent consequences before those become visible in formal measurement. This knowledge should be assessed for its local scope and evidential char-

acter, while its situated origin can itself be informative about how consequences are distributed.

Proposition 10.303 (Affectedness and practical standing). *Where a practical trajectory materially alters a subject-position's burdens, capabilities, dependencies, risks, or future options, that affectedness provides a reason to include the position within the practical analysis and to consider appropriate pathways for knowledge, voice, protection, participation, representation, or review.*

Practical standing can vary with the question being addressed. A subject bearing direct irreversible risk can have strong grounds for participation in risk assessment and protective design. A subject with minor indirect exposure may have a different relation to implementation details. A future affected population may require representation through institutions, guardianship, scenario analysis, or preserved option space because direct participation is unavailable. The relevant architecture should therefore connect forms of affectedness to suitable forms of inclusion rather than assuming one identical participatory role for every affected subject.

10.12.2 Stakeholders

Affectedness identifies one relation to praxis. Application-dominant settings usually contain additional actors whose relevance arises through authority, responsibility, knowledge, resources, implementation, maintenance, dependence, or capacity to alter outcomes. The stakeholder category is useful for mapping this wider field, provided that it remains analytically differentiated.

Definition 10.304 (Practical stakeholder). *A practical stakeholder is an actor, collective, institution, or organized position with a consequential relation to a practical process through affectedness, authority, responsibility, knowledge, capability, resource contribution, implementation, maintenance, dependence, representation, monitoring, evaluation, or another role that can materially shape or be shaped by the praxis.*

Stakeholder status is therefore relational rather than honorary. An actor becomes practically relevant through a specified connection to the process. The connection should be named. One stakeholder may be a directly affected subject. Another may be responsible for implementation. A third may possess specialized knowledge. A fourth may finance or maintain infrastructure. A fifth may represent absent or dispersed subjects. Mapping these relations prevents the word *stakeholder* from flattening heterogeneous positions into a single generic category.

A stakeholder map also benefits from distinguishing interests from responsibilities. Some actors have strong interests in the outcome while possessing limited responsibility for the process. Others bear formal responsibilities even when their own interests are modest. Some actors possess knowledge without decision authority. Some can block action without bearing its principal consequences. These configurations matter because participation design should respond to the practical relation at issue.

Definition 10.305 (Stakeholder-role profile). *A stakeholder-role profile records the relevant actor's affectedness, authority, knowledge, capability, resource relation, responsibility, implementation role, dependence, representational function, monitoring function, and capacity to alter or contest the practical process.*

Stakeholder relations can change as praxis develops. An organization that begins as a technical adviser can become an implementer. An affected community can develop collective capacity and become a co-decision body. A supplier can become infrastructurally indispensable. An evaluator can acquire agenda-setting power when future funding depends on its assessment. Stakeholder analysis should therefore be updated at important transition points rather than treated as a one-time inventory.

The category also requires boundary discipline. A practical process can generate a very wide network of indirect interests. Expanding the stakeholder list without distinguishing relevance can make participation unworkable and obscure highly affected positions. A useful approach is to specify the relation, stage, and issue for which a stakeholder is relevant. This can support differentiated forms of participation: some actors may require decision rights, others technical consultation, others monitoring access, others protected voice, and others representation.

Definition 10.306 (Stakeholder topology). A *stakeholder topology* is a relational map of the actors and positions connected to a practical process, the kinds of connection among them, the stages at which those connections become consequential, and the pathways through which influence, burden, information, responsibility, or dependency can propagate.

The topology perspective also reveals missing positions. If implementation relies on unpaid maintenance, informal coordination, local mediation, or household adaptation, the relevant actors may be practically central even when absent from formal governance charts. Conversely, an institution can appear prominent in organizational documentation while having limited influence over the practical stage under analysis. Mapping relations rather than titles improves the accuracy of participation design.

Caution 10.307 (Stakeholder equivalence). Stakeholder status identifies a consequential relation to praxis. It does not by itself establish identical standing, authority, burden, expertise, responsibility, or claim strength across heterogeneous stakeholders. These dimensions should remain separately represented.

This caution is important for later justice analysis. A process that gives each stakeholder the same procedural unit of influence can still reproduce substantial asymmetry if affectedness, risk, dependence, responsibility, or participation cost differ sharply. The stakeholder concept supports mapping; normative weighting requires additional argument.

10.12.3 Participation

Participation concerns practical entry into the process through which a situation is interpreted and acted upon. Because Section 10.11 distributed power across many loci, participation should be analyzed across corresponding stages. Actors can participate in problem recognition, evidence formation, interpretation, end specification, option generation, decision, implementation, monitoring, evaluation, and revision. These forms differ in their practical effects.

Definition 10.308 (Practical participation). *Practical participation* is a situated relation through which an actor or represented position enters one or more stages of

application-dominant praxis with a recognized pathway to contribute information, interpretation, values, proposals, decisions, implementation, monitoring, evaluation, contestation, or revision.

Participation therefore has several dimensions. *Access* concerns whether entry is possible. *Contribution* concerns what participants can provide. *Uptake* concerns whether contributions enter the practical process. *Influence* concerns whether they can alter problem framing, ends, options, decisions, implementation, or review. *Protection* concerns whether participation can occur without disproportionate retaliation or exposure. *Continuity* concerns whether participation persists through relevant stages rather than ending after a single consultation event.

Definition 10.309 (Participation pathway). A *participation pathway* is the sequence of access points, contribution channels, uptake procedures, influence opportunities, feedback mechanisms, and review rights through which an actor or represented position can enter and remain connected to a practical process.

Participation pathways can be narrow or broad. A public comment period creates an access and expression pathway. A co-design process can extend participation into option generation. A delegated committee can allocate decision rights. Community monitoring can extend participation into implementation and evaluation. Appeal or reopening procedures can preserve participation after initial closure. These differences should be specified because the same label of participation can describe very different practical relations.

Participation can improve praxis in several ways. It can reveal affected positions omitted by the initial problem formulation. It can contribute situated knowledge. It can identify implementation constraints and latent actions. It can expose value conflicts. It can generate trust, shared vocabulary, and coordination capacity. It can also distribute learning across actors so that later adaptation becomes easier. These are possible practical functions whose relevance depends on context; participation does not guarantee them automatically.

Participation also has costs and risks. Meetings consume time. Repeated consultation can impose burdens on actors with limited resources. Disclosure can expose sensitive information or create interpersonal risk. Participation can create expectations that institutions lack capacity to meet. Highly technical processes can shift interpretive labor toward participants who already face burdens. These effects belong inside the intervention footprint rather than being treated as external procedural details.

Definition 10.310 (Participation-stage profile). A *participation-stage profile* records which actors or represented positions can participate at each practical stage, the form of participation available, the contribution expected, the decision or review rights attached to it, and the principal costs or risks of participation.

Stage profiles help identify a common structural problem: participation can be broad during diagnosis and narrow during commitment, or narrow during design and broad only during implementation. Such arrangements can be appropriate when responsibilities differ, but their structure should remain visible. A process that invites experience after the decisive options have already been fixed provides a different form of agency from one that permits participation in problem and option formation.

Participation should also be proportionate to the practical issue. Some technical

operations require specialized competence. Some emergency stages require rapid coordination. Some long-horizon commitments benefit from broader deliberation. Differentiated participation can therefore coexist with strong inclusion when the reasons for differentiated roles, the boundaries of delegated authority, and the pathways for challenge remain explicit.

Proposition 10.311 (Stage-specific participation). *The practical significance of participation depends partly on the stage at which participation occurs, the objects participants can influence, the burdens they bear, and the pathways through which their contributions can alter later praxis.*

10.12.4 Representation

Direct participation is frequently limited by scale, distance, time, expertise, disability, risk, organizational complexity, future affectedness, or the dispersed character of a population. Representation creates a practical relation through which one actor or institution carries the claims, interests, knowledge, values, or authority of positions that do not participate directly at every stage.

Definition 10.312 (Practical representation). *Practical representation* is a recognized relation through which an actor, collective, or institution is authorized, mandated, selected, entrusted, or otherwise positioned to articulate claims, exercise specified functions, or participate in consequential praxis on behalf of other subjects or positions.

Representation can take several forms. It can be electoral, delegated, professional, fiduciary, organizational, statistical, legal, customary, or emergent from collective practice. These forms create different mandates and accountability structures. A technical representative may be authorized to interpret evidence without authority to determine values. A legal guardian can possess decision responsibilities for an absent subject. A community representative can carry locally developed priorities into a larger institutional process. An indicator or aggregate can also function representationally in a different sense by standing for a population within decision systems, although such symbolic representation should be distinguished from agency-bearing representation.

The practical quality of representation depends partly on how the representational relation is maintained. A representative can possess a clear mandate, periodic feedback, accessible communication, and review. Another can remain distant from represented positions after selection. Representation can also become difficult where represented subjects are internally heterogeneous or where the consequences of action differ across subgroups.

Definition 10.313 (Representation chain). *A representation chain* is the sequence of relations through which claims, knowledge, preferences, values, authority, or responsibility are translated from represented positions through one or more representatives into a practical process and back through feedback, reporting, review, or accountability.

Long representation chains can support large-scale coordination while increasing the possibility of translation loss. Each step can aggregate, simplify, reinterpret, prior-

itize, or delay information. The relevant issue is not the mere length of the chain. The important questions concern what is preserved, what is transformed, what feedback remains possible, and whether represented positions can challenge a representation that becomes materially inaccurate or unresponsive.

Representation also has a temporal dimension. The represented population can change. New affected groups can emerge. A mandate appropriate during emergency stabilization can become insufficient for long-term structural decisions. Representatives themselves can acquire knowledge, resources, and institutional position that alter their relation to the people they represent. Representation should therefore be revisable as the practical situation changes.

Definition 10.314 (Representational distance). *Representational distance* is the practical separation between represented positions and the actor or institution acting on their behalf, assessed through access, feedback, information flow, mandate clarity, substitutability, review, and capacity to correct divergence.

Representational distance can be small even across large geographic scale where feedback and accountability are strong. It can be large within the same organization where represented positions have little access to those speaking for them. This concept therefore remains relational rather than spatial.

Some affected subjects cannot authorize representatives directly. Future subjects, very young children, some incapacitated persons, non-human living systems, or diffuse ecological relations can enter praxis only through forms of guardianship, trusteeship, expertise, legal standing, scenario analysis, or institutionalized duties. Such representation carries a special burden of justification because direct feedback can be limited or unavailable. Preserving future options and making assumptions explicit become especially important under these conditions.

Proposition 10.315 (Representation and feedback). *Where direct participation is limited, representation can extend practical inclusion when mandate, translation, feedback, accountability, and revision pathways remain sufficiently connected to the positions and consequences being represented.*

10.12.5 Voice

Participation and representation create channels of entry. Voice concerns the practical capacity to articulate experience, knowledge, judgment, objection, proposal, or dissent in a form that can enter the relevant process and encounter a pathway of reception. Voice therefore links expression to practical uptake without requiring that every expressed claim determine the final decision.

Definition 10.316 (Practical voice). *Practical voice* is the situated capacity of an actor or represented position to articulate a practically relevant experience, claim, interpretation, value, warning, objection, proposal, or dissent through a channel that can be received, considered, and responded to within consequential praxis.

Voice has at least four components. *Expression* concerns the ability to formulate a contribution. *Transmission* concerns access to a channel through which it can travel. *Reception* concerns whether relevant actors or institutions can hear, read, interpret, or otherwise register it. *Response* concerns whether the process provides a way to ac-

knowledge, incorporate, reject with reasons, investigate, or reopen the matter. Weakness at any point can reduce effective voice.

Definition 10.317 (Voice pathway). A *voice pathway* is the practical sequence through which an expression is produced, transmitted, translated where necessary, received by relevant actors, entered into deliberation or review, and connected to a response or revision mechanism.

Voice can be constrained by language, technical vocabulary, procedural rules, time limits, social status, fear of retaliation, accessibility, data requirements, or cultural expectations about legitimate expression. Some knowledge is readily translated into institutional categories. Other knowledge appears as narrative, embodied experience, local practice, informal observation, or a pattern that has not yet acquired a recognized indicator. A participation architecture should therefore consider translation capacity without requiring every form of knowledge to become identical in format.

Voice also differs from influence. An actor can speak extensively while having little capacity to alter the process. Conversely, a brief intervention can have substantial influence when it enters a high-leverage decision point. Recording voice separately from decision power prevents symbolic inclusion from being confused with practical agency.

Definition 10.318 (Effective voice). *Effective voice* is practical voice supported by sufficient transmission, intelligibility, protection, institutional reception, and response capacity for the contribution to have a plausible pathway to affect interpretation, action, review, or the recorded reasons for maintaining the current course.

Effective voice also requires room for disagreement. A process organized only around consensus can suppress information carried by minority positions, dissent, or outlying experience. Dissent can reveal hidden risk, boundary errors, implementation failure, or value conflict. Its practical role depends on evidential quality and relevance, while the architecture should preserve a path through which disagreement can be expressed and examined.

Voice can be collective. Petitions, associations, professional bodies, community organizations, worker groups, user groups, and other collectives can aggregate dispersed experiences into more legible forms. Collective voice can reduce participation cost and increase bargaining capacity, while aggregation can also suppress internal variation. The relation between collective expression and internal diversity therefore remains analytically important.

Proposition 10.319 (Voice and practical uptake). A *participation architecture strengthens effective voice when relevant expressions can travel through protected and intelligible channels into practical reception, reasoned response, monitoring, or revision rather than terminating at the point of expression.*

10.12.6 Distributed Decision-Making

Section 10.11 distinguished formal decision power from implementation, knowledge, and other loci of power. Distributed decision-making develops this insight institutionally. Decision authority can be allocated across actors, stages, domains, or scales so that different positions decide different practical objects under specified conditions.

Definition 10.320 (Distributed decision-making). *Distributed decision-making* is an arrangement in which authority to authorize, condition, implement, revise, veto, escalate, or review practical commitments is allocated across multiple actors, collectives, institutions, stages, domains, or scales according to specified competences and relations.

Distribution can occur by function. One body defines technical standards while another authorizes resource use. It can occur by stage. A local unit can authorize reversible pilots while a broader institution decides durable expansion. It can occur by scale. Local actors can adapt implementation within system-wide safety constraints. It can occur by issue. Affected subjects can possess decision rights over particular forms of data use while institutions retain authority over other operational questions.

Distributed decision-making can support local knowledge, resilience, redundancy, specialization, and adaptation. It can also reduce dependence on a single decision center. Yet distribution can create coordination problems when authority boundaries are unclear, when decisions interact across scales, or when responsibility becomes difficult to trace. The design therefore requires explicit interfaces.

Definition 10.321 (Decision-rights architecture). A *decision-rights architecture* specifies which positions can propose, authorize, condition, veto, implement, review, reopen, or escalate which practical commitments, at which stages and scales, and under which triggering conditions.

Interfaces among decision centers require mechanisms for conflict, inconsistency, and temporal coordination. One unit may need rapid action while another retains review authority. Local adaptation can conflict with system-wide interoperability. A safety body can impose constraints on an operational body. These interactions can be managed through precedence rules, escalation pathways, joint review, time-limited authority, nested mandates, or shared thresholds.

Definition 10.322 (Decision interface). A *decision interface* is the set of rules, communication pathways, escalation procedures, precedence relations, and review conditions through which two or more decision centers coordinate interacting commitments.

Distributed decision-making also has a generative effect on capability. Giving local actors meaningful authority can generate learning and institutional competence. Repeated central override can weaken local capacity. Conversely, highly fragmented authority can prevent actors from developing experience with system-wide consequence. The distribution of decision rights therefore shapes future agency as well as present decisions.

A distributed architecture should also remain connected to affectedness. Decision rights can be allocated partly according to consequence exposure, knowledge, responsibility, competence, or scale. These criteria can point toward different distributions. The practical design question concerns how they are combined for the issue at hand while preserving transparency and revision.

Proposition 10.323 (Distribution and coordination). *Distributed decision-making can expand practical agency when differentiated authority is matched by workable decision interfaces, traceable responsibilities, relevant knowledge, and mechanisms for coordination, escalation, and revision.*

10.12.7 Collective Agency

Distributed decision rights describe an institutional arrangement. Collective agency concerns a different phenomenon: the emergence of a coordinated capacity through which a plurality of actors can form, sustain, implement, and revise joint praxis. Collective agency is relevant when consequential action exceeds the capacity of any single participant and depends on organized relations among participants.

Definition 10.324 (Collective practical agency). *Collective practical agency* is the relationally generated capacity of a plurality of actors to form sufficiently shared practical orientations, coordinate differentiated roles, sustain consequential action through time, learn from consequences, and revise joint commitments through recognizable collective processes.

This definition treats collective agency as a capacity of organized relations. Shared identity can contribute to it, but shared identity is not required in every case. Actors with different interests can develop collective agency around a bounded practical task when coordination, role differentiation, communication, trust, rules, resources, and revision procedures are adequate to sustain joint action.

Collective agency has several constituent capacities. *Orientation capacity* supports formation of a sufficiently shared practical direction. *Coordination capacity* aligns differentiated contributions. *Execution capacity* mobilizes resources and maintains action. *Memory capacity* preserves reasons, commitments, consequences, and prior learning. *Reflection capacity* permits the collective to interpret feedback. *Revision capacity* allows ends, roles, or procedures to change when conditions warrant.

Definition 10.325 (Collective-agency profile). A *collective-agency profile* records a collective's capacities for orientation, coordination, execution, memory, reflection, conflict handling, representation, and revision across the stages relevant to a practical process.

Collective agency can be uneven. A group can coordinate implementation effectively while lacking a reliable process for revising ends. An institution can preserve memory while providing weak voice to front-line participants. A coalition can mobilize quickly and then struggle with maintenance. A distributed network can generate ideas rapidly while lacking authority to commit resources. Profiling these dimensions avoids treating the collective as a unitary actor with a single level of capability.

Collective agency also changes through action. Successful coordination can generate trust, routines, shared vocabulary, and institutional memory. Failure can expose interface problems and prompt redesign. Repeated exclusion can fragment collective capacity. Concentrated authority can increase short-run speed while reducing distributed learning. Participatory processes can generate new organizations that later become durable actors. Collective agency is therefore both a condition and a possible outcome of application-dominant praxis.

Definition 10.326 (Agency-generating participation). *Agency-generating participation* is participation that materially increases the later capacity of actors or collectives to understand, coordinate, decide, act, monitor, contest, or revise within the relevant practical field.

This concept connects participation to the generative orientation of GR. A process

can be evaluated partly by what capacities it leaves behind. An intervention that solves an immediate coordination problem while making future collective action more dependent on a narrow center produces a different generative trajectory from one that builds distributed competence. The comparison remains context-sensitive because some situations require concentrated expertise or emergency coordination.

Collective agency can also contain internal asymmetry. A collective label can obscure unequal voice, agenda control, labor, or risk. Analysts should therefore preserve both levels: the collective's capacity to act externally and the internal relations through which that capacity is produced. This prepares the next subsection on unequal participation.

Proposition 10.327 (Collective agency as generated capacity). *Where coordinated praxis creates durable capabilities for joint orientation, action, learning, memory, and revision, participation can generate collective agency that changes the later practical possibilities of the participating positions.*

10.12.8 Unequal Participation

Participation opportunities are rarely costless or evenly usable. Actors can differ in available time, mobility, language, literacy, technical expertise, digital access, organizational support, safety, social recognition, confidence, care responsibilities, financial reserves, legal status, and familiarity with institutional procedure. These differences can shape who participates, how often, with what form of evidence, and with what practical influence.

Definition 10.328 (Participation inequality). *Participation inequality* is a consequential difference among positions in their practical capacity to access, sustain, influence, benefit from, or safely withdraw from participatory processes relevant to application-dominant praxis.

Participation inequality can appear even under formally identical access conditions. An evening meeting can be open to everyone while remaining difficult for people with care duties or inflexible work. A technical consultation can accept comments from all actors while privileging those able to produce institutionally legible documentation. A digital process can reduce travel cost while excluding actors with weak connectivity or accessibility. Equal formal invitation is therefore one component of participation architecture, while effective participation depends on a wider capability structure.

Definition 10.329 (Participation-burden profile). A *participation-burden profile* records the time, financial cost, cognitive demand, translation requirement, disclosure burden, travel, accessibility need, safety exposure, emotional labor, opportunity cost, and procedural effort required for a position to enter and remain in a participatory process.

Burden profiles can reveal cumulative inequalities. A single meeting may impose a small cost, while repeated consultations over months become difficult for participants without institutional support. Actors whose participation is professionally funded can sustain engagement more easily than actors contributing unpaid time. The resulting asymmetry can gradually shift agenda-setting and institutional mem-

ory toward the more persistent participants.

Recognition also matters. Participants can enter the same forum while their contributions receive different credibility, interpretive generosity, or evidential status. Some forms of expertise are institutionally certified. Other forms arise from lived experience, local practice, maintenance work, or informal observation. A plural methodology can evaluate different forms of contribution according to their evidential function while preserving the possibility that recognition itself is unevenly distributed.

Definition 10.330 (Participation conversion). *Participation conversion* is the process through which formal access to a participatory setting becomes effective capacity to contribute, receive uptake, influence relevant practical objects, and remain connected to feedback and revision.

Participation conversion depends on enabling conditions. Translation, accessible formats, compensation, childcare, protected time, independent facilitation, technical support, confidentiality, transportation, asynchronous participation, capacity building, and procedural education can alter the effective action space of participants. The appropriate supports depend on the actual burden structure and should be treated as part of practical design.

Unequal participation can also be generated by the intervention itself. An institutional reform can create new participation channels for some actors while increasing procedural complexity for others. A data system can amplify the voice of groups with strong reporting capacity. A decentralization process can expand local decision rights where local institutions are strong while leaving other areas with weak practical capacity. Monitoring should therefore examine the distributional effects of participation architecture over time.

The aim of participation design is not necessarily identical influence in every matter. Expertise, responsibility, affectedness, legal authority, and implementation role can justify differentiated functions. The relevant analytical requirement is to make those differences explicit, examine how they are justified, identify the burdens they produce, and preserve pathways for challenge when the differentiation becomes practically harmful or unresponsive.

Proposition 10.331 (Formal access and effective participation). *Formal access becomes effective participation only through conversion conditions that make contribution, uptake, influence, continuity, and safe withdrawal practically reachable for the relevant positions.*

10.12.9 Contestability

Application-dominant praxis requires provisional closure because action cannot remain indefinitely suspended. Sections 10.4, 10.5, and 10.8 nevertheless established that problem formulations, judgments, and decisions remain revisable. Contestability provides an institutional and relational capacity through which such revisability can become practically usable after power, authority, and routines have begun to stabilize a course of action.

Definition 10.332 (Practical contestability). *Practical contestability* is the situated ca-

capacity to question, challenge, supplement, appeal, reopen, or seek review of a problem formulation, evidential claim, practical end, decision, implementation practice, measurement regime, evaluation, representational relation, or other consequential element of praxis through a recognized pathway capable of producing response or revision.

Contestability differs from permanent veto. A contestable arrangement can continue operating while preserving channels through which challenges are heard, reasons are examined, and material errors or harms can trigger review. It also differs from informal complaint alone. Effective contestability requires a path from challenge to a body or process capable of responding.

Definition 10.333 (Contestability pathway). A *contestability pathway* is the sequence through which a challenge can be raised, protected, received, documented, assessed, answered, escalated where necessary, and connected to correction, compensation, suspension, redesign, or reopening.

Contestability can operate at multiple loci. Problem-definition contestability permits alternative framing and boundary revision. Evidential contestability permits supplementary data, methodological challenge, or reanalysis. Normative contestability permits disagreement about ends and burden distribution. Decision contestability permits appeal or review of commitments. Implementation contestability addresses local practices. Measurement contestability, introduced in Section 10.11, permits challenge to categories and indicators. Evaluation contestability permits alternative interpretations of success or harm. Representational contestability permits represented positions to challenge those acting on their behalf.

The usability of these pathways depends on several conditions. Challengers need information about the decision and the reasons supporting it. They need access to records or evidence adequate to formulate a challenge. They may need protection from retaliation. Review needs sufficient independence from the original decision where conflicts of interest are substantial. Time matters because a review completed after irreversible consequences can have limited practical value. Remedies also matter; a process that can acknowledge an error without changing anything has weaker practical contestability than one connected to correction or compensation.

Definition 10.334 (Contestability architecture). A *contestability architecture* is the organized set of transparency, access, protection, review, escalation, timing, remedy, and reopening arrangements through which consequential praxis remains practically challengeable after provisional commitment.

Contestability can support learning. A challenge can reveal an omitted affected position, an unreliable measurement, a changed implementation condition, an unanticipated interaction, or a value conflict that earlier stages did not adequately represent. When records preserve the challenge and the response, contestation becomes part of institutional memory. Recurrent challenges can indicate that the problem lies in the underlying architecture rather than in isolated decisions.

Contestability also has costs. Endless reopening can impede coordination, create uncertainty, or allow strategically powerful actors to delay protective action. Practical design therefore requires thresholds, standing rules, time windows, escalation levels, or differentiated review procedures. These constraints should preserve mean-

ingful access while preventing the review system from becoming a general mechanism of paralysis. The appropriate structure depends on urgency, irreversibility, burden, and the availability of corrective action.

Definition 10.335 (Protected dissent). *Protected dissent* is an institutionalized condition under which participants can raise materially relevant disagreement, warnings, or objections without disproportionate retaliation and with access to a documented pathway of practical response.

Protected dissent is especially important where authority is concentrated, information is asymmetric, or implementation occurs far from formal decision centers. Front-line actors and affected subjects can observe consequences before central institutions do. Preserving a channel for early warning can therefore improve both epistemic quality and practical safety.

Proposition 10.336 (Contestability and revisable closure). *Practical closure remains more effectively revisable when participants and affected positions retain usable pathways to challenge consequential assumptions, decisions, implementations, measurements, evaluations, and representations after commitment.*

Participation and distributed agency therefore concern more than presence within a deliberative forum. They concern how affectedness is identified, how stakeholders are differentiated, how participation enters successive stages, how absent positions are represented, how voice reaches practical uptake, how decision rights are distributed, how collective capacity is generated, how participation burdens are allocated, and how established arrangements remain contestable. These relations shape both present action and the future capacities through which actors can participate in later praxis.

The architecture developed here also creates a problem of responsibility. Distributed agency can improve knowledge, coordination, and legitimacy while making causal and normative responsibility more difficult to locate. A decision can be jointly authorized, locally implemented, technically advised, institutionally funded, externally evaluated, and later revised by actors who occupy different positions in the process. Participation can also create responsibilities of representation, response, maintenance, and follow-through. Section 10.13 therefore turns to responsibility and accountability, distinguishing responsibility for decision, action, inaction, uncertainty, distributed contribution, institutional structure, traceability, and long-horizon consequence.

10.13 Responsibility and Accountability

Sections 10.11 and 10.12 showed that application-dominant praxis is distributed across multiple loci of power and multiple forms of participation. Problem definition, end specification, decision, implementation, measurement, evaluation, representation, contestation, and exit can be carried by different actors and institutions. This distribution creates a corresponding question of responsibility. The present section examines responsibility across the full practical sequence, extending its analysis beyond a single moment of choice, a single causal actor, or retrospective blame. Its objective is to distinguish responsibility for decision, action, inaction, uncertainty,

distributed contribution, institutional structure, accountability, traceability, and long-horizon consequence. The discussion remains domain-general and relational. Responsibility is treated as a structured connection among practical role, authority, capacity, knowledge, contribution, undertaking, consequence, and the possibility of response.

Responsibility has both prospective and retrospective dimensions. Prospectively, it concerns what an actor or institution is expected to attend to, preserve, decide, perform, monitor, disclose, repair, or revise before and during consequential action. Retrospectively, it concerns how decisions, omissions, implementations, institutional arrangements, and consequences can be reconstructed and answered for after they occur. These dimensions can overlap while remaining analytically distinct. A practical architecture that concentrates only on retrospective attribution can neglect prevention, maintenance, and learning. An architecture that emphasizes only prospective duties can leave weak pathways for explanation, correction, or remedy after harmful consequence.

Definition 10.337 (Practical responsibility). *Practical responsibility* is a situated relation through which an actor, collective, or institution bears a warranted obligation to attend to, answer for, sustain, revise, prevent, repair, or otherwise respond to a practical object because of its role, authority, capacity, undertaking, knowledge, contribution, or relation to the relevant consequences.

The definition leaves open several grounds of responsibility because application-dominant praxis rarely contains only one. Decision authority can create responsibility even where implementation is delegated. Technical contribution can create responsibility for the reliability of a component while leaving broader programme responsibility with other positions. Possession of unique knowledge can create a responsibility to communicate a warning even when the knowledgeable actor lacks decision authority. Institutional mandate can create a duty of maintenance that persists across personnel changes. Affectedness primarily identifies exposure and standing; affected actors can acquire further responsibilities through later participation, representation, or collective action.

Responsibility should also be distinguished from several neighboring concepts. Causal contribution can support responsibility while remaining insufficient by itself where agency, knowledge, role, or capacity are absent. Formal authority can support responsibility while leaving operational contribution elsewhere. Accountability concerns the organized conditions under which responsibility is made answerable and practically reviewable. Liability is a more specific legal or institutional status and is outside the general conceptual burden of this section. Blame is an evaluative response to some forms of responsibility failure, whereas practical responsibility also includes ordinary duties of care, documentation, maintenance, monitoring, learning, and repair.

Table 10.13 separates responsibility according to the practical object to which it attaches. The same actor can occupy several rows, and several actors can share one row through differentiated roles. The purpose of the separation is analytical: it distinguishes practical objects while allowing roles to overlap. It helps identify where practical duties arise, where responsibility can become diffuse, and which records or institutional interfaces are required for later answerability.

Table 10.13: Principal dimensions of responsibility and accountability in application-dominant praxis.

Dimension	Primary practical object	Characteristic basis	Characteristic requirement
Decision	Authorized commitment	Decision right, veto, delegation, ratification	Reasons, threshold justification, conflict disclosure, reopening conditions
Action	Implementation and maintenance	Operational control, expertise, execution capacity, undertaking	Competent execution, adaptation records, monitoring, repair
Inaction	Omission, delay, non-response	Capacity, standing, knowledge, opportunity, assigned duty	Justification of forbearance, escalation, preservation of alternatives
Uncertainty	Residual epistemic incompleteness	Knowledge position, risk control, decision authority	Uncertainty characterization, calibration, monitoring, updating
Distributed responsibility	Multi-actor contribution	Complementary roles, causal chains, shared authority, interdependence	Role mapping, interface duties, gap prevention, coordinated response
Institutional responsibility	Durable organized praxis	Mandate, rules, routines, infrastructure, memory, resource control	Continuity, governance, institutional learning, correction across turnover
Accountability	Answerability and review	Responsibility relation plus authorized forum or process	Explanation, scrutiny, response, remedy, revision, learning
Traceability	Reconstruction of practical provenance	Records, version history, role assignment, evidence and decision provenance	Recoverable sequence from grounds to commitment, action, consequence, and revision
Long horizon	Delayed and persistent consequence	Continuing influence, maintenance burden, path creation, inherited commitment	Stewardship, handoff, periodic review, preservation of future response capacity

Definition 10.338 (Responsibility profile). A *responsibility profile* is a stage-, role-, and object-specific account of the prospective and retrospective responsibilities borne by relevant actors, collectives, and institutions across problem formation, decision, action, non-action, monitoring, evaluation, repair, and revision.

A responsibility profile should preserve both the grounds and the limits of each responsibility. Unbounded expansion can make responsibility analytically empty and practically unusable. Excessively narrow attribution can leave interfaces, cumulative effects, or revision without a capable responsibility-bearing position even when consequential processes are jointly produced. The task is therefore to reconstruct the architecture through which responsibility is generated, divided, transferred, retained, and sometimes lost.

10.13.1 Responsibility for Decision

Decision responsibility concerns the practical obligations attached to converting a set of possibilities into an authorized commitment. Section 10.8 treated decision as provisional commitment under incomplete knowledge, while Section 10.11 distinguished decision power from other loci of power. Responsibility for decision asks what follows once a position possesses the authority or effective capacity to authorize, block, condition, ratify, or reopen such a commitment.

Definition 10.339 (Decision responsibility). *Decision responsibility* is the obligation attached to a decision-bearing position to ensure that a consequential commitment is formed through appropriately warranted reasons, procedures, thresholds, disclosures, and revision conditions relative to the practical situation.

Decision responsibility begins before the formal moment of authorization. A decision-holder can be responsible for whether relevant evidence was sought, whether materially affected positions were recognized, whether conflicts of interest were disclosed, whether uncertainty was characterized, whether alternatives were considered, and whether the decision threshold matched the consequence structure. It can continue after authorization through duties to preserve records, receive monitoring information, and reopen the commitment when pre-specified conditions are met.

Delegation complicates this architecture. A principal can delegate analysis, recommendation, implementation, or even bounded decision authority while retaining responsibility for the design and oversight of the delegation. The delegate can simultaneously bear responsibility for competent exercise of the assigned role. Transfer of a task therefore redistributes responsibility according to the retained and delegated practical objects.

Definition 10.340 (Responsibility-retention condition). A *responsibility-retention condition* is a feature of a practical arrangement under which an actor or institution remains responsible for a relevant object after delegating, contracting, automating, or otherwise transferring part of the activity through which that object is handled.

Responsibility-retention conditions are especially important where the delegating actor selects the delegate, defines the mandate, controls the resources, determines the evaluation criteria, or retains the capacity to intervene. An institution that commissions an automated system, for example, can delegate computation while retaining responsibility for procurement, deployment conditions, monitoring, escalation, and the decision to rely on the output. The general point applies across technologies and organizational forms. Delegation changes the responsibility architecture while retained control, selection, or oversight can preserve responsibilities of the delegating position.

Decision responsibility also includes dissent. Collective bodies can reach an authorized decision while containing materially relevant disagreement. A responsibility architecture benefits from preserving whether dissent concerned evidence, values, procedure, risk, implementation, or affected positions. Such records protect institutional memory and can become important when later consequences activate reopening conditions.

Definition 10.341 (Decision responsibility record). A *decision responsibility record*

preserves the responsible decision positions, delegated roles, principal reasons, material uncertainties, dissent, conflicts of interest, threshold conditions, monitoring requirements, and reopening conditions associated with a practical commitment.

The record supports later accountability under conditions of inevitably limited foresight. It allows subsequent reviewers to distinguish a decision that was carefully warranted under the knowledge available at the time from one whose deficiencies were already visible but omitted, suppressed, or left unexamined.

Proposition 10.342 (Decision responsibility across commitment). *Where a position possesses practical authority to authorize or block consequential commitment, its responsibility extends to the warrant, procedure, disclosure, and revision architecture through which that authority is exercised.*

10.13.2 Responsibility for Action

Responsibility for action concerns the translation of authorized orientation into concrete intervention. Section 10.11 distinguished decision power from action power because execution requires resources, access, expertise, coordination, and local discretion. The corresponding responsibility can therefore be distributed differently from decision responsibility.

Definition 10.343 (Action responsibility). *Action responsibility* is the obligation attached to a position that plans, executes, coordinates, maintains, or materially controls an intervention to perform its role competently, preserve relevant constraints, monitor material consequences, and respond to implementation-relevant change.

Action responsibility contains both fidelity and adaptation. Implementers can be responsible for respecting the authorized end, safeguards, limits, and reporting requirements. They can also be responsible for adapting when local conditions materially diverge from the assumptions under which the intervention was designed. These two responsibilities can conflict. Mechanical fidelity can be harmful where conditions have changed, while unconstrained adaptation can exceed the legitimate scope of implementation discretion.

A useful practical architecture therefore specifies an adaptation envelope: which features can be adjusted locally, which require consultation, which require new authorization, and which trigger suspension. This makes implementation discretion visible and connects it to escalation pathways.

Definition 10.344 (Implementation-responsibility envelope). An *implementation-responsibility envelope* specifies the range within which implementers may adapt an intervention, the constraints they must preserve, the conditions requiring escalation, and the records needed to explain significant deviations from the authorized plan.

Action responsibility also includes maintenance. Many interventions create infrastructures, dependencies, recurring services, monitoring obligations, or repair burdens that extend beyond initial deployment. A project can therefore be responsibly initiated and poorly sustained. Maintenance responsibility should be specified when action creates conditions whose functioning or safety depends on continuing support.

Repair is another component. When implementation produces avoidable error, localized harm, or unanticipated breakdown, responsibility can include correction,

restoration, compensation, communication, or redesign. The appropriate response depends on the type of consequence and the actor's capacity to influence it. Repair responsibility therefore belongs to the practical architecture independently of whether a blame judgment is warranted.

Definition 10.345 (Action-responsibility chain). An *action-responsibility chain* maps the positions responsible for planning, execution, coordination, maintenance, monitoring, escalation, repair, and termination across the life of an intervention.

This chain is especially useful where implementation crosses organizational boundaries. Contractors, professional teams, local operators, funders, regulators, infrastructure providers, and affected communities can occupy different roles. The chain identifies interfaces at which responsibility can become ambiguous and allows those interfaces to be designed before failure occurs.

Proposition 10.346 (Responsibility through implementation). *Where consequential action depends on interpretation, adaptation, maintenance, and repair; responsibility follows the practical capacities exercised at those stages in addition to the responsibility attached to the original decision.*

10.13.3 Responsibility for Inaction

Section 10.9 distinguished several forms of action and non-action, including forbearance, waiting, delay, refusal, withdrawal, and exit. Responsibility for inaction requires equal differentiation. The absence of intervention can arise from deliberate restraint, uncertainty, incapacity, lack of authority, fragmented coordination, exclusion, ignorance, or failure to recognize a problem. These pathways carry different responsibility structures.

Definition 10.347 (Inaction responsibility). *Inaction responsibility* is responsibility associated with a consequential omission, delay, refusal, withdrawal, or failure to respond where a position had a materially relevant combination of practical standing, capacity, knowledge, opportunity, and obligation to influence the evolving situation.

This formulation distinguishes consequential non-intervention from omissions attributable to a particular actor. Responsibility depends on the relation between the actor and the practical object. A position may lack authority, resources, knowledge, or reasonable opportunity to act. Another actor may possess those capacities but face legitimate reasons for forbearance. A third may deliberately withhold action despite a clear assigned duty. These cases should remain analytically distinct.

Definition 10.348 (Inaction-responsibility conditions). *Inaction-responsibility conditions* are the role, knowledge, capacity, opportunity, authority, consequence, and duty conditions relevant to determining whether a position bears responsibility for a consequential absence or withholding of action.

The conditions can vary by situation. Urgency can increase the practical significance of delay. High uncertainty can make restraint warranted while increasing the responsibility to gather information or preserve options. Fragmented authority can create a coordination problem in which several actors possess partial capacities while complete control is absent from the practical field. In such cases responsibility analysis should examine whether there was also responsibility to coordinate, escalate,

communicate, or create a temporary joint response.

Waiting can carry responsibility for monitoring. Refusal can carry responsibility for communicating reasons and consequences where other actors depend on the refused contribution. Withdrawal can create handoff obligations where abrupt departure would transfer unmanaged burden to others. Exit can create residual responsibilities where the exiting actor retains control over information, infrastructure, or repair capacity needed by those who remain. These responsibilities are context-sensitive and should be stated through explicit role and dependency relations.

Inaction responsibility also includes the design of institutional default states. If a system requires active intervention before protection occurs, responsibility can be concentrated in those able to trigger action. If a protective measure remains in force until actively withdrawn, responsibility shifts toward those able to remove it. Defaults therefore shape the architecture of omission and should be treated as practical design choices.

Proposition 10.349 (Responsibility and consequential non-action). *Responsibility for non-action becomes practically relevant when a consequential trajectory intersects with a position that possessed a warranted relation of capacity, knowledge, standing, opportunity, or assigned duty to alter, monitor, escalate, or responsibly preserve that trajectory.*

10.13.4 Responsibility under Uncertainty

Application-dominant praxis frequently requires commitment before uncertainty has been resolved. Section 10.8 treated incomplete knowledge as a condition for decision design, and Section 10.10 distinguished characterized risk from forms of uncertainty that remain structurally or evidentially open. Responsibility under uncertainty concerns the obligations that arise from this epistemic condition.

Definition 10.350 (Responsibility under uncertainty). *Responsibility under uncertainty* is the obligation to characterize materially relevant uncertainty, calibrate commitment to its consequence structure, preserve proportionate monitoring and revision capacity, and update practical orientation when the evidential situation materially changes.

The definition centers responsibility on epistemic handling under conditions where perfect prediction is unavailable. A decision-maker can act responsibly while some consequences remain unknown. Conversely, merely stating that uncertainty exists is insufficient where the uncertainty can be characterized, reduced, monitored, or bounded through practical design. Responsibility concerns the quality of uncertainty handling across characterization, calibration, communication, monitoring, and revision.

Several duties can follow from this principle. *Characterization responsibility* concerns identifying the important unknowns and distinguishing forms of uncertainty where possible. *Reduction responsibility* concerns gathering additional information where the expected value of learning is material and delay is acceptable. *Calibration responsibility* concerns matching scale, duration, reversibility, and exposure to the uncertainty profile. *Monitoring responsibility* concerns observing consequences ca-

pable of changing the decision. *Updating responsibility* concerns revising prior judgments when material evidence changes.

Definition 10.351 (Uncertainty-responsibility profile). An *uncertainty-responsibility profile* records which positions are responsible for identifying, reducing, communicating, monitoring, and responding to the principal residual uncertainties associated with a practical commitment.

Communication is especially important where those exposed to consequences differ from those controlling the decision. Affected positions can require information about uncertainty in order to consent, prepare, contest, or exercise exit. Uncertainty communication should therefore preserve the distinction between what is known, what is estimated, what remains contested, and what remains outside present characterization.

Uncertainty can also be distributed strategically. One actor may receive the benefits of early commitment while another bears the downside of uncertain consequences. A responsibility analysis should therefore ask who is authorized to create exposure, who can reduce or monitor the uncertainty, who bears the consequences if the uncertainty resolves adversely, and who possesses the capacity for recovery. These relations connect responsibility directly to the risk distribution described in Section 10.10.

Definition 10.352 (Uncertainty-burden allocation). *Uncertainty-burden allocation* is the distribution of exposure, information requirements, monitoring duties, adaptation costs, and recovery burdens generated by residual uncertainty across the positions involved in a practical process.

Responsible uncertainty management therefore has both epistemic and distributive dimensions. The former concerns the quality of the knowledge process; the latter concerns who bears the consequences of acting before the knowledge process is complete.

Proposition 10.353 (Responsibility under Epistemic Incompleteness). *Epistemic incompleteness reconfigures practical responsibility toward characterization, calibration, communication, monitoring, revision, and explicit allocation of uncertainty-related burdens.*

10.13.5 Distributed Responsibility

The distributed agency developed in Section 10.12 implies that responsibility can also be distributed. A practical outcome may depend on problem framing by one body, evidence generated by another, a decision authorized by a third, implementation by several organizations, and evaluation by still another. Responsibility analysis should preserve these differentiated contributions while retaining both collective organization and distinct positional roles.

Definition 10.354 (Distributed responsibility). *Distributed responsibility* is a responsibility structure in which several actors, collectives, or institutions bear differentiated, overlapping, complementary, or sequential obligations toward a shared practical object or consequence.

Distributed responsibility can take several forms. *Joint responsibility* arises where

actors jointly authorize or perform a practical act. *Complementary responsibility* arises where different roles are each necessary to an overall process. *Sequential responsibility* arises along a chain in which one stage creates conditions for the next. *Overlapping responsibility* arises where several positions independently retain duties toward the same object, such as monitoring safety or protecting affected subjects.

Definition 10.355 (Responsibility topology). A *responsibility topology* maps practical objects to the actors, collectives, and institutions that bear decision, action, monitoring, communication, maintenance, repair, review, or revision responsibilities, together with the interfaces connecting those responsibilities.

The topology makes responsibility gaps visible. A process can contain competent actors at every stage while leaving an interface unowned. Data can be collected while responsibility for reviewing anomalies remains unassigned. An implementation team can detect problems while escalation authority or duty remains absent. A decision body can receive reports while the duty to reopen the decision remains unspecified. Responsibility gaps therefore frequently arise at interfaces among named roles.

Responsibility diffusion is a related phenomenon. When many actors contribute, each can perceive its own influence as small and defer to the presumed responsibility of others. This can weaken response even where the collective system possesses adequate capacity. Explicit role mapping, escalation rules, named interface owners, and joint review procedures can reduce such diffusion.

Definition 10.356 (Responsibility gap). A *responsibility gap* is a practically consequential object, interface, or transition for which the existing responsibility architecture fails to provide a sufficiently capable and answerable position for attention, response, escalation, or revision.

Distributed responsibility should also preserve proportionality. An actor who supplied a bounded technical component bears a responsibility profile different from the body that selected the system, defined its use, authorized deployment, and controlled monitoring. Narrow role descriptions still require scrutiny where foreseeable interface effects fell within the actor's practical capacity to address.

The relevant analytical question is therefore relational: which position controlled which object, possessed which knowledge, had which capacity, undertook which role, and retained which possibility of response? This reconstructs responsibility from the process and uses organizational title as one source of evidence about role and authority.

Proposition 10.357 (Distributed responsibility and interface ownership). *Where consequential praxis depends on multiple differentiated contributors, responsibility becomes more practically coherent when the interfaces among roles receive explicit ownership in addition to the responsibilities assigned within each role.*

10.13.6 Institutional Responsibility

Institutions stabilize mandates, roles, routines, records, infrastructures, resources, and decision procedures across changes in individual personnel. They can therefore bear forms of practical responsibility whose reconstruction requires more than ag-

gregating the responsibilities of currently present individuals. Institutional responsibility concerns this durable organized capacity.

Definition 10.358 (Institutional responsibility). *Institutional responsibility* is the responsibility generated by an institution's mandate, organized capacities, rules, routines, resource control, infrastructures, memory, and continuing influence over a practical field.

Institutional responsibility can arise from what the institution is constituted to do, from capacities it has accumulated, from dependencies it has created, and from prior commitments it continues to administer. An institution may therefore remain responsible for maintenance, disclosure, review, or repair after the individuals who made the original decision have left.

Rules and routines are central because they shape repeated action. A harmful outcome can emerge from ordinary procedure even when no individual intended it. Responsibility analysis should then ask whether the institutional design created predictable blind spots, weak escalation, perverse incentives, inaccessible contestability, or inadequate maintenance. This analysis remains compatible with individual responsibility where particular actors also had relevant authority and knowledge.

Definition 10.359 (Institutional responsibility profile). An *institutional responsibility profile* records the institution's mandate, decision rights, operational capacities, dependencies, recurring duties, information channels, memory systems, maintenance obligations, review procedures, and capacity for repair or revision.

Institutional memory is especially important. Responsibility that depends entirely on personal recollection can disappear through turnover. Records, version histories, handoff procedures, archival practices, recurring review, and explicit ownership of unresolved issues allow responsibilities to persist beyond individual tenure. These mechanisms connect institutional responsibility to traceability in Subsection 10.13.8.

Institutions can also generate responsibilities by creating reliance. Once others organize their activities around a service, infrastructure, standard, or guarantee, abrupt institutional withdrawal can impose consequences beyond the original transaction. Such reliance can create responsibilities for transition, notice, portability, handoff, or mitigation while still permitting legitimate institutional change.

Definition 10.360 (Responsibility continuity). *Responsibility continuity* is the preservation of an institution's capacity to recognize, carry, transfer, and discharge practical responsibilities across personnel turnover, organizational change, delegation, and extended time horizons.

Institutional responsibility also includes responsibility for learning. Recurrent failures that remain isolated as individual errors can persist. An institution capable of aggregating incidents, identifying patterns, revising procedures, and disseminating learning has a different responsibility architecture from one that repeatedly resets after each event.

Proposition 10.361 (Institutional responsibility across turnover). *Where organized mandates, capacities, dependencies, and consequences persist across personnel changes, responsibility can attach to the institution through the continuing practical relation across successive individual tenures.*

10.13.7 Accountability

Responsibility and effective answerability can diverge. Accountability concerns the practical architecture through which responsibilities become visible, reviewable, challengeable, and connected to response. It therefore links the responsibility relations developed above to the contestability architecture of Section 10.12.

Definition 10.362 (Practical accountability). *Practical accountability* is the organized condition under which a responsibility-bearing position can be required to provide reasons, disclose relevant records, undergo appropriately independent scrutiny, respond to findings, and participate in correction, remedy, or revision where warranted.

Accountability contains several functions. *Answerability* concerns the duty to explain and justify. *Reviewability* concerns the capacity of an authorized or legitimate forum to examine the relevant record. *Responsiveness* concerns the requirement to address findings and connect them to practical response. *Corrective capacity* concerns the possibility of repair, remedy, redesign, sanction, or reopening where appropriate. *Learning capacity* concerns preservation of the result so that later praxis can change.

Definition 10.363 (Accountability architecture). An *accountability architecture* is the arrangement of responsibility assignments, disclosure duties, review forums, evidential access, independence safeguards, response requirements, remedies, escalation pathways, and learning mechanisms through which consequential praxis becomes practically answerable.

The quality of accountability depends on fit between the forum and the practical object. Technical questions can require specialized review. Distributional questions can require access by affected positions. Institutional conflicts of interest can require independent scrutiny. Urgent situations can require rapid review pathways, while long-horizon effects can require periodic reassessment. A single accountability mechanism is therefore unlikely to be adequate across every stage and object of application-dominant praxis.

Accountability can also become performative in a weak sense: reports are produced, hearings occur, or metrics are disclosed while practical corrective capacity remains weak. The architecture developed here therefore requires a response pathway. Explanation alone can be valuable, but consequential responsibility often requires the possibility of action after explanation.

Excessive accountability burden can also impair praxis. Duplicative reporting, fragmented audits, incompatible metrics, and constant approval requirements can consume operational capacity and discourage responsible adaptation. Accountability design should therefore be proportionate to consequence, uncertainty, power concentration, reversibility, and the existing quality of internal controls.

Definition 10.364 (Accountability fit). *Accountability fit* is the degree to which an accountability process is appropriately matched to the practical object's consequence, uncertainty, power distribution, technical complexity, temporal horizon, and available forms of correction.

Accountability is therefore neither a synonym for punishment nor a final-stage au-

dit. Properly designed, it is part of the practical system through which responsibility becomes operational, contestability becomes consequential, and institutional learning becomes possible.

Proposition 10.365 (Accountability as response architecture). *Accountability becomes practically substantive when answerability and review are connected to usable capacities for correction, remedy, escalation, learning, or reopening proportional to the responsibilities under examination.*

10.13.8 Traceability

Accountability depends on the possibility of reconstructing how consequential praxis developed. Traceability concerns this reconstruction. It connects evidence, assumptions, problem formulations, decisions, implementation changes, monitoring, dissent, evaluation, and revision through a recoverable provenance structure.

Definition 10.366 (Practical traceability). *Practical traceability* is the capacity to reconstruct the materially relevant sequence linking problem formulation, evidence, assumptions, roles, decisions, actions, deviations, monitoring, consequences, evaluations, and revisions within a practical process.

Traceability supports several functions. It permits later reviewers to identify what knowledge was available at a decision point. It records who held which authority. It distinguishes an authorized plan from local implementation changes. It preserves dissent and warnings. It connects observed consequences to the versions of the intervention under which they occurred. It also supports institutional learning by making prior reasoning and adaptation recoverable.

Definition 10.367 (Practical provenance chain). A *practical provenance chain* is a linked record of the principal sources, transformations, decisions, role assignments, implementation states, observations, evaluations, and revisions through which a practical commitment develops over time.

Traceability should be selective enough to remain usable. Recording every interaction can create unusable archives, high administrative burden, privacy risks, strategic surveillance, or false confidence that what is documented exhausts what mattered. A traceability architecture therefore requires a materiality principle: preserve the information necessary to reconstruct consequential reasoning, authority, change, and response while protecting information whose collection or retention would create disproportionate harm.

Definition 10.368 (Traceability materiality). *Traceability materiality* is the criterion by which a practical process identifies which decisions, assumptions, changes, warnings, observations, role transitions, and consequences are sufficiently important to require durable provenance.

Traceability also has a relational dimension. Records can be technically complete while inaccessible to the actors who need them. Different participants may require different views: affected subjects may need understandable explanations; auditors may need detailed provenance; implementers may need operational change logs; decision-holders may need threshold and uncertainty records. Access design should therefore reflect legitimate role, privacy, security, and contestability requirements.

Automation can increase traceability by recording versions, timestamps, transformations, and decision pathways, but automated records still require interpretation. A log can show that an output was generated while leaving the appropriateness of the underlying assumptions for substantive evaluation. Traceability preserves reconstructability; substantive responsibility and correctness require further analysis.

Definition 10.369 (Traceability gap). A *traceability gap* is a materially relevant discontinuity in the practical provenance chain that prevents reliable reconstruction of a consequential decision, role transition, implementation change, warning, observation, or revision.

Traceability gaps can become responsibility gaps because later actors can lose the basis for directing review, repair, or learning. Conversely, excessive traceability requirements can themselves create exclusion or surveillance. The appropriate architecture therefore balances reconstructability with privacy, proportionality, accessibility, and operational feasibility.

Proposition 10.370 (Traceability and responsible revision). *Practical revision is more accountable when the principal grounds, role assignments, implementation changes, consequences, and prior responses remain reconstructable through a proportionate provenance chain.*

10.13.9 Long-Horizon Responsibility

Some consequences emerge after the decision cycle that produced them has ended. Infrastructures require maintenance, institutional classifications persist, ecological or social effects accumulate, capabilities decay or grow, dependencies become entrenched, and future actors inherit action spaces shaped by commitments formed before their participation. Long-horizon responsibility concerns the practical obligations created by this temporal extension of consequence.

Definition 10.371 (Long-horizon responsibility). *Long-horizon responsibility* is responsibility for consequences, dependencies, maintenance burdens, option structures, and revision needs that persist, accumulate, or become visible beyond the immediate decision and implementation horizon.

Long-horizon responsibility is especially relevant to path-creating commitments introduced in Section 10.10. A decision can appear reversible during initial implementation while gradually generating standards, dependencies, sunk investments, skill distributions, or institutional expectations that narrow later possibilities. Responsibility therefore includes attention to the temporal profile through which reversibility changes.

Maintenance is one component. Durable interventions should specify who will maintain, finance, monitor, repair, decommission, or transfer them. Review is another. A commitment justified under one evidential or social condition can persist after those conditions change unless periodic reassessment is built into the architecture. Handoff is a third. Responsibilities need to survive personnel turnover, organizational restructuring, and the transfer of assets or authority.

Definition 10.372 (Responsibility horizon). A *responsibility horizon* is the temporal range over which a practical actor or institution is expected to preserve attention,

maintenance, monitoring, review, repair, or transfer arrangements for consequences generated by its commitments.

Responsibility horizons can differ among practical objects. A temporary communication campaign can require a short monitoring horizon, while a durable infrastructure or long-lived institutional rule can require continuing stewardship. The horizon should therefore be matched to persistence, irreversibility, latency of consequence, maintenance dependency, and the availability of future corrective action.

Long-horizon responsibility also concerns future agency. Present actors can preserve or foreclose options, transfer unresolved risks, create maintenance obligations, or shape the capabilities through which later actors respond. A generative-relational perspective therefore asks what practical conditions are handed forward in addition to what immediate outcome is produced.

Definition 10.373 (Temporal stewardship). *Temporal stewardship* is the organized preservation of monitoring, maintenance, memory, option awareness, handoff capacity, and revision pathways needed for future actors to respond responsibly to consequences inherited from earlier praxis.

Temporal stewardship preserves the autonomy of future practical judgment. Its role is to preserve relevant information, maintain necessary capacities, limit unnecessary foreclosure, document inherited burdens, and keep revision pathways available where this is practicable. This creates a bridge from responsibility to justice because future actors can inherit benefits, burdens, risks, exclusions, opportunities, and institutional structures that were generated before they acquired practical voice.

The architecture of responsibility and accountability developed in this section therefore extends across the full practical sequence. Decision responsibility concerns warranted commitment. Action responsibility concerns competent execution, adaptation, maintenance, and repair. Inaction responsibility concerns consequential omissions under relevant conditions of capacity and standing. Responsibility under uncertainty concerns characterization, calibration, monitoring, updating, and burden allocation. Distributed responsibility maps differentiated contributions and interfaces. Institutional responsibility preserves obligations across organized structures and turnover. Accountability makes responsibility answerable and responsive. Traceability preserves the provenance required for review and learning. Long-horizon responsibility carries practical attention beyond the immediate decision cycle.

Proposition 10.374 (Responsibility across generative consequence). *Where praxis generates durable consequences, dependencies, capabilities, burdens, or option structures, responsibility can extend beyond the initiating decision to the maintenance, monitoring, handoff, repair, and revision conditions through which those consequences continue to shape later practical situations.*

Responsibility establishes which practical structures can be expected to answer for consequential praxis. Justice adds evaluation of how benefits, burdens, risks, participation, recognition, relational position, generative opportunity, historical consequence, and inherited conditions are distributed under heterogeneous forms of value. Section 10.14 therefore turns to justice in application-dominant praxis.

10.14 Justice in Application-Dominant Praxis

Section 10.13 established responsibility and accountability as architectures for connecting consequential praxis to answerability, review, repair, learning, and long-horizon stewardship. Justice adds a different practical question. It asks how the benefits, burdens, risks, participatory positions, forms of recognition, relational structures, generative opportunities, historical inheritances, and future conditions produced or preserved by praxis are distributed across heterogeneous positions. The present section develops this question at the general level of application-dominant praxis. Its objective is to identify principal dimensions through which justice enters practical judgment without reducing them to a single distributive metric or importing a complete substantive theory of justice. The discussion proceeds analytically across benefits, burdens, risk, participation, recognition, relations, generative opportunity, historical inheritance, intergenerational consequence, and heterogeneous value. Each dimension is treated as a distinct but interacting object of practical assessment.

Justice in this chapter functions as a landscape of practical evaluation. Application-dominant praxis frequently changes who receives advantages, who carries costs, who is exposed to uncertainty, who can participate, whose experiences become legible, which relations are strengthened, and what possibilities remain available later. Some of these changes can be represented quantitatively; others remain qualitative, relational, historical, or interpretive. The purpose of the present framework is therefore to preserve the plurality of justice-relevant objects while making their practical relations traceable.

Definition 10.375 (Justice profile in application-dominant praxis). *A justice profile in application-dominant praxis* is a structured account of how a practical commitment distributes or transforms benefits, burdens, risks, participatory standing, recognition, relational position, generative opportunity, historical consequence, and future conditions across relevant positions and temporal horizons.

A justice profile is neither a complete moral theory nor a scalar score. It is an analytical record that makes justice-relevant consequences visible for judgment, contestation, and revision. Its components can support different normative interpretations. Some practical contexts can justify relatively clear thresholds; others can contain persistent disagreement about the relative importance of the dimensions. Preserving that disagreement is often more informative than translating every concern into one commensurable quantity.

Table 10.14 separates justice-relevant objects that can otherwise be merged under broad language of fairness or distribution. The dimensions interact. A benefit can create a burden elsewhere. Participation can alter recognition. Recognition can change which risks become visible. Relational arrangements can determine who can convert formal opportunities into effective capability. Historical structures can shape present exposure, while present decisions can transfer long-lived conditions to future actors. The separation therefore supports analysis rather than conceptual isolation.

Definition 10.376 (Justice-relevant transformation). *A justice-relevant transformation* is a change in practical conditions that materially alters the distribution, accessibility, recognition, relational structure, or temporal inheritance of one or more justice-relevant objects across affected positions.

Table 10.14: Principal justice dimensions in application-dominant praxis.

Dimension	Primary practical object	Characteristic question	Characteristic concern
Benefits	Advantage, capability, access, relief, opportunity	Who receives which practical gains, when, and under what conditions?	Concentration, exclusion, unequal usability, delayed access
Burdens	Cost, effort, obligation, disruption, sacrifice	Who carries implementation, adaptation, maintenance, and residual burdens?	Burden transfer, overload, hidden labor, recovery asymmetry
Risk	Exposure to uncertain adverse consequence	Who is exposed, who authorizes exposure, and who can recover?	Risk transfer, asymmetric protection, tail exposure, weak recovery capacity
Participation	Standing, voice, influence, contestability	Which affected positions can enter which stages of praxis?	Formal inclusion without influence, participation burden, inaccessible review
Recognition	Legibility, standing, category, respect	Which subjects, experiences, identities, and claims become practically intelligible?	Omission, distortion, stigmatizing categories, epistemic invisibility
Relational justice	Dependence, authority, reciprocity, domination, care	What kinds of relations are created, preserved, or weakened?	Durable subordination, one-sided dependence, weakened agency, unaccountable authority
Generative opportunity	Future capacity to act, learn, create, revise, and participate	Whose future practical possibilities are expanded or contracted?	Capability concentration, foreclosure, dependence, unequal future agency
Historical justice	Inherited structure and accumulated consequence	How do earlier decisions, exclusions, benefits, and burdens shape present positions?	Path dependence, inherited disadvantage, unaddressed legacy, historical erasure
Across generations	Conditions transferred across temporal horizons	What benefits, burdens, risks, capacities, and options are handed forward?	Deferred costs, maintenance debt, irreversible loss, constrained future judgment
Heterogeneous values	Plural and partly non-commensurable goods	How can justice be evaluated when relevant values resist reduction to one scale?	Forced commensuration, hidden trade-offs, value erasure, opaque priority rules

The definition includes both direct and indirect effects. An intervention can distribute a material benefit directly while indirectly changing status, bargaining capacity, mobility, dependence, or access to later opportunities. A practical justice analysis should therefore follow the transformation beyond the immediate output where later generative effects are material to the situation.

10.14.1 Benefits

Benefits are among the most visible objects of justice analysis, yet their practical structure extends beyond the presence or quantity of an advantageous outcome. Application-dominant praxis can generate relief, access, capability, security, knowledge, recognition, institutional support, improved environmental conditions, reduced exposure, or expanded practical possibility. Justice analysis asks how these

benefits are distributed, whether they are usable, how long they persist, what conditions attach to them, and which positions remain outside their reach.

Definition 10.377 (Practical benefit). A *practical benefit* is a positively valued change in condition, relation, capability, access, protection, recognition, or future possibility generated, preserved, or made more reachable through praxis.

Benefit should therefore be distinguished from nominal allocation. A resource, service, right, or opportunity can be formally provided while remaining difficult to use because of distance, language, timing, eligibility, administrative complexity, technological requirements, social stigma, or dependence on complementary capacities. Justice analysis should consequently examine both distribution and convertibility into practical advantage.

Definition 10.378 (Benefit-conversion condition). A *benefit-conversion condition* is a practical condition required for a nominally available good, protection, service, capability, or opportunity to become an effectively usable benefit for a particular position.

Conversion conditions can vary across positions. Identical formal provision can produce unequal effective benefit where actors differ in access, time, knowledge, mobility, institutional standing, complementary resources, or capacity to bear activation costs. Equality of nominal distribution can therefore coexist with inequality of practical benefit.

Temporal structure also matters. Benefits can arrive immediately, accumulate gradually, depend on continued maintenance, or remain contingent on future institutional support. A short-term gain can be accompanied by a long-term loss of autonomy or option space. Conversely, a temporary burden can support durable capability or protection. Benefit analysis should therefore record both immediate and generative effects where the latter are material.

Definition 10.379 (Benefit-distribution profile). A *benefit-distribution profile* records the form, magnitude where appropriate, accessibility, timing, duration, conversion conditions, and relevant generative consequences of practical benefits across affected positions.

Benefits can also be relational. An intervention can improve a person's position by reducing dependence, increasing bargaining capacity, making participation easier, or creating a credible exit option. These effects may be poorly captured by output measures while remaining central to practical justice. The benefit profile should therefore remain open to relational and qualitative forms of advantage.

Proposition 10.380 (Benefits and practical accessibility). A *justice assessment of benefits is more complete when it distinguishes nominal provision from the position-specific conditions through which that provision becomes effectively accessible, usable, and capable of supporting later practical agency.*

10.14.2 Burdens

Application-dominant praxis distributes burdens as well as benefits. Burdens can include financial cost, physical exposure, time, administrative labor, emotional strain, displacement, adaptation effort, monitoring duties, maintenance obligations, reduced privacy, loss of convenience, constrained choice, or the work required to

make an intervention function. Some burdens are visible in budgets and plans. Others remain distributed through everyday labor, informal care, compliance effort, or repeated coordination.

Definition 10.381 (Practical burden). A *practical burden* is a cost, effort, obligation, exposure, loss, constraint, disruption, or maintenance requirement borne by a position as part of, or as a consequence of, consequential praxis.

Burdens should be examined independently of benefits because net aggregation can conceal who carries the costs of producing gains elsewhere. A programme can generate substantial aggregate benefit while concentrating disruption or maintenance obligations on a smaller group. Conversely, a burden borne by one actor can be voluntarily undertaken to protect others. Justice analysis therefore requires distributional structure in addition to aggregate consequence.

Capacity to bear a burden is also relevant. The same nominal cost can have very different practical effects across positions with different resources, health, time, social support, mobility, or recovery capacity. This does not imply that every burden should be equalized mechanically. It indicates that burden significance depends partly on the relation between the burden and the position that receives it.

Definition 10.382 (Burden-capacity relation). A *burden-capacity relation* describes how the practical significance of a burden varies with the affected position's resources, alternatives, dependencies, recovery capacity, obligations, and ability to contest or redistribute that burden.

Hidden burdens are especially important in distributed praxis. Participation can require unpaid time. Digital systems can transfer administrative work from institutions to users. Safety requirements can impose documentation labor on front-line staff. Exit can transfer maintenance or repair obligations to those who remain. These effects should be traced across implementation and long-horizon responsibility rather than treated as external to the intervention.

Burden transfer can also occur through institutional design. A decision-maker can reduce its own operational uncertainty by requiring affected actors to absorb variability, documentation, waiting, or adaptation. Such arrangements can be practically efficient in one dimension while creating concentrated burdens elsewhere. Justice analysis should make the transfer explicit before deciding whether it is acceptable.

Definition 10.383 (Burden-distribution profile). A *burden-distribution profile* records the type, intensity where appropriate, duration, recoverability, transfer pathway, bearing capacity, and contestability of relevant practical burdens across affected positions.

Proposition 10.384 (Burden visibility). A *practical arrangement can appear favorable under aggregate outcome measures while remaining justice-relevant where implementation, maintenance, adaptation, or residual burdens are concentrated on positions with limited capacity to absorb, contest, or transfer them.*

10.14.3 Risk

Section 10.10 developed risk as a relational consequence structure involving exposure, uncertainty, propagation, vulnerability, and recovery capacity. Justice adds the

question of how those elements are distributed. The actor authorized to create risk can differ from the actor exposed to it. Those receiving expected benefits can differ from those carrying tail exposure. Those best positioned to recover can differ from those facing the greatest downside. Risk justice therefore cannot be inferred from expected aggregate outcome alone.

Definition 10.385 (Risk-distribution justice profile). *A risk-distribution justice profile records which positions authorize, generate, benefit from, are exposed to, monitor, absorb, recover from, and remain responsible for materially relevant practical risks.*

Risk distribution has an epistemic dimension. Some actors can possess better information about exposure than others. Affected positions may be asked to accept uncertain consequences without equivalent access to evidence or to the assumptions used in risk characterization. Section 10.13 treated uncertainty communication as a responsibility; justice analysis asks whether information asymmetry itself changes the distribution of practical agency and exposure.

Consent can matter while remaining insufficient as a complete account. A position may formally accept a risk because alternatives are weak, dependence is high, or exit is costly. Conversely, some risks cannot feasibly be individualized because consequences propagate through shared systems. The practical structure of authorization, dependence, and collective exposure should therefore accompany any record of consent.

Tail risk creates a further problem. A low-probability or poorly characterized adverse consequence can be concentrated on actors who receive little expected benefit and possess limited recovery capacity. Even where aggregate expected value appears favorable, the asymmetry of catastrophic exposure can remain justice-relevant. This is one reason why reversibility, containment, redundancy, and option preservation carry both risk-management and justice significance.

Definition 10.386 (Risk-exposure asymmetry). *Risk-exposure asymmetry is a practical configuration in which the authority to create, authorize, or benefit from a risk is separated from the position that bears a disproportionate share of its downside exposure or recovery burden.*

Risk can also be redistributed through protection. Insurance, reserves, fallback systems, emergency capacity, legal remedy, redundancy, or public infrastructure can reduce the burden of adverse realization. Justice analysis should therefore ask not only who faces the probability of harm but also who possesses access to protection and recovery.

Proposition 10.387 (Risk and distributed exposure). *Where authority, benefit, exposure, information, and recovery capacity occupy different positions, justice analysis should preserve these separations rather than representing practical risk only through an aggregate probability or expected loss.*

10.14.4 Participation

Section 10.12 developed participation as a distributed relation across problem recognition, evidence formation, interpretation, end specification, option generation, decision, implementation, monitoring, evaluation, contestation, and revision. Justice

enters this architecture through questions of standing, access, influence, burden, representation, and the ability to challenge practical closure. Participation can therefore be both a means of improving decisions and a justice-relevant practical condition in its own right.

Definition 10.388 (Participatory justice profile). A *participatory justice profile* records which affected positions possess access, voice, influence, representation, contestability, information, support, and withdrawal options across the stages of a practical process.

Participation quality depends on where participation enters. Consultation after the principal problem, ends, and option set have already been fixed provides a different form of agency from participation in problem construction or option generation. Likewise, access to comment differs from power to require a response, reopen a decision, or alter implementation. A participatory justice profile should therefore record stage and practical effect rather than merely counting participants.

Participation also distributes burdens. Meetings require time. Consultation can require disclosure of sensitive experience. Representation can create emotional and interpretive labor. Repeated requests for community input can transfer problem-definition work onto affected groups without transferring corresponding authority or resources. Justice analysis should therefore preserve the participation-burden profile introduced in Section 10.12.

Unequal participation can also arise from institutional language, technical complexity, disability, digital access, migration status, care responsibilities, professional norms, or fear of retaliation. Formal inclusion becomes practically weak when these conversion barriers remain unaddressed. Participation support can therefore include translation, compensation, accessibility, confidentiality, technical assistance, protected time, and procedural explanation.

Definition 10.389 (Participatory standing). *Participatory standing* is the recognized practical basis on which an affected or relevant position is entitled to enter, influence, contest, or seek review of specified stages of consequential praxis.

Participatory standing need not imply identical authority for every actor across every decision object. Technical implementation, rights protection, collective resource allocation, and individualized consent can require different decision-rights architectures. Justice analysis concerns whether the differentiation is warranted, visible, contestable, and appropriately related to affectedness, expertise, responsibility, and consequence.

Proposition 10.390 (Participation across practical stages). *Participatory justice is better assessed through the distribution of standing, influence, support, burden, and contestability across practical stages than through presence at a single decision point.*

10.14.5 Recognition

Application-dominant praxis depends on categories through which actors, conditions, harms, capabilities, evidence, and claims become legible. Recognition concerns the practical standing produced through these interpretive structures. Some subjects can remain outside the categories through which institutions observe a problem. Others

can be visible only through classifications that distort their experience, reduce their agency, or attach stigmatizing assumptions. Justice therefore includes the conditions under which relevant positions are recognized as subjects of concern, knowledge, participation, and practical agency.

Definition 10.391 (Practical recognition). *Practical recognition* is the condition in which a subject, group, relation, experience, capability, or claim becomes legible within praxis in a form sufficiently adequate to support appropriate consideration, standing, participation, and response.

Recognition has an epistemic dimension because what remains unrecognized can disappear from evidence architectures. It has a participatory dimension because standing often depends on categorical inclusion. It has a relational dimension because categories can encode hierarchy, dependency, or deficit. It also has a temporal dimension because historically inherited classifications can continue to shape present access even after their original justification has weakened.

Recognition should not be equated with visibility alone. Visibility can coexist with distortion. A group may be intensely measured while its own account of the relevant problem remains institutionally weak. Conversely, privacy or autonomy can make reduced visibility desirable in some contexts. Justice analysis should therefore examine the terms of recognition, the agency available in defining those terms, and the consequences attached to categorical placement.

Definition 10.392 (Recognition gap). A *recognition gap* is a materially relevant mismatch between an affected practical reality and the categories, records, representations, or institutional standing through which that reality is made intelligible for consequential praxis.

Recognition gaps can take several forms. A subject can be omitted entirely. A relation can be observed only through one side. A harm can be registered as individual failure while its relational or institutional generation remains invisible. A capability can be overlooked because evaluation records only deficits. A collective can be treated as homogeneous despite internally unequal positions. These gaps connect recognition to the problem-formation architecture of Section 10.4.

Recognition can also change through praxis. New categories, testimony, data, participatory processes, or institutional learning can make previously obscured conditions visible. Such changes should remain revisable because recognition categories can themselves produce new exclusions.

Proposition 10.393 (Recognition and practical legibility). *Justice-relevant recognition requires attention to the adequacy, consequences, and revisability of the categories through which affected positions become practically legible, in addition to their mere visibility within the decision process.*

10.14.6 Relational Justice

Benefits, burdens, and risks can be distributed through relations that themselves deserve evaluation. An intervention can improve an outcome while increasing one-sided dependence. It can expand access while weakening exit. It can reduce uncertainty for a central institution by transferring adaptation demands to peripheral ac-

tors. Conversely, a practical arrangement can strengthen reciprocal capacity, reduce arbitrary dependence, improve contestability, or distribute authority more responsively. Relational justice concerns these structural properties of the relations through which praxis operates.

Definition 10.394 (Relational justice). *Relational justice* is the justice-relevant assessment of how consequential praxis constitutes, preserves, or transforms relations of dependence, authority, reciprocity, recognition, care, coordination, contestability, and practical agency among affected positions.

The relational perspective supplements outcome distribution. Two arrangements can produce similar immediate benefits while creating different future dependencies. One may require continuous permission from a central actor; another may transfer capability to local actors. One may permit meaningful contestation and exit; another may make access conditional on continued compliance. These differences can become especially important when the intervention persists over time.

Dependence is not inherently unjust. Practical life contains extensive interdependence, specialization, delegation, and care. The relevant questions concern form, asymmetry, necessity, contestability, reciprocity, alternatives, and the consequences of withdrawal. A relation can be asymmetric while remaining legitimate under conditions of limited scope, accountability, competence, and meaningful review. A relation can also become problematic when one side acquires durable control over essential conditions without proportionate answerability or exit.

Definition 10.395 (Relational justice profile). A *relational justice profile* records the principal dependencies, authority relations, reciprocities, asymmetries, exit conditions, contestability pathways, and agency effects generated or preserved by a practical arrangement.

Relational justice also connects to power conversion in Section 10.11. A resource asymmetry becomes justice-relevant when the surrounding relations convert it into durable capacity to define problems, impose burdens, withhold action, control measurement, or foreclose alternatives. The profile should therefore include the institutional conditions that amplify or constrain asymmetry.

A further issue concerns care and support relations. Increasing autonomy in one dimension can remove valuable forms of dependable support if independence is treated too narrowly. Relational justice therefore benefits from examining the quality and revisability of interdependence rather than assuming that reduced dependence is always preferable.

Proposition 10.396 (Justice through relational structure). *Where practical arrangements generate durable relations of dependence, authority, reciprocity, care, or contestability, justice analysis should evaluate the structure of those relations in addition to the immediate distribution of outcomes they produce.*

10.14.7 Generative Opportunity

Section 10.7 treated action space as a dynamic structure of available, latent, foreclosed, and generated possibilities. Section 10.6 introduced generative value at the general GR level as value associated with enabling, sustaining, diversifying, regener-

ating, or deepening later possibilities for valued generation. Justice adds a positional question: whose capacities to generate later action, learning, interpretation, coordination, creation, revision, and value are expanded or contracted through present praxis?

Definition 10.397 (Generative opportunity). *Generative opportunity* is a position's effective practical capacity to participate in, initiate, revise, sustain, or benefit from future processes of valued generation across relevant relational and temporal settings.

Generative opportunity differs from possession of a single present benefit. A short-term transfer can improve immediate conditions without altering the capabilities or relations through which future options are produced. Another intervention can generate durable knowledge, confidence, infrastructure, networks, rights, institutional access, or collective capacity that changes later possibility. Justice analysis should be capable of distinguishing these effects without assuming that generative expansion is sufficient for justice by itself.

Generative opportunity can also be concentrated. An intervention may expand the future option space of powerful actors while making weaker positions more dependent on those actors. Technology can create extensive new capability for some while narrowing the ability of others to contest or exit. Institutional reforms can create new forms of participation while increasing the expertise required to use them. The distribution of generative capacity is therefore as important as its aggregate growth.

Definition 10.398 (Generative-opportunity profile). A *generative-opportunity profile* records how praxis changes position-specific capacities for learning, acting, coordinating, creating, revising, refusing, exiting, participating, and generating later practical options.

The profile should distinguish expansion from dependence-mediated access. A position may gain access to new possibilities only while a central provider remains willing to supply infrastructure, permissions, or data. Such access can still be valuable, but its dependency structure matters for long-horizon agency. Generative opportunity therefore connects directly to relational justice and temporal stewardship.

Protective limits can also support generative opportunity. Some constraints preserve attention, health, ecological conditions, institutional reliability, or shared resources needed for later generation. An unrestricted increase in immediate options can sometimes erode the conditions from which future options emerge. Justice analysis should consequently examine the temporal and relational conditions of generativity rather than treating option quantity as an adequate proxy.

The later GRE parts will develop economic questions of heterogeneous value, conversion, circulation, return, capture, dissipation, and regeneration in greater specificity. The present subsection remains at the general GR level: its purpose is to establish future generative capacity as a justice-relevant object of praxis.

Proposition 10.399 (Distribution of generative opportunity). *Where present praxis materially changes who can generate, revise, sustain, or access later practical possibilities, the distribution of those generative opportunities belongs to the justice profile of the intervention in addition to its immediate outcome distribution.*

10.14.8 Historical Justice

Practical positions are historically formed. Present differences in capacity, exposure, recognition, institutional access, trust, wealth, infrastructure, or authority can reflect earlier decisions and accumulated relations. A purely contemporaneous snapshot can therefore obscure the processes through which current advantages and disadvantages became possible. Historical justice introduces temporal reconstruction into practical evaluation.

Definition 10.400 (Historical justice profile). A *historical justice profile* is a reconstruction of materially relevant past decisions, relations, exclusions, transfers, burdens, benefits, recognitional structures, and institutional inheritances that contribute to the present justice-relevant configuration.

Historical relevance should be established rather than assumed. A past event matters for current praxis when a plausible continuity connects it to present conditions through institutions, property, infrastructure, categories, obligations, capabilities, environmental effects, social memory, or other durable relations. Temporal distance alone neither erases nor establishes practical relevance.

The profile can identify several kinds of inheritance. Benefits can accumulate across time. Burdens can persist through debt, degraded environments, lost capability, exclusion, or institutional mistrust. Categories can carry earlier assumptions into present decision systems. Infrastructure can embody previous priorities. Earlier harms can alter the capacity of affected positions to participate in current processes. These inheritances can influence what present actors can reasonably be expected to contribute or bear.

Definition 10.401 (Historical carryover). *Historical carryover* is a continuing practical effect through which an earlier decision, relation, institution, classification, transfer, or consequence materially shapes the present distribution of agency, benefit, burden, risk, recognition, or opportunity.

Historical justice also raises questions of response. Possible responses can include acknowledgment, restoration, institutional redesign, repair, preservation of memory, change in classification, transfer of capacity, or alteration of decision rights. The appropriate form depends on the continuity between past and present, the nature of the inherited consequence, current affected positions, available forms of repair, and the risk of generating additional harm through response.

Historical analysis should remain open to multiple scales. A local practical problem can carry institutional history, community memory, legal history, technological history, ecological change, or organizational path dependence. The relevant scale should be chosen according to the generative pathways that remain active in the present situation.

Proposition 10.402 (Historical continuity and present justice). *Past conditions become practically relevant to present justice where identifiable historical carryovers continue to shape current agency, exposure, recognition, responsibility, access, or opportunity through durable relational pathways.*

10.14.9 Intergenerational Justice

Long-horizon responsibility in Section 10.13 established that present actors can create maintenance burdens, durable dependencies, path-created commitments, and inherited option structures extending beyond the immediate decision cycle. Intergenerational justice evaluates the conditions transferred across those temporal horizons. Future actors can inherit benefits and infrastructures while also inheriting debt, risk, environmental degradation, maintenance obligations, locked standards, reduced option spaces, or incomplete records needed for revision.

Definition 10.403 (Intergenerational justice profile). An *intergenerational justice profile* records the benefits, burdens, risks, capabilities, institutional conditions, information, maintenance requirements, and option structures that present praxis is expected to transfer to later practical actors.

Future actors occupy a distinctive participatory position because they cannot enter present deliberation in the same way as current affected subjects. Representation is therefore indirect. Present decision processes can use long-horizon scenario analysis, stewardship institutions, maintenance funds, preservation rules, periodic review, reversibility protections, archival practices, or explicit future-impact criteria to make later conditions more visible. These devices remain imperfect and should be treated as practical proxies rather than as literal substitutes for future voice.

A central question concerns inherited option space. Present actors can preserve flexibility for future judgment, but preservation itself can have costs. Maintaining redundant infrastructure, withholding irreversible development, or financing long-term monitoring can burden current actors. Conversely, maximizing present flexibility can leave future actors with weak commitments, inadequate infrastructure, or deferred problems. Intergenerational justice therefore involves balancing transferred capacity, burden, and option structure rather than simply maximizing open possibilities.

Definition 10.404 (Future-agency preservation). *Future-agency preservation* is the practical effort to maintain sufficient information, capability, environmental and institutional conditions, and revisable option structures for later actors to exercise meaningful judgment over consequences inherited from present praxis.

Irreversibility sharpens this problem. Some present decisions can eliminate conditions that later actors cannot restore. Where consequences are durable and uncertain, preservation of future agency can support stronger requirements for precaution, modularity, monitoring, or justified constraint on present commitment. The appropriate threshold depends on the magnitude, persistence, recoverability, and distribution of the relevant consequence.

Intergenerational justice also includes continuity of memory. Later actors cannot responsibly revise inherited arrangements if the reasons, assumptions, risks, responsibilities, and alternatives surrounding their creation have disappeared. Temporal stewardship therefore has a justice dimension: provenance and institutional memory can become part of what one generation owes to later practical judgment.

Proposition 10.405 (Justice and inherited practical conditions). *Where present praxis materially shapes the benefits, burdens, risks, capabilities, records, or option structures available to later actors, those inherited practical conditions belong to the justice assess-*

ment of the present commitment.

10.14.10 Justice under Heterogeneous Values

The preceding dimensions rarely enter practical judgment through a single common measure. Benefits can concern health, autonomy, knowledge, security, ecological integrity, recognition, cultural continuity, capability, or social relation. Burdens can concern money, time, dignity, exposure, displacement, attention, dependence, or irreversible loss. Participation and recognition have forms that resist reduction to the units used for material allocation. Generative opportunity can concern future capacities whose value remains partly open. Justice under heterogeneous values therefore requires an architecture capable of practical comparison without assuming complete commensurability.

Definition 10.406 (Heterogeneous-value justice situation). A *heterogeneous-value justice situation* is a practical configuration in which materially relevant justice claims concern multiple forms of value whose ordering is partial, contested, context-sensitive, or not adequately representable through a single common scale.

Value heterogeneity does not prevent practical judgment. It changes the form of comparison. Some alternatives can be excluded because they violate a sufficiently established threshold. Some can be compared within a shared value dimension. Some can be ordered through agreed priority rules. Others can remain partially ordered, leaving several acceptable options whose differences must be described rather than collapsed. Deliberation can also reveal value conversions or previously hidden conflicts without making all values equivalent.

Definition 10.407 (Justice comparison architecture). A *justice comparison architecture* is the explicit set of thresholds, priority rules, partial orderings, conversion assumptions, protected values, unresolved conflicts, and revision conditions through which heterogeneous justice claims are compared for practical judgment.

The comparison architecture should disclose where commensuration occurs. Converting time, risk, ecological loss, dignity, cultural continuity, or future option space into a common metric can be useful for some purposes while obscuring other dimensions. Where conversion is used, its domain, assumptions, uncertainty, and remainder should remain visible. Where conversion is withheld, the resulting plurality should be carried into judgment rather than treated as a methodological failure.

Value conflict can also be relational. The same practical arrangement can embody different values for different positions. A shared place can function simultaneously as livelihood, heritage, habitat, infrastructure, memory, and future development option. Justice analysis should therefore record whose value articulation enters the decision, how translations are made across value forms, and which losses remain insufficiently represented by the chosen decision language.

Definition 10.408 (Justice remainder). A *justice remainder* is a materially relevant value, claim, loss, disagreement, or relational consequence that remains unresolved or inadequately represented after the principal comparison and decision architecture has been applied.

Preserving a justice remainder supports revisability. Some conflicts can become

clearer after implementation. New affected positions can emerge. Consequences can reveal that an earlier metric was too narrow. Institutional values can change. Recording what remained unresolved at closure makes later reopening more accountable and reduces the tendency to reinterpret previous uncertainty as prior consensus.

Justice under heterogeneous values therefore complements the theory of practical judgment in Section 10.5. Practical judgment can integrate differentiated evaluative dimensions without claiming that they have become identical. It can support action where several values remain in tension, provided the comparison architecture, unresolved remainder, burden distribution, and revision conditions remain explicit.

Proposition 10.409 (Justice without complete commensurability). *Application-dominant praxis can reach a provisionally warranted justice-sensitive judgment under heterogeneous values by combining explicit thresholds, partial comparisons, transparent priority rules, preserved disagreement, and revisable practical closure without requiring all justice-relevant values to be reduced to one common measure.*

Taken together, these dimensions extend justice analysis beyond outcome distribution. They preserve differences among accessibility, burden-bearing capacity, exposure, participation, recognition, relational position, generative opportunity, historical inheritance, intergenerational consequence, and heterogeneous value while allowing their interactions to remain visible.

Definition 10.410 (Integrated justice record). *An integrated justice record is a revisable account of the principal justice profiles, comparison rules, affected positions, unresolved remainder, and reopening conditions associated with a practical process.*

The record preserves disagreement where the dimensions point in different directions. An intervention can improve benefits while weakening participation, reduce one risk while transferring another, or expand aggregate opportunity while concentrating future generative capacity.

Proposition 10.411 (Justice as a multi-dimensional practical architecture). *Justice in application-dominant praxis is more adequately represented when its principal dimensions remain distinguishable within an integrated and revisable practical record.*

Justice analysis prepares the institutional level of the chapter. Application-dominant praxis is organized through collectives, roles, routines, infrastructures, mandates, and durable decision structures that condition how power, responsibility, participation, and justice are realized. Section 10.15 turns to these institutional and collective forms of praxis.

10.15 Institutional and Collective Praxis

Section 10.14 established justice as a multi-dimensional practical architecture spanning benefits, burdens, risk, participation, recognition, relational position, generative opportunity, historical inheritance, and future conditions. These dimensions are rarely realized through isolated actors. Application-dominant praxis is commonly organized through institutions and collectives whose mandates, capacities, constraints, memories, decision structures, coordination arrangements, cooperative relations, conflicts, and trust conditions shape what can be recognized, authorized, implemented, maintained, contested, and revised. The present section develops

this institutional and collective layer. Its objective is to explain how consequential praxis acquires durability and distributed agency without treating institutions as unitary subjects or collectives as internally homogeneous. The discussion proceeds analytically from mandates, capacity, constraints, and memory to collective decision, coordination, cooperation, conflict, trust, and collective generativity.

The institutional perspective adds temporal and organizational thickness to the preceding analysis. Power can be stabilized through roles and procedures. Responsibility can persist across personnel turnover. Participation can become routinized or narrowed. Justice-relevant benefits and burdens can be reproduced through infrastructure, eligibility rules, categories, and maintenance practices. Trust can attach to procedures and institutional reliability in addition to particular persons. Collective agency can emerge from relations among actors whose individual capacities would be insufficient for the practical object. Institutions therefore belong to the generative conditions of praxis rather than merely to its external setting.

Definition 10.412 (Institutional configuration). An *institutional configuration* is a relatively durable arrangement of roles, rules, mandates, authority relations, resources, routines, infrastructures, expectations, records, and practical interfaces that structures consequential praxis across more than one isolated episode.

Durability is relative. Some institutional configurations persist for decades, while others are temporary task structures created for a crisis, project, inquiry, or transition. What matters analytically is that they organize expectations and practical possibility beyond the immediate choice of one actor.

Definition 10.413 (Collective praxis). *Collective praxis* is consequential praxis whose formation, execution, maintenance, interpretation, or revision depends materially on the interdependent contributions of multiple positions organized around one or more shared, compatible, negotiated, or contested practical objects.

Collective praxis does not require complete consensus. A collective can contain disagreement, unequal authority, competing interpretations, and different reasons for participation while still producing a practical process that cannot be reduced to the acts of any one participant. The analytical task is therefore to reconstruct how differentiated contributions become organized into durable capacity and consequence.

Table 10.15 separates dimensions that often appear together in organizational descriptions. A formal mandate can exist without adequate capacity. Capacity can be high while coordination is weak. Cooperation can occur amid unresolved conflict. Trust can substitute for some monitoring while also creating vulnerability. Institutional memory can stabilize useful learning or preserve obsolete categories. Collective generativity depends on the interactions among these dimensions rather than on any one of them in isolation.

10.15.1 Institutional Mandates

Application-dominant praxis requires some account of who is authorized, expected, or recognized as competent to address a practical object. Institutional mandates organize this relation. They can arise through law, charter, contract, professional role, delegated authority, established convention, emergency arrangement, community

Table 10.15: Principal dimensions of institutional and collective praxis.

Dimension	Primary practical object	Characteristic question	Characteristic concern
Mandates	Authorized or recognized scope of action	Which practical objects may or should the institution address?	Gaps, overlap, ambiguity, mandate–capacity mismatch
Capacity	Deployable ability to sense, decide, act, maintain, and revise	What can the institution or collective effectively accomplish?	Overload, bottlenecks, capability concentration, adaptive weakness
Constraints	Limits and conditions on institutional action	Which possibilities are restricted, protected, delayed, or conditioned?	Lock-in, procedural rigidity, resource scarcity, enabling limits
Memory	Records, routines, skills, categories, and inherited learning	What practical knowledge survives across episodes and personnel?	Amnesia, selective retention, inaccessible records, path dependence
Collective decision	Formation of authoritative practical commitment	How do differentiated inputs become a decision capable of organizing action?	Agenda control, aggregation, dissent, decision–implementation gaps
Coordination	Alignment of interdependent activities	How are timing, interfaces, information, and role dependencies organized?	Fragmentation, duplication, incompatible routines, cascading failure
Cooperation	Contribution toward shared or compatible practical ends	Under what conditions do actors sustain mutually supporting contribution?	Free riding, exclusion, unequal dependence, unstable reciprocity
Conflict	Structured divergence within or among practical actors	How are incompatible ends, interpretations, burdens, or claims handled?	Suppression, escalation, unresolved antagonism, hidden disagreement
Trust	Reliance under vulnerability and incomplete verification	Which expectations permit practical reliance, and how are they calibrated?	Overtrust, distrust, opacity, betrayal, weak repair pathways
Collective generativity	Capacity to create later capabilities and possibilities	What future practical capacities does collective organization generate or erode?	Lock-in, dependence, capability growth, institutional self-revision

recognition, or other durable sources of practical standing. A mandate therefore concerns the scope and grounds of institutional action rather than merely the existence of an organization.

Definition 10.414 (Institutional mandate). An *institutional mandate* is a recognized scope of practical authority, responsibility, or expected action through which an institution or collective is positioned to address specified objects, affected positions, processes, or consequences.

Mandates have boundaries. They can specify subject matter, territory, population, time horizon, procedural requirements, permissible means, reporting duties, or conditions for escalation. These boundaries structure the action space developed in Section 10.7. They can protect affected positions by limiting arbitrary intervention, while also creating gaps where consequential problems fall between institutional jurisdictions.

Definition 10.415 (Mandate topology). A *mandate topology* maps the practical objects and interfaces assigned to relevant institutions or collective roles, together with

areas of overlap, dependency, ambiguity, and unassigned responsibility.

Overlap is not inherently inefficient. Two institutions can retain partially overlapping mandates because independent review, redundancy, specialized expertise, or checks on concentrated authority are valuable. Overlap becomes problematic when authority, escalation, or responsibility remain sufficiently unclear that actors defer to one another without effective response. Conversely, strict separation can create gaps at interfaces where the practical object crosses institutional boundaries.

Mandates also possess provenance. The practical meaning of a mandate can depend on the reasons for which it was created, the conditions it presupposed, and the historical problems it was designed to address. A mandate formed under one technological, demographic, environmental, or institutional setting can become misaligned with a changed practical situation. Historical reconstruction can therefore be necessary before scope is interpreted as fixed.

Definition 10.416 (Mandate–capacity relation). *A mandate–capacity relation is the practical correspondence between what an institution is authorized or expected to do and the capabilities, resources, knowledge, infrastructures, and interfaces through which it can actually perform that mandate.*

A strong mandate with weak capacity can create symbolic responsibility without effective agency. High capacity outside a recognized mandate can create action without adequate legitimacy or accountability. Practical design should therefore examine mandate and capacity together, while preserving their distinction. Expanding one does not automatically repair weakness in the other.

Mandates can also be revised. New problems can require delegation, shared jurisdiction, temporary authority, or new institutional forms. Such revision changes practical power and responsibility and should therefore remain traceable to explicit reasons, affected positions, limits, and review conditions.

Proposition 10.417 (Mandates and practical reach). *Institutional mandates organize the legitimate or recognized scope of praxis, while effective practical reach depends additionally on capacity, coordination, resources, knowledge, and the relational conditions through which authority can be exercised.*

10.15.2 Institutional Capacity

A mandate acquires practical significance only where an institution or collective can convert authority and intention into effective response. Institutional capacity therefore extends beyond possession of resources. It includes the ability to perceive relevant conditions, interpret them, form decisions, mobilize action, coordinate interfaces, maintain operations, monitor consequences, repair failure, learn, and revise prior commitments.

Definition 10.418 (Institutional capacity). *Institutional capacity is the deployable ability of an institutional configuration to perform the sensing, interpretation, decision, implementation, coordination, maintenance, monitoring, repair, learning, and revision functions required by its practical objects under relevant conditions.*

Capacity is therefore function-specific and situation-sensitive. An institution can possess strong analytical capacity and weak implementation capacity, strong emer-

gency response and weak long-horizon maintenance, or extensive resources with limited ability to coordinate across boundaries. A single aggregate description can conceal these bottlenecks.

Definition 10.419 (Institutional capacity profile). An *institutional capacity profile* records the principal practical functions an institution or collective can perform, the conditions under which those functions are deployable, the bottlenecks among them, and the dependencies on external actors or infrastructures.

The distinction between nominal and deployable capacity is important. Expertise can exist without access to decision channels. Funds can exist without procurement authority. Data can exist without interpretive capability. Staff can exist without time or coordination. Infrastructure can exist without maintenance. Practical capacity therefore depends on conversion relations that connect possessed resources to usable action.

Definition 10.420 (Capacity conversion). *Capacity conversion* is the process through which resources, expertise, authority, infrastructure, information, relationships, and time become effectively deployable practical capability within a specific institutional configuration.

Capacity can also be overloaded. An institution may be capable under ordinary conditions while losing effective function when case volume, urgency, uncertainty, coordination demand, or maintenance burden exceeds its operating range. Capacity assessment should therefore include reserve, redundancy, recovery, and surge conditions where the practical object is sensitive to overload.

Institutional capacity is partly collective. Coordination among several limited actors can generate a capability that none possesses alone. Shared infrastructure, common standards, complementary expertise, trusted referral pathways, or distributed observation can create emergent capacity. The reverse is also possible: individually capable actors can form a collectively weak system when interfaces are incompatible or authority is fragmented.

Capacity-building interventions consequently have generative effects. Training, infrastructure, records, interoperable systems, durable relationships, and learning routines can expand future action spaces. Capacity building can also create dependence when essential capability remains controlled by an external provider. Its relational and temporal structure therefore belongs to the practical assessment.

Proposition 10.421 (Capacity as an institutional relation). *Institutional capacity depends on the conversion of resources and authority through roles, interfaces, routines, infrastructures, and relationships, so increases in nominal resources do not by themselves establish corresponding increases in effective collective agency.*

10.15.3 Institutional Constraints

Institutions act within constraints generated by law, procedure, resources, infrastructure, knowledge, time, organizational history, public expectations, dependencies, and prior commitments. These constraints can reduce action space, slow response, or make some interventions inaccessible. They can also protect rights, preserve procedural quality, prevent concentration of power, maintain safety, or force deliberation

before difficult-to-reverse commitments. Institutional constraints therefore require interpretation through their practical function rather than through a simple preference for fewer limits.

Definition 10.422 (Institutional constraint configuration). An *institutional constraint configuration* is the structured set of legal, procedural, material, epistemic, temporal, infrastructural, relational, and historical conditions that limit, channel, sequence, or protect institutional action within a practical situation.

Constraints differ in origin and revisability. Some are externally imposed. Others are internal rules adopted for reliability or accountability. Some derive from resource scarcity. Others arise from inherited infrastructure or technical standards. Some can be changed by the institution itself, while others require negotiation, higher authority, collective coordination, or long-term transformation.

A useful distinction concerns restrictive and enabling effects. A procedural review requirement can delay action while reducing error and improving accountability. Data-access restrictions can limit analysis while protecting privacy. Redundancy requirements can increase short-term cost while supporting resilience. Constraints should therefore be evaluated in relation to the practical objects and risks they organize.

Definition 10.423 (Enabling institutional constraint). An *enabling institutional constraint* is a limitation or procedural condition that restricts some immediate actions while preserving or generating valued capabilities, protections, reliability, accountability, or future practical options.

Constraints can become misaligned. Rules designed for stable conditions can obstruct response under rapid change. Emergency exceptions can outlive the conditions that justified them. Historical routines can preserve categories that obscure new affected positions. Constraint revision should therefore examine both the value protected by the constraint and the consequences created by its present operation.

Institutional constraints also interact with power. Powerful actors can sometimes navigate procedures, absorb delay, acquire specialized expertise, or secure exemptions more easily than weaker actors. The same formal rule can therefore create different effective constraints across positions. A constraint profile should include such asymmetries where they materially affect participation, access, or burden distribution.

Proposition 10.424 (Institutional constraints and protected capability). *The practical significance of an institutional constraint depends on both the possibilities it restricts and the capabilities, rights, reliability, accountability, or future options it preserves or generates under the relevant conditions.*

10.15.4 Institutional Memory

Application-dominant praxis extends through time. Decisions are revisited by people who did not make them. Risks emerge after personnel change. Maintenance obligations persist beyond the initiating project. Institutional memory provides continuity across these temporal discontinuities. It can reside in records, archives, routines, categories, technical standards, infrastructures, professional practices, narra-

tives, learned skills, or durable relationships.

Definition 10.425 (Institutional memory). *Institutional memory* is the distributed preservation of practically relevant knowledge, reasons, routines, skills, categories, records, relationships, and learned responses through which an institutional configuration carries experience across episodes and personnel changes.

Institutional memory has both explicit and tacit forms. Formal records can preserve decisions, assumptions, thresholds, dissent, incidents, responsibilities, and revision conditions. Tacit memory can persist through experienced personnel, professional judgment, routines, and informal networks. Each form has vulnerabilities. Formal records can become inaccessible or detached from context. Tacit memory can disappear quickly through turnover or fragmentation.

Definition 10.426 (Operational institutional memory). *Operational institutional memory* is the portion of institutional memory that remains sufficiently accessible, interpretable, and connected to present roles and procedures to influence current practical judgment or action.

The distinction between stored information and operational memory matters because extensive archives can coexist with recurrent forgetting. Retrieval, indexing, handoff, interpretive context, and responsibility for review determine whether preserved material enters future praxis. The provenance structures developed in Section 10.13 therefore support institutional memory only when later actors can use them.

Memory can also constrain. Institutions can overlearn from salient past events, reproduce inherited categories, or treat earlier procedures as fixed because their original rationale has been forgotten. Memory should therefore preserve both prior conclusions and the conditions under which those conclusions were reached. Reasons, uncertainty, rejected alternatives, and reopening criteria are often as important as the final decision.

Definition 10.427 (Institutional memory handoff). An *institutional memory handoff* is a structured transfer of practically relevant records, reasons, unresolved uncertainties, responsibilities, skills, relationships, and revision conditions from one temporal or organizational configuration to another.

Memory is also selective. What an institution records reflects earlier problem formulations, measurement choices, power relations, and categories of recognition. Missing records can therefore reveal earlier exclusions as well as administrative failure. Institutional memory should remain open to supplementation by testimony, external archives, affected communities, and newly available evidence when the existing record is incomplete.

A strong memory architecture supports learning without making the past authoritative merely because it is preserved. Institutional learning requires comparison between inherited knowledge and changed conditions. Memory and revisability should therefore operate together.

Proposition 10.428 (Memory and revisable continuity). *Institutional memory supports responsible continuity when preserved experience remains accessible with sufficient provenance to inform present judgment while retaining the conditions for reinterpretation, supplementation, and revision under changed practical circumstances.*

10.15.5 Collective Decision

Collective praxis requires mechanisms through which differentiated judgments, roles, interests, knowledge, and authority become capable of organizing consequential commitment. A collective decision is therefore more than the sum of individual preferences. Its practical structure includes agenda formation, evidence selection, proposal generation, deliberation, aggregation or authorization, recording of dissent, implementation linkage, and conditions for reopening.

Definition 10.429 (Collective practical decision). A *collective practical decision* is a practically authoritative commitment produced through an organized process involving multiple differentiated positions whose inputs, rights, responsibilities, or dependencies materially contribute to the formation or execution of that commitment.

Different decision architectures can allocate these functions differently. One body can define the agenda, another provide technical analysis, another deliberate, another authorize, and still another implement. A collective decision can therefore emerge without a unified collective preference or a single moment at which all practical content is determined.

Definition 10.430 (Collective decision architecture). A *collective decision architecture* is the structured distribution of agenda-setting, evidence production, interpretation, proposal, deliberation, authorization, dissent recording, implementation linkage, monitoring, and reopening functions across the positions involved in a collective practical process.

This architecture connects directly to the power analysis of Section 10.11 and the participation analysis of Section 10.12. Formal voting or authorization captures only one locus of decision power. Control over agenda, admissible evidence, timing, default options, amendment rules, and access to implementation can materially shape the resulting commitment.

Collective decisions can preserve disagreement. Requiring complete consensus can be impractical or can give disproportionate power to positions capable of withholding agreement. Majority procedures can suppress materially important minority concerns. Expert delegation can increase technical coherence while narrowing participatory standing. The appropriate architecture depends on the practical object, stakes, affected positions, uncertainty, reversibility, and need for continued cooperation.

Definition 10.431 (Decision dissent record). A *decision dissent record* is a traceable account of materially relevant objections, alternative interpretations, minority positions, unresolved uncertainties, and conditions under which those differences should be reconsidered after collective closure.

The record turns disagreement into institutional memory rather than treating closure as retrospective unanimity. It can later help distinguish unforeseen consequences from consequences that were anticipated but outweighed or insufficiently addressed.

Collective decision also requires connection to action. A formally valid commitment can remain practically inert when implementing actors lack capacity, incentives, authority, information, or ownership. Decision architecture should therefore

include implementation interfaces and feedback channels rather than treating authorization as the terminal act.

Proposition 10.432 (Collective decision and distributed closure). *Collective practical closure can be achieved without complete agreement when the decision architecture makes authority, participation, dissent, implementation responsibility, residual uncertainty, and reopening conditions sufficiently explicit for coordinated action and later review.*

10.15.6 Coordination

Collective decisions do not by themselves align interdependent activity. Coordination concerns the practical organization of timing, information, interfaces, sequencing, standards, expectations, and role dependencies through which differentiated contributions become mutually compatible. Coordination can occur within a single institution or across organizations, communities, technical systems, and informal networks.

Definition 10.433 (Practical coordination). *Practical coordination* is the alignment of interdependent actions, information flows, timings, interfaces, and role expectations so that differentiated contributions can function together within a consequential practical process.

Coordination differs from cooperation. Actors can coordinate while pursuing partially conflicting ends, as when competitors follow shared safety protocols or institutions with different mandates exchange information. Cooperation can also exist without strong coordination, producing goodwill but duplicated effort, incompatible timing, or gaps in responsibility.

Definition 10.434 (Coordination architecture). *A coordination architecture* specifies the interfaces, information pathways, sequencing rules, shared standards, escalation channels, synchronization mechanisms, and fallback procedures through which interdependent practical contributions are aligned.

Coordination burden can become substantial. Meetings, reporting, data translation, interoperability work, negotiation, handoff, and synchronization consume time and attention. Adding more actors can improve representation or capability while increasing these burdens. Effective coordination therefore depends partly on interface design and on identifying where standardization is useful and where local flexibility should be preserved.

Coordination failure often appears at boundaries. One institution can complete its assigned task while the collective process fails because a dependency was unspecified, a handoff occurred too late, or two systems interpreted the same category differently. These failures resemble the responsibility gaps developed in Section 10.13. They can be reduced by explicit interface ownership, shared situational awareness, and protocols for anomalies that do not fit routine categories.

Definition 10.435 (Coordination failure). *A coordination failure* is a breakdown in the alignment of interdependent roles, timings, information, standards, or interfaces that materially weakens collective practical performance even where individual components may remain locally functional.

Coordination should also remain adaptive. Highly standardized systems can per-

form efficiently under familiar conditions while responding poorly to novelty. Flexible local discretion can support adaptation but create inconsistency or obscure accountability. Coordination architectures therefore need a relation between routine operation and escalation into higher-order judgment when ordinary interfaces cease to fit the situation.

Proposition 10.436 (Coordination as interface capacity). *Where collective praxis depends on differentiated contributors, effective capacity depends materially on the quality of the interfaces among those contributors in addition to the competence or resources contained within each component.*

10.15.7 Cooperation

Coordination organizes interdependence, while cooperation concerns sustained contribution toward shared, compatible, or mutually supporting practical ends. Cooperation can be voluntary, role-based, reciprocal, contractually structured, normatively expected, or institutionally supported. Its practical importance lies in enabling actors to pool resources, distribute tasks, share risk, generate knowledge, and sustain undertakings that exceed individual capacity.

Definition 10.437 (Practical cooperation). *Practical cooperation* is a relational pattern in which differentiated actors contribute resources, capacities, knowledge, effort, or restraint in ways that mutually support one or more shared or compatible practical ends over a relevant period.

Cooperation does not require identical motivation. Participants can cooperate because of shared values, reciprocal advantage, duty, professional role, strategic interdependence, care, or long-term expectation. What matters is that their contributions become mutually enabling within the practical process.

Definition 10.438 (Cooperation condition profile). A *cooperation condition profile* records the principal dependencies, incentives, norms, trust relations, contribution capacities, reciprocity expectations, monitoring arrangements, and exit conditions that sustain or weaken a cooperative practical relation.

Cooperation can generate surplus practical capacity. Shared learning can reduce duplication. Repeated interaction can improve coordination. Complementary expertise can make previously latent actions reachable. Joint infrastructure can reduce activation costs. These effects make cooperation a possible source of collective generativity.

Cooperation can also distribute benefits and burdens unevenly. Some participants can contribute invisible maintenance or care work while others receive more visible credit or decision authority. Some can bear the cost of flexibility when others miss commitments. Dependence on a highly capable partner can improve short-term performance while weakening autonomous capacity over time. The justice profile of cooperation therefore matters alongside its effectiveness.

Cooperative arrangements can also support harmful or exclusionary ends. Internal solidarity does not establish external justice. A tightly cooperative group can coordinate exploitation, exclusion, concealment, or burden transfer. Cooperation should consequently be evaluated in relation to the practical object, affected outsiders, ac-

countability, and broader relational consequences.

Proposition 10.439 (Cooperation and collective capacity). *Cooperation can generate collective capabilities that exceed the isolated capacities of participants, while the justice and durability of those capabilities depend on how contributions, benefits, burdens, dependence, and accountability are organized within and beyond the cooperative relation.*

10.15.8 Conflict

Institutions and collectives contain heterogeneous values, interests, identities, interpretations, risk positions, responsibilities, and practical horizons. Conflict therefore belongs to ordinary collective praxis rather than representing only institutional breakdown. The relevant question is how conflict is formed, expressed, contained, interpreted, transformed, and connected to decision and revision.

Definition 10.440 (Practical conflict). *A practical conflict is a structured divergence among positions whose ends, values, interpretations, claims, burdens, authorities, identities, or preferred actions cannot be jointly realized without negotiation, priority, redistribution, transformation, or residual disagreement under the present practical conditions.*

Conflict can reveal information. Affected actors can perceive harms that central decision-makers do not observe. Technical disagreements can expose model uncertainty. Value conflict can reveal that an apparently common objective contains incompatible meanings. Institutional conflict can reveal overlapping mandates or missing responsibility. Suppressing conflict can therefore weaken the epistemic and adaptive capacity of the collective.

Definition 10.441 (Conflict architecture). *A conflict architecture is the set of channels, rules, protections, forums, escalation pathways, negotiation practices, and decision procedures through which materially relevant disagreement can enter collective praxis and influence its interpretation, closure, or revision.*

Conflict architecture connects to protected dissent in Section 10.12. The ability to disagree safely can preserve early warning and prevent apparent consensus from concealing coercion or dependency. Yet continual contestation without closure can also disable action. Institutions require ways to distinguish disagreements that need further inquiry, those that require negotiated accommodation, those that can remain as recorded dissent after decision, and those that indicate a need to redesign the practical object itself.

Conflict can escalate. Repeated exclusion, opaque authority, distributive imbalance, identity threat, or failed repair can transform disagreement into antagonism. Conversely, new information, reframing, compensation, changed sequencing, shared problem reconstruction, or altered institutional roles can transform the structure of the conflict.

Definition 10.442 (Conflict transformation). *Conflict transformation is a change in the relations, representations, incentives, capabilities, institutional interfaces, or practical objects through which a conflict is generated, such that the form or intensity of the conflict itself is altered.*

Transformation differs from simple suppression. A conflict can become less visible because weaker actors lose voice while its generative conditions remain. Durable transformation requires attention to the relations through which the disagreement is reproduced.

Conflict also has an external dimension. Institutions can internalize cooperation while transferring costs or conflict outward to excluded groups, environments, or future actors. Collective analysis should therefore identify the boundary within which harmony is being observed.

Proposition 10.443 (Conflict as a source of collective information). *Where materially relevant disagreement reflects differences in evidence, affected position, value, burden, or practical horizon, preserving intelligible and protected conflict can increase the epistemic and adaptive capacity of collective praxis even when eventual closure remains necessary.*

10.15.9 Trust

Collective praxis depends on forms of reliance that cannot always be secured through complete verification. Actors rely on information they did not produce, procedures they cannot inspect in full, expertise they do not possess, commitments whose performance occurs later, and institutions whose continuity extends beyond particular persons. Trust therefore enters where practical interdependence combines reliance with vulnerability and incomplete control.

Definition 10.444 (Practical trust relation). *A practical trust relation is a situated relation in which one position accepts material reliance on another actor, collective, institution, procedure, or system under conditions of vulnerability and incomplete verification because relevant expectations of competence, integrity, reliability, responsiveness, or rule-governed performance are sufficiently supported for the practical purpose.*

Trust should be distinguished from mere dependence. A person can depend on an institution while expecting failure and lacking alternatives. Trust should also be distinguished from complete verification. Where every relevant action is fully controlled and checked, the practical role of trust is narrower. Most institutions operate between these extremes, combining verification, standards, reputation, accountability, and trust.

Definition 10.445 (Institutional trust architecture). *An institutional trust architecture is the set of roles, procedures, records, competence signals, accountability mechanisms, transparency conditions, contestability pathways, and repeated performance relations through which practical reliance on an institution becomes supportable or revisable.*

Institutional trust can therefore attach to structures rather than only to personal familiarity. Reliable procedure, predictable escalation, accurate records, transparent reasons, independent review, and effective repair can support trust even when participants do not know one another personally. Conversely, a trusted individual operating within an opaque or fragile system may be unable to provide durable institutional trust.

Trust should be calibrated. Excessive distrust can increase verification burden, slow coordination, fragment information, and prevent cooperation. Excessive trust can reduce scrutiny, concentrate vulnerability, and delay recognition of failure. The appropriate level depends on stakes, history, reversibility, observability, alternative safeguards, and the cost of misplaced reliance.

Definition 10.446 (Trust calibration). *Trust calibration* is the alignment of practical reliance with the available evidence about competence, reliability, integrity, accountability, vulnerability, and repair capacity relevant to the specific institutional relation.

Trust also has temporal dynamics. Reliable performance can stabilize expectations. Breach can rapidly alter them. Repair requires more than renewed assurance where the institutional conditions that produced the failure remain unchanged. A credible repair process can require acknowledgment, explanation, remedy, changed procedure, monitoring, and demonstrated performance over time.

Trust is also unevenly distributed. Institutions may be highly trusted by positions that benefit from predictable treatment and weakly trusted by positions with histories of exclusion, error, or unremedied harm. Aggregated measures of trust can therefore conceal relational variation. A trust profile should remain position-sensitive and historically informed.

Proposition 10.447 (Trust and institutional reliance). *Institutional trust is practically stronger when reliance is supported by competence, traceable procedure, accountability, contestability, and repair capacity, because these conditions permit trust to remain both usable for coordination and revisable after failure.*

10.15.10 Collective Generativity

The preceding dimensions converge in the question of what institutions and collectives make possible later. Mandates open and close practical domains. Capacity makes actions reachable. Constraints protect or limit possibility. Memory preserves learning. Decision architectures organize closure. Coordination and cooperation combine differentiated capability. Conflict can reveal hidden conditions. Trust can support reliance across incomplete verification. Together these structures can generate future capacities that did not exist at the beginning of the practical process.

Definition 10.448 (Collective generativity). *Collective generativity* is the capacity of an institutional or collective configuration to generate, sustain, combine, regenerate, or transform future practical capabilities, relationships, knowledge, coordination structures, trust conditions, institutions, and action possibilities beyond those directly consumed in the present intervention.

Collective generativity is not the sum of individual capability. A group can possess extensive individual expertise while lacking the interfaces needed to use it collectively. Conversely, modest individual capacities can produce substantial collective capability through complementary roles, shared memory, reliable coordination, mutual learning, and durable infrastructure. The relational organization of capability is therefore central.

Definition 10.449 (Collective generativity profile). *A collective generativity profile*

records how a practical process changes future institutional and collective capacities for sensing, learning, deciding, coordinating, cooperating, contesting, repairing, revising, and generating new practical options across relevant positions and horizons.

Collective generativity can be enabling or constraining. Institutions can generate expertise, trust, rights, shared infrastructure, interoperable standards, public knowledge, and collective problem-solving capacity. They can also generate lock-in, dependence, opacity, brittle coordination, concentrated authority, exclusionary categories, and self-reinforcing inability to revise. Generativity therefore remains analytically distinct from normative desirability, consistent with the distinction established throughout the book.

Institutional reproduction is one form of generativity. Routines, training, archives, succession, budgets, and role structures allow practical capacity to persist. Yet reproduction can preserve both strengths and defects. A highly stable institution can become poorly adapted to a changed situation. Collective generativity should therefore include the capacity to transform the conditions of collective action, not merely to reproduce them.

Definition 10.450 (Institutional self-revision capacity). *Institutional self-revision capacity* is the practical ability of an institutional configuration to detect materially relevant mismatch, contest its existing arrangements, preserve usable memory, redesign roles or procedures, and implement changes to its own modes of action while maintaining sufficient continuity for responsible praxis.

Self-revision requires interfaces among research, monitoring, participation, evaluation, and decision. Institutions that cannot convert evidence of failure into changed practice can accumulate knowledge without learning. Institutions that revise continuously without preserving memory or responsibility can lose continuity. Generative institutional design therefore requires a relation between stability and transformability.

Collective generativity also has distributive structure. An institution can increase aggregate capability while concentrating access to essential data, infrastructure, expertise, or decision rights. It can generate new possibilities for one group while narrowing exit or independent capacity for another. The generative opportunity and justice profiles developed in Section 10.14 therefore remain necessary at the institutional level.

Proposition 10.451 (Collective generativity and institutional form). *The long-horizon practical significance of an institutional or collective arrangement includes the capabilities, relationships, knowledge, trust conditions, coordination structures, and revision capacities that it generates or erodes for later praxis, in addition to the immediate outputs of the present action.*

Taken together, these dimensions make institutional and collective praxis a durable medium for application-dominant praxis. Their interactions also make application a source of knowledge: implementation produces traces, coordination exposes interfaces, conflict reveals divergent interpretations, failure generates diagnostic evidence, and revision changes the conditions for later inquiry. Section 10.16 develops this reciprocal coupling between application and research.

10.16 Coupling between Application and Research

Sections 10.1–10.15 have developed application-dominant praxis as a configuration in which consequential action becomes practically determinative while knowledge, values, authority, timing, and future consequences remain partly open. The role of the present section is to reconnect that architecture to the research-dominant praxis developed in Part III without returning to a linear model in which research first produces completed knowledge and application subsequently implements it. Its objective is to specify the reciprocal pathways through which research informs action, action generates evidence, interventions carry epistemic functions, practical failure reorganizes inquiry, theory changes through use, and post-action experience becomes available for disciplined re-epistemization. The discussion proceeds through seven movements: research-informed action, action-generated evidence, intervention as inquiry, practical failure as epistemic event, theory revision through practice, re-epistemization after action, and return toward research-dominant praxis. The method is architectural and recursive. Research and application remain analytically distinguishable praxis modes while their outputs, responsibilities, records, and transformations are traced across repeated crossings between them.

A reciprocal account is necessary because application changes the object about which later research asks questions. A decision can alter institutions, expectations, relations, categories, capabilities, incentives, infrastructures, and available options. Monitoring after action therefore occurs in a historically transformed field. At the same time, research does not enter application as a neutral stock of facts. Its questions, boundaries, models, uncertainty profiles, and closure records acquire new functions once they participate in consequential judgment. The relevant relation is consequently neither simple transfer nor complete fusion. It is a coupling in which the two praxis modes remain differentiated while each can reorganize the conditions under which the other proceeds.

Definition 10.452 (Research–application coupling). *Research–application coupling* is the structured and revisable relation through which research objects, evidential states, models, uncertainties, practical actions, implementation traces, consequences, and institutional learning travel between research-dominant and application-dominant praxis while retaining sufficient provenance to reconstruct changes in their function and epistemic status.

Definition 10.452 emphasizes function and provenance. A model used to explore a mechanism in research can later become a decision aid. An implementation record generated for accountability can later become evidence. A practical failure can become a new research question. The object may remain materially continuous while its role changes. The coupling architecture should make such functional changes visible so that epistemic status established for one purpose is not silently transferred to another.

Table 10.16 summarizes the seven principal movements developed in this section. The table is intentionally directional in both ways. Some movements carry research into action, some carry action back into inquiry, and several operate across the boundary in both directions.

The table also indicates why coupling should remain governed. Application

Table 10.16: Principal movements in the coupling between application and research

Movement	Principal practical object	Epistemic function	Characteristic discipline
Research-informed action	Research claims, models, historical reconstructions, uncertainty and robustness profiles	Supplies structured warrant and alternatives for practical judgment	Function-sensitive transfer and explicit limits of use
Action-generated evidence	Implementation traces, responses, adaptations, unintended effects, emergent relations	Reveals or constitutes relations, mechanisms, capacities, constraints, and consequences	Intervention provenance and distinction between revelation and generation
Intervention as inquiry	Deliberate or adaptive practical change	Uses action to discriminate mechanisms, test assumptions, or expose practical structure	Dual practical–epistemic governance and consequence-sensitive inquiry
Failure as epistemic event	Breakdown, mismatch, unmet end, harm, resistance, or implementation divergence	Creates diagnostic pressure on models, categories, assumptions, and practical design	Failure decomposition, attribution restraint, and preservation of negative evidence
Theory revision through practice	Conceptual and theoretical architectures used in application	Tests transport, scope, mechanism, category adequacy, and omitted relations	Versioned theory revision and preservation of superseded states
Post-action re-epistemization	Preserved decisions, traces, outcomes, dissent, uncertainty, and later knowledge	Reconstructs earlier action under changed evidence, concepts, methods, or historical conditions	Temporal separation of earlier warrant from later interpretation
Praxis-mode return	Reopened questions, unresolved anomalies, changed objects, new evidential demands	Reorganizes the project around inquiry when knowledge production again becomes principal	Explicit transition record and renewed research closure conditions

can produce large volumes of data without producing useful evidence. Research can supply highly refined models whose operational function exceeds their warrant. Failure can provoke learning or merely produce retrospective storytelling. Re-epistemization can deepen understanding or project later categories backward without discipline. The coupling becomes epistemically productive when each transition records the object being transferred, the function it is asked to perform, the uncertainties that remain, and the conditions under which its status should be reconsidered.

10.16.1 Research-Informed Action

Research-informed action is the first direction of coupling because application-dominant praxis rarely begins from an epistemic blank state. Historical reconstruction, field knowledge, empirical evidence, models, scenarios, interpretations, prior interventions, negative results, and uncertainty analyses can all shape practical judgment. Their role is to discipline attention, make alternatives visible, clarify plausible mechanisms, identify affected relations, and narrow unsupported claims. Their presence does not determine action by themselves because practical judgment also includes values, authority, risk, participation, timing, reversibility, and responsibility.

Definition 10.453 (Research-informed action). *Research-informed action* is consequential praxis whose problem formulation, judgment, end specification, option construction, timing, implementation, monitoring, or revision is materially shaped by research objects whose evidential status, scope, uncertainty, and provenance

remain identifiable at the point of practical use.

The definition requires more than citation to research. A practical decision can invoke a study rhetorically while ignoring its scope conditions or uncertainty. Conversely, tacit institutional knowledge can be research-informed when it is linked to preserved inquiry and can be reconstructed. The relevant question is whether research changes the practical architecture in a traceable way.

The carry-forward state established in Chapter 9, Section 264, supplies several kinds of research object. Relational reconstructions can identify positions and dependencies. Generative models can suggest mechanisms and trajectories. Sensitivity analysis can identify assumptions whose alteration changes a conclusion. Robustness analysis can reveal which practical interpretations survive across plausible alternatives. Historical inquiry can show how a present condition was formed. Negative results can remove apparently attractive but unsupported pathways. Closure records can identify what the completed research cycle established and what remained unresolved.

These objects acquire different burdens in application. A model used to generate a research hypothesis can be useful in practical brainstorming without being sufficiently validated for direct operational control. A descriptive classification can become consequential when eligibility, access, or burden is attached to it. A weakly supported mechanism can still justify additional monitoring while remaining insufficient to justify an irreversible intervention. The transfer from research to application therefore requires a function-sensitive translation.

Definition 10.454 (Practical research-use profile). A *practical research-use profile* records the research object being used, its original research function, its proposed practical function, evidential and model status, scope conditions, material uncertainties, relevant alternatives, practical consequences of error, and any additional validation or governance required by the change of use.

The profile prevents epistemic status from travelling by association. Research sufficiency established for publication, conceptual development, or exploratory modeling does not automatically establish sufficiency for high-stakes application. This principle parallels the action-relative epistemic sufficiency developed in Section 10.8. The practical function helps determine the burden.

Research can also inform action through disagreement rather than convergence. Competing models can reveal different vulnerability structures. Divergent qualitative and quantitative findings can identify scale or category problems. Historical interpretation can challenge assumptions built into a current optimization. A preserved minority interpretation can become practically salient when an intervention reaches the population or context about which that interpretation was concerned. Research-informed action therefore does not require the research record to have collapsed into one conclusion.

The relation also remains selective. Practical decisions operate under temporal and institutional constraints. Decision makers can rarely reconstruct the complete lineage of every research object during action. Good coupling therefore depends on intermediary forms that preserve material epistemic distinctions without reproducing the entire research archive. These can include uncertainty summaries,

model cards, scenario dossiers, causal maps, historical briefs, closure records, or decision-specific evidence syntheses, provided their compression remains linked to fuller provenance.

Proposition 10.455 (Function-sensitive research transfer). *Research contributes more responsibly to application when the warrant attached to a research object is assessed afresh relative to its practical function, consequence profile, scope, uncertainty, and alternatives, with the original research function retained as provenance rather than transferred as sufficient warrant.*

Research-informed action therefore preserves a distinction between being informed by research and being determined by research. The former strengthens practical judgment by making its epistemic dependencies more inspectable. The latter would erase the normative, relational, institutional, and temporal dimensions established throughout Chapter 10.

10.16.2 Action-Generated Evidence

Application produces traces that did not exist before action. Chapter 8, Section 231, developed action-generated evidence within research-dominant generative inquiry and defined it as evidence whose observability, diagnostic value, or existence depends materially on intervention. The present subsection changes the orientation. The practical action is now principally organized around consequential purposes, while its implementation and consequences can nevertheless become epistemically informative. The objective is to specify how those traces can return to inquiry without treating every operational datum as research evidence.

Implementation can reveal latent constraints. A policy can encounter an institutional bottleneck not visible in planning. A service can reveal previously unrecognized demand. A new coordination channel can expose dependence between organizations. An infrastructure change can generate behavioral adaptation. A protective measure can show that an assumed mechanism was weaker or stronger than expected. Resistance, workaround, non-use, refusal, maintenance difficulty, and unexpected uptake can all become evidence about the relational configuration within which the action operates.

The distinction between revelation and constitution remains essential. An action can reveal an existing relation, create a new relation, activate a latent capacity, suppress a prior pathway, or transform the categories through which later behavior is organized. Evidence after action therefore cannot be interpreted as though it were drawn from an unchanged field.

Definition 10.456 (Application-generated evidential trace). *An application-generated evidential trace is an observation, record, response, adaptation, outcome, or emergent relation produced or made observable through application-dominant praxis that can bear on a later epistemic question when its dependence on the practical intervention is preserved.*

The term *trace* is used deliberately. A trace becomes evidence only relative to a claim and inferential architecture. Operational systems generate logs, reports, complaints, performance indicators, financial records, sensor data, narratives, meeting

minutes, and administrative classifications. Their existence does not guarantee evidential adequacy. They can be incomplete, strategically produced, shaped by reporting incentives, or restricted to what institutions already know how to measure. Their conversion into evidence therefore requires renewed question formation and provenance assessment.

Definition 10.457 (Action-to-evidence conversion). *Action-to-evidence conversion* is the disciplined process through which application-generated traces are connected to a specified epistemic question, evaluated for provenance and representational limits, compared with relevant alternatives, and assigned an evidential status appropriate to the claim they can support.

This conversion prevents monitoring from being equated with research. Monitoring often asks whether implementation remains within a practical range or whether a trigger for revision has occurred. Research can ask why the observed pattern emerged, whether a mechanism generalizes, how effects differ across positions, or which generative rule changed. The same trace can participate in both functions, yet the inferential burden differs.

Action-generated evidence can also be highly selective because practical systems observe what they operationalize. A programme designed around one target can produce rich data about that target while remaining almost silent about unrecognized burdens. A digital platform can record interactions that occur within it while obscuring excluded users or off-platform adaptation. An institutional complaint system can document voiced harm while missing positions unable or unwilling to complain. The epistemic return from application therefore depends partly on the participation, recognition, and measurement architectures developed in Sections 10.12 and 10.11.

Unintended consequences are especially important because they can reveal branches outside the planned theory of action. Their evidential value increases when timing, pathway, affected positions, competing explanations, and intervention dependence can be reconstructed. A surprising outcome alone does not identify its cause. Yet repeated or patterned surprises can indicate that the practical model omits a relation, mis-specifies a scale, or assumes a stability that the intervention itself has changed.

Proposition 10.458 (Application evidence with intervention provenance). *Traces generated during application become stronger inputs to later research when the records preserve what action occurred, under which conditions, for whom, through which implementation pathway, with which adaptations, and against which plausible alternative explanations.*

Application-generated evidence therefore turns practical history into a possible epistemic resource while retaining the historicity of that resource. Later inquiry studies a world partly transformed by earlier action.

10.16.3 Intervention as Inquiry

Application can contain inquiry even when practical transformation remains the dominant orientation. A staged intervention can be designed to preserve learning. A pilot can compare implementation pathways. A phased rollout can reveal capac-

ity differences. Adaptive action can change in response to accumulating evidence. A reversible intervention can be selected partly because it enables diagnostic observation before deeper commitment. These arrangements make inquiry an embedded function of application rather than the principal purpose of the entire praxis configuration.

Definition 10.459 (Inquiry-bearing intervention). An *inquiry-bearing intervention* is an application-dominant action whose design, sequencing, monitoring, or variation intentionally preserves opportunities to learn about mechanisms, implementation conditions, affected relations, consequences, or future action possibilities while the principal orientation remains practical transformation.

The distinction from intervention-based research is one of organizing function. In research-dominant inquiry, the intervention is principally justified by the epistemic problem, subject to practical and ethical constraints. In application-dominant praxis, the intervention is principally justified by the practical problem, while learning is designed into the action because uncertainty remains and later judgment can improve. The same technical design can move between these orientations as conditions change.

Inquiry-bearing intervention can take several forms. Staging can expose effects before scale expands. Modularity can isolate components whose interactions remain uncertain. Parallel local implementations can reveal contextual dependence. Deliberate variation can distinguish among practical pathways when several are already acceptable. Monitoring can be structured around mechanism-relevant signals rather than only terminal outcomes. Reversible commitments can preserve an opportunity to learn without making early uncertainty historically permanent.

The epistemic advantages remain bounded by justice and responsibility. Application cannot treat affected subjects merely as experimental material because the practical action already carries obligations established in Sections 10.12–10.14. Learning value does not independently authorize exposure. Where deliberate variation redistributes risk, benefit, access, or burden, that variation requires practical justification in addition to epistemic usefulness.

Definition 10.460 (Practical learning architecture). A *practical learning architecture* specifies which uncertainties an intervention is expected to reduce, which observations are needed, how implementation variation will be interpreted, which actors can access and contest the resulting evidence, how learning can alter ongoing action, and which practical protections bound the inquiry function.

This architecture should include the possibility that action changes the question. An intervention can reveal that the original endpoint was poorly chosen, that affected subjects value a different condition, that implementation produces a new dependency, or that the practical problem has shifted. Inquiry within application is therefore not limited to parameter estimation inside a fixed model. It can reopen categories, boundaries, ends, and the object of action itself.

The capacity to learn during action also depends on institutional design. Section 10.15 developed memory, coordination, conflict, trust, and self-revision as collective capacities. Without those interfaces, organizations can collect evidence without converting it into changed practice. An inquiry-bearing intervention consequently requires both an observation pathway and a decision pathway through

which materially relevant learning can modify what happens next.

Proposition 10.461 (Embedded inquiry under practical primacy). *Application-dominant praxis can contain substantial inquiry without changing praxis mode when learning remains organized around the responsible conduct, monitoring, revision, or evaluation of consequential action rather than becoming the principal purpose for which the practical configuration is maintained.*

The proposition preserves the distinction between modes while making their overlap substantive. Application need not wait for research to finish because it can create its own governed learning structures. Research need not absorb all inquiry because some epistemic functions properly remain embedded within practical institutions.

10.16.4 Practical Failure as Epistemic Event

Practical failure can create strong pressure for epistemic revision because it exposes a mismatch between an intended practical architecture and the trajectory that actually emerged. Failure can concern an end that was not achieved, an implementation that broke down, an unforeseen burden, a harmful branch, a coordination interface, an assumption about behavior, an institutional incapacity, or a practical action that became unacceptable as consequences accumulated. The role of the present subsection is to make such failure epistemically usable without equating failure with simple falsification of the theory that informed action.

Definition 10.462 (Practical failure event). *A practical failure event is a materially consequential divergence between the warranted expectations, requirements, safeguards, or ends organizing an intervention and the observed practical trajectory, where the divergence is sufficient to require explanation, response, or revision.*

Failure is relative to the practical architecture. An intervention can achieve its nominal target while failing distributively because burdens are concentrated unexpectedly. It can succeed initially while failing at maintenance. It can satisfy an institutional indicator while generating relational harm. It can fail according to one value while remaining acceptable according to another. A failure record should therefore preserve which expectation or requirement was violated rather than assigning a global label to the entire action.

Several sources of failure should be distinguished. The underlying theory can be wrong or incomplete. The problem formulation can omit an affected relation. The intervention can be poorly implemented. Resources or authority can be insufficient. External conditions can change. Strategic actors can adapt. Measurement can misclassify outcomes. The selected end can become normatively inadequate. Coordination can break at an interface. A theory can remain locally sound while the institutional conditions required for its practical use were absent.

Definition 10.463 (Failure decomposition). *Failure decomposition is the reconstruction of a practical failure across potentially distinct loci including problem formulation, evidence, model, theory, value judgment, option design, authority, implementation, coordination, measurement, external change, adaptation, maintenance, and evaluation.*

Decomposition does not imply that each failure has one isolable cause. Several

loci can interact. A model can omit strategic adaptation while an institution simultaneously lacks the capacity to detect it. A poorly specified target can encourage implementation behavior that satisfies the indicator while worsening the underlying condition. The objective is to make competing failure accounts inspectable enough to guide both repair and inquiry.

Failure can therefore function as an epistemic event. It can expose a hidden constraint, reveal that an assumed relation was unstable, show that a category lacks practical correspondence, identify a missing scale, or reveal that actors interpreted the intervention differently than the model assumed. Failure can also expose limits of research transfer: a finding can be valid in its original context yet transport poorly into a new institutional configuration.

Definition 10.464 (Failure-generated epistemic question). *A failure-generated epistemic question is a researchable uncertainty whose practical significance becomes salient because an intervention diverged materially from its expected or required trajectory and whose resolution could alter explanation, redesign, scope, or future practical judgment.*

Negative evidence should be preserved even when immediate repair succeeds. Institutions often have incentives to narrate recovery as restoration of competence and to compress the history that made repair necessary. Yet a preserved failure can later reveal recurring structural weakness, inform analogous contexts, or become newly interpretable under later theory. This is one reason the responsibility and institutional-memory architectures of Sections 10.13 and 10.15 are epistemically consequential.

A failure also need not imply that continued application should stop while research proceeds. Urgency, reversibility, protective duties, and available alternatives can justify immediate redesign under uncertainty. The practical and epistemic responses can therefore run in parallel: stabilize harm, preserve evidence, revise implementation, and initiate deeper inquiry where necessary.

Caution 10.465 (Failure attribution). A practical failure should not be treated as direct evidence against a theory, model, institution, or actor until the relation among design, implementation, context, adaptation, measurement, and the failed practical requirement has been reconstructed with sufficient specificity for that attribution.

Proposition 10.466 (Failure as epistemic opening). *Practical failure becomes epistemically productive when its divergence is preserved with sufficient provenance to generate discriminating questions about the assumptions, relations, mechanisms, values, and institutional conditions through which the practical trajectory was expected to unfold.*

Failure therefore creates an opening rather than an automatic conclusion. The next movement concerns how such openings can alter theory itself.

10.16.5 Theory Revision through Practice

Application subjects theory to conditions that differ from those under which a theory can appear coherent within research. Concepts must be interpreted by institutions. Models encounter incomplete implementation. Actors adapt to classifications. Boundaries acquire practical consequences. Temporal delays matter. Values enter

operational rules. The theory's categories can become performative once institutions act through them. Practice can therefore test not only empirical predictions but also the transportability, operational intelligibility, and institutional consequences of theoretical structures.

Definition 10.467 (Practice-induced theory pressure). *Practice-induced theory pressure* is a materially relevant mismatch, anomaly, translation difficulty, unintended consequence, or recurrent implementation pattern generated through practical use that provides reason to reconsider the content, scope, representation, or status of a theory or one of its components.

Theory pressure can remain local. A parameter can require revision while the mechanism remains useful. A mechanism can remain valid only under narrower institutional conditions. A category can need differentiation. A scale assumption can fail while the underlying relation survives. A theory can retain explanatory value but lose suitability for direct practical guidance. The revision should therefore match the location of the pressure rather than treating every practical anomaly as a reason for wholesale theoretical replacement.

Practice can also expose conceptual ambiguity. Terms that remain productive in theoretical discussion may become unstable when translated into eligibility rules, measurement systems, organizational roles, or decision thresholds. Operationalization can force distinctions that research had left tacit. Such practical pressure can improve theory when the resulting distinctions are brought back into conceptual analysis rather than treated merely as implementation details.

Definition 10.468 (Practice-to-theory revision record). A *practice-to-theory revision record* identifies the practical event or pattern creating revision pressure, the theoretical object affected, the proposed depth of revision, supporting and countervailing evidence, preserved alternatives, consequences for earlier claims, and conditions under which the revised formulation should be re-evaluated.

The record should preserve superseded theory states when they remain relevant to historical reconstruction. An earlier theory may have shaped the intervention that produced the evidence now used to revise it. Erasing the earlier state would obscure the causal and epistemic lineage. Versioned theory therefore supports both responsibility and future re-epistemization.

Theory revision through practice also requires restraint because practical outcomes are mediated by implementation and context. A theory used through a weak institution can appear empirically poor because its required conditions were absent. Conversely, a practically successful intervention can receive support from mechanisms different from those the theory proposed. Practical success alone does not confirm the theory that motivated action.

Proposition 10.469 (Practice-sensitive theory revision). *Practice warrants theory revision most strongly when the practical record can distinguish pressure on the theory's conceptual or generative structure from pressure arising principally through implementation failure, contextual difference, measurement error, institutional incapacity, or changed practical ends.*

The relation remains reciprocal. Theory helps organize what practice observes, while practice can reorganize the theory through which later situations become in-

telligible. This reciprocity motivates post-action re-epistemization.

10.16.6 Re-Epistemization after Action

Re-epistemization after action concerns the disciplined reconstruction of an earlier practical episode under later epistemic conditions. Part III developed historical re-epistemization for research objects, archives, models, categories, and completed research cycles. Application adds another layer because later inquiry must reconstruct what actors knew, believed, valued, could do, and could reasonably foresee before the consequences were fully manifest. The objective is to learn from later evidence without rewriting the earlier decision as though later knowledge had already been available.

Definition 10.470 (Post-action re-epistemization). *Post-action re-epistemization* is the disciplined reconstruction of a prior practical situation, judgment, decision, implementation, and consequence under later evidence, concepts, methods, or historical knowledge while preserving the earlier information state, uncertainty, alternatives, authority, and practical constraints needed to distinguish later interpretation from contemporaneous warrant.

This distinction between *as-of* and later knowledge is essential. A later harmful consequence can reveal that an intervention should now be changed without proving that the original decision was negligent. Conversely, an action can have produced a favorable outcome despite weak original warrant. Outcome and decision quality are related but not identical. Re-epistemization should preserve both the *ex ante* and *ex post* structures.

The required record is broader than an ordinary evaluation file. It can include the original problem formulation, evidence state, research-use profiles, uncertainty, dissent, practical ends, option set, decision threshold, expected consequences, responsibility allocation, implementation adaptations, monitoring signals, failure events, repairs, and later outcomes. The provenance chain developed in Section 10.13 supplies much of this architecture.

Definition 10.471 (Practical *as-of* state). A *practical as-of state* is a reconstruction of the materially relevant knowledge, uncertainty, values, options, authority, capacities, constraints, and foreseeable consequence structure available to the responsible positions at a specified point in an earlier practical process.

Re-epistemization can operate at several depths. A local reanalysis can update one causal estimate. A category revision can change how earlier records are interpreted. New testimony can reveal affected positions omitted from the original problem. A later comparison can show that an institutional effect previously attributed to the intervention depended on a broader historical change. A new formal model can reconstruct feedback that earlier analysis could not represent. These later resources can transform understanding while leaving the earlier temporal record intact.

Practical records also preserve negative epistemic option value. A failed pilot, abandoned design, minority dissent, or unresolved anomaly can become highly informative under a later question. Deleting such records because they did not support the final action weakens future learning. Preservation remains bounded, however,

by privacy, legitimate confidentiality, security, stewardship, and the burden of maintaining records that no longer serve a proportionate purpose.

Definition 10.472 (Re-epistemization dossier). A *re-epistemization dossier* is a versioned collection linking an earlier practical as-of state and intervention history with later evidence, consequences, uncertainty, revised interpretations, and reasons for changed judgment.

Re-epistemization is also relevant to justice. Later recognition of an affected group, historical burden, or value that was insufficiently represented can alter the interpretation of an earlier practical process. The later judgment should state whether the issue was reasonably inaccessible at the time, weakly visible but ignored, actively excluded, or visible through a dissent that the institution overrode. These differences matter for institutional learning and accountability.

Proposition 10.473 (Temporal discipline in post-action learning). *Post-action learning is strengthened when later evidence can revise the interpretation and future use of an earlier decision without collapsing the distinction between what is known now and what was reasonably available to the responsible actors at the time of action.*

Post-action re-epistemization therefore converts practical history into a revisable epistemic object. In some cases the resulting questions become sufficiently central that the praxis configuration should shift back toward research-dominant orientation.

10.16.7 Return toward Research-Dominant Praxis

Application-dominant praxis can return toward research-dominant praxis when an epistemic problem becomes sufficiently consequential and insufficiently resolved that the production and revision of warranted knowledge again becomes the principal organizing function of a phase. This return is not regression to a prior stage. The field has changed through action, new evidence exists, responsibilities have accumulated, and some options may have been generated or foreclosed. The research phase begins from an altered practical history.

Signals for return include unresolved mechanisms after failure, consequential competing explanations, model breakdown outside the original context, contested categories, poorly understood institutions generated by intervention, long-horizon effects, and repeated adaptation that weakens the original theory of change. Such developments can make systematic inquiry more appropriate than continued local adjustment.

Definition 10.474 (Research-return trigger). A *research-return trigger* is a practical, evidential, theoretical, historical, or governance development indicating that a materially important uncertainty can no longer be addressed adequately within the embedded learning functions of application and should become the principal object of renewed research-dominant praxis.

The trigger should be proportional. Local monitoring, expert review, or implementation adjustment can resolve many uncertainties. A stronger transition becomes appropriate when the unresolved question materially affects legitimacy, effectiveness, safety, justice, or future generativity and systematic inquiry can plausibly improve

the practical situation.

The return also requires a boundary decision about ongoing action. Some interventions can pause while research proceeds. Others concern essential services, urgent protection, or durable institutional functions that cannot simply be suspended. Research-dominant inquiry can therefore occur alongside continued application-dominant operations. The two modes can become nested: the broader institution remains application-dominant while a defined subsystem, evaluation unit, or research collaboration becomes research-dominant around a specific question.

Definition 10.475 (Praxis recoupling record). A *praxis recoupling record* identifies the practical development prompting renewed inquiry, the research question being reopened or newly formed, the application functions that continue during research, the evidential and ethical interfaces between the two modes, the responsible actors, and the conditions under which the research phase can later return its outputs to practical judgment.

The record closes the loop opened by the praxis transition interface established in Chapter 9, Section 264. Research outputs can enter application through a documented change of function; application can then generate evidence, failure, theory pressure, and new questions that reorganize part of the praxis configuration around research. The resulting movement is recursive and historical because each return begins from an altered field.

Application institutions should retain sufficient epistemic capacity to monitor and revise their own action. Some questions, however, require longer horizons, alternative methods, deeper evidence, independent critique, or distance from immediate operational demands. A return toward research-dominant praxis creates room for those functions while application continues to learn.

Proposition 10.476 (Recursive transition between praxis modes). *The two praxis modes can alternate, overlap, and nest across practical history. Each transition should follow a change in the principal organizing problem and preserve material outputs, uncertainties, responsibilities, and inherited field changes.*

The coupling developed across this section completes an important part of the Chapter 10 architecture. Research can inform action; action can generate evidence; intervention can preserve inquiry functions; failure can open epistemic questions; theory can change under practical pressure; later inquiry can re-epistemize action; and application can return toward research when knowledge production again becomes practically determinative.

This reciprocal architecture also prepares the chapter's penultimate problem. Even with research-application coupling, praxis cannot remain indefinitely open. Decisions, implementations, evaluations, and institutional processes eventually require a provisional stopping point sufficient for coordinated action and responsibility. Section 10.17 therefore turns to *Practical Closure*: the conditions under which application-dominant praxis can close provisionally while preserving residual uncertainty, residual disagreement, revision, reversal, exit, and the possibility of reopening deliberation.

10.17 Practical Closure

Sections 10.1–10.16 have developed application-dominant praxis as a configuration in which consequential action must be organized through incomplete knowledge, plural values, unequal power, distributed agency, institutional mediation, and historically changing practical fields. The role of the present section is to specify how such praxis can reach a bounded stopping point sufficient for coordinated action and responsibility without representing the underlying uncertainty, disagreement, or relational dynamics as finally resolved. Its objective is to develop a theory of *practical closure* that can support commitment while preserving the epistemic, normative, institutional, and temporal conditions required for later revision. The discussion proceeds through nine movements: necessity of closure, decision before complete knowledge, provisional practical closure, residual uncertainty, residual disagreement, conditions for revision, conditions for reversal, conditions for exit, and reopening deliberation. The method is architectural and temporal. Closure is analyzed as a structured practical state situated between open deliberation and later change rather than as the terminal elimination of doubt.

Application-dominant praxis requires closure because action, coordination, allocation of responsibility, and institutional continuity cannot remain indefinitely suspended. Yet the need to close does not convert partial knowledge into complete knowledge, plural judgment into unanimity, or practical authorization into final correctness. Closure therefore performs a specific function: it stabilizes enough of the practical configuration for a defined commitment, horizon, scale, and responsibility architecture to operate. The resulting stability is real, but bounded.

Definition 10.477 (Practical closure). *Practical closure* is a temporally and functionally bounded stabilization of problem formulation, practical judgment, authorized commitment, responsibility, and implementation conditions sufficient for coordinated praxis under a specified horizon while materially relevant uncertainty, disagreement, revision pathways, and later consequences remain explicitly preservable.

Definition 10.477 distinguishes closure from finality. A practical process can close sufficiently for action while remaining epistemically incomplete, normatively contested, institutionally revisable, and historically open. The object being closed can also differ. A decision can close while evaluation remains open. A pilot can close its enrollment phase while the broader intervention remains provisional. A regulatory process can close one authorization question while monitoring obligations continue. A collective can close deliberation for the present cycle while preserving a scheduled review. Practical closure should therefore identify *what* is being stabilized and for which function.

Table 10.17 summarizes the principal dimensions of closure developed in this section. The table emphasizes that each closing operation should carry forward some remainder or reopening pathway. A closure architecture that records only the authorized action can erase the very conditions that made the authorization provisional.

The architecture is intentionally asymmetric. Closure may occur quickly while reopening can require substantial institutional work. Implementation can deepen path dependence while review capacity erodes. Records can disappear, personnel can

Table 10.17: Principal dimensions of practical closure

Dimension	Primary practical object	Closure function	Preserved condition
Necessity of closure	Open inquiry, deliberation, coordination, and commitment	Establishes a bounded stopping point for action and responsibility	Explicit object, horizon, authority, and consequence of delay
Decision before complete knowledge	Evidence, models, uncertainty, and practical thresholds	Converts sufficient warrant into authorized commitment without claiming completeness	Residual uncertainty and assumptions linked to monitoring
Provisional closure	Decision, implementation, responsibility, and review architecture	Stabilizes a practical configuration for a specified purpose and duration	Scope, duration, revision authority, and reopening conditions
Residual uncertainty	Unresolved mechanisms, boundaries, consequences, and affected positions	Keeps uncertainty visible after closure	Uncertainty profile, detection pathway, contingency, and responsible monitor
Residual disagreement	Divergent evidence judgments, values, priorities, and interpretations	Preserves materially relevant dissent after authorized commitment	Grounds of disagreement, standing, and later review pathway
Revision	Existing decision or orientation	Permits modification when practical warrant materially changes	Revision triggers, authority, memory, and implementation capacity
Reversal	Implemented action and its consequences	Enables rollback, restoration, repair, or redirection where feasible	Reversibility profile, rollback capacity, and residual harm record
Exit	Actor–arrangement relation	Permits termination or relocation of participation under specified conditions	Exit capacity, transition obligations, and exit remainder
Reopening	Closed deliberative configuration	Restores previously stabilized questions to active collective judgment	Trigger, standing, provenance, procedural pathway, and new closure criteria

change, and dissent can become difficult to reconstruct. For this reason, reopening capacity should be designed at the time of closure where consequences and uncertainty make later correction materially important.

Proposition 10.478 (Closure without finality). *Application-dominant praxis can achieve a practically sufficient stopping point without treating the underlying epistemic, normative, relational, or historical field as finally settled when the closure object, authority, horizon, residual uncertainty, residual disagreement, responsibility, and pathways for later change remain materially explicit.*

Proposition 10.478 supplies the integrating principle for the section. Practical closure is strongest when its boundaries are intelligible: actors know what has been decided, what remains uncertain, who is responsible for implementation and monitoring, which disagreements remain active, what would justify reconsideration, and which consequences may resist correction.

10.17.1 Necessity of Closure

Application-dominant praxis eventually encounters a coordination problem that inquiry alone cannot resolve. Evidence can continue to accumulate, interpretations can continue to multiply, values can continue to be debated, and alternative actions can continue to be generated. Yet the practical field also changes while deliberation proceeds. Deadlines pass, institutions allocate resources, affected actors adapt, harms or opportunities accumulate, and the feasibility of later options changes. Closure becomes necessary because open deliberation itself occupies time and alters the sit-

uation.

The necessity of closure is therefore relational rather than merely administrative. A hospital, school, court, emergency organization, research institution, civic association, technical system, or public authority may need a stable commitment so that multiple actors can coordinate expectations and responsibilities. Suppliers need to know whether an implementation will proceed. Staff need role assignments. Affected subjects need to know which protections, obligations, or services apply. Monitoring systems need a defined object. Accountability needs an identifiable decision against which reasons and consequences can later be assessed. Without a bounded closure point, practical responsibility can diffuse into continuous discussion.

Closure also creates temporal legibility. A practical process becomes easier to reconstruct when there is a distinguishable state at which one problem formulation, one authorized action, one implementation plan, or one temporary arrangement became operative. Such temporal markers support provenance and re-epistemization. Later actors can compare what was known before closure with what became visible afterward. Where closure is informal or continuously shifting, the relation between evidence, authority, action, and consequence can become difficult to reconstruct.

The need for closure should remain object-specific. Different elements of praxis can close at different times. Problem recognition can close provisionally while causal reconstruction remains open. An operational plan can close for the next month while the longer institutional strategy remains under review. A temporary safety measure can become active before a final evaluation standard is agreed. This modularity avoids treating an entire practical process as either wholly open or wholly closed.

Definition 10.479 (Closure object). A *closure object* is the specific question, judgment, commitment, role allocation, implementation configuration, evaluation frame, or institutional arrangement whose present stabilization is required for a defined practical function.

Identifying the closure object limits overreach. A body authorized to close an operational question does not thereby close the underlying scientific controversy. A majority vote on a temporary programme does not settle every value dispute surrounding the programme. A completed evaluation does not eliminate the possibility of later evidence. Closure should therefore track the authority and function of the process that produced it.

The consequences of continued openness also belong to closure analysis. Deliberation can have epistemic and democratic value, but it can also produce opportunity loss, exhaustion, strategic delay, uncertainty for affected actors, and de facto continuation of an existing arrangement. In some situations, those who benefit from the status quo possess greater capacity to sustain extended process than those who bear ongoing burdens. The decision to continue deliberating can therefore distribute consequences unevenly.

At the same time, closure can be premature. A process can close before affected positions are recognized, before a decisive uncertainty is investigated, before alternatives are meaningfully considered, or before the responsible institution has implementation capacity. The necessity of closure consequently does not establish that immediate closure is warranted. It establishes that the practical process requires an

explicit account of when continued openness ceases to be the more responsible orientation.

Proposition 10.480 (Bounded necessity of closure). *Where continued openness materially affects coordination, responsibility, consequence, or future option structure, application-dominant praxis requires an explicit closure decision concerning the relevant practical object even when the appropriate decision is to extend inquiry or deliberation for a further bounded interval.*

The proposition includes the possibility of intentionally continued openness. A decision to collect more evidence for three months, to conduct another participatory round, or to delay authorization until a safety threshold is met can itself constitute a form of bounded closure because the institution has stabilized what will happen during the interim and when reconsideration will occur. The key difference lies between governed openness and indefinite drift.

10.17.2 Decision before Complete Knowledge

Section 10.8 established that epistemic sufficiency for action differs from epistemic completeness. Practical closure extends that argument from the moment of decision to the wider configuration that makes commitment operational. The relevant problem is not whether every uncertainty has been resolved. It is whether the present evidential state, practical stakes, available alternatives, consequences of delay, reversibility, distribution of burden, and monitoring capacity support closing the current question for the intended horizon.

Decision before complete knowledge requires explicit discipline because closure can psychologically and institutionally transform provisional assumptions into apparent facts. Once resources are allocated and roles assigned, organizations often begin to speak as though the selected problem formulation and theory of change were established. Repetition in documents, dashboards, and routines can further stabilize the representation. A closure architecture should therefore preserve the difference between what was observed, what was inferred, what was assumed, and what was accepted pragmatically for purposes of action.

The closure threshold should also be sensitive to consequence. A small reversible experiment can close under a thinner evidential state than an intervention that creates long-term dependency, exposes people to severe harm, or forecloses future options. Conversely, severe harm from delay can justify closure under substantial uncertainty when waiting would itself produce unacceptable consequences. Epistemic demands and practical urgency interact; neither can be inferred from uncertainty alone.

Definition 10.481 (Closure sufficiency). *Closure sufficiency* is the condition in which the available evidence, practical judgment, authority, capability, uncertainty characterization, and consequence architecture are adequate for stabilizing a specified closure object for a stated horizon, given the expected consequences of both commitment and continued openness.

Closure sufficiency is purpose-relative. A configuration sufficient to authorize a pilot can remain insufficient for scale-up. A temporary restriction can be justified for

immediate protection while evidence for permanent institutionalization remains incomplete. A preliminary evaluation can close a funding tranche while a long-horizon causal claim remains open. The closure record should therefore state the function for which sufficiency was judged.

The possibility of unknown unknowns remains. No closure process can document uncertainty that has not entered recognition. This limitation increases the importance of diversity in observation, anomaly reporting, protected dissent, reversibility, and monitoring of unexpected consequences. The response to unrecognized uncertainty is not exhaustive anticipation but greater capacity to detect and respond when the practical field departs from expectation.

Decision before complete knowledge also creates responsibility for epistemic compression. Practical institutions often need concise representations of complex evidence. Summaries, risk categories, traffic-light systems, model outputs, briefing notes, and decision dashboards can support action, but they can also hide uncertainty and disagreement. Closure should therefore preserve links to fuller provenance proportionate to consequence. The practical representation can be compressed while remaining traceable to the evidential architecture from which it was constructed.

In some cases the decision to close is itself a hypothesis about future manageability. An institution can proceed because it believes that monitoring will detect problems early, rollback remains feasible, implementation can adapt, or affected actors can contest harmful developments. These beliefs should be treated as closure assumptions, not background certainties. Their failure can become a later trigger for revision or reopening.

Proposition 10.482 (Action-relative closure sufficiency). *The epistemic and institutional requirements for practical closure should vary with the scale, consequence, reversibility, distribution, uncertainty, monitoring capacity, and temporal urgency of the commitment being stabilized rather than with an abstract requirement of complete knowledge.*

This proposition carries forward the decision architecture of Section 10.8. Practical closure does not lower the value of knowledge. It locates knowledge within a consequential judgment about when the present state of inquiry is sufficient for a defined practical task and how remaining uncertainty will be governed after commitment.

10.17.3 Provisional Practical Closure

Provisional practical closure is the principal form of closure developed in this chapter. Its provisionality concerns the status of the practical commitment, not the seriousness of action. A provisional closure can authorize major expenditure, institutional restructuring, emergency protection, long-term monitoring, or difficult trade-offs. The term indicates that the closure is bounded by its stated horizon, assumptions, responsibilities, and conditions for later change.

Definition 10.483 (Provisional practical closure). *Provisional practical closure is a practical closure in which the authorized commitment is treated as sufficiently warranted for a specified function and horizon while the conditions under which its interpretation, continuation, scope, implementation, or legitimacy should be reconsidered*

remain institutionally and epistemically available.

A strong provisional closure should specify several elements. It should identify the closure object and the practical end being pursued. It should identify the authority under which closure occurs and the positions responsible for implementation, monitoring, review, and repair. It should state the relevant evidence and assumptions, the residual uncertainty, the materially relevant disagreement, the expected distribution of benefit and burden, and the anticipated effects on future action space. It should distinguish temporary from path-creating components. It should also record revision, reversal, exit, and reopening pathways where they are materially relevant.

These elements need not always appear in one formal document. In complex institutions they can be distributed across authorization records, implementation plans, risk registers, dissent records, monitoring protocols, contracts, appeals procedures, and archival systems. What matters is practical linkage. Later actors should be able to reconstruct how the parts relate to the closure state.

Definition 10.484 (Practical closure dossier). A *practical closure dossier* is a proportionate and versioned collection of the problem formulation, evidential basis, practical judgment, authorized commitment, responsible positions, residual uncertainty, residual disagreement, expected consequences, monitoring architecture, revision conditions, reversibility information, exit provisions, and reopening pathways associated with a practical closure.

The dossier supports continuity across time. Personnel change. Institutions reorganize. Political or organizational priorities shift. An action can outlast the people who originally justified it. Without preserved closure context, later actors can inherit the commitment while losing its assumptions and limits. The result can be institutionalization by forgetting: a provisional arrangement persists because its provisional status is no longer visible.

Provisionality should therefore have an operational form. Time-limited authorization, scheduled review, staged expansion, threshold-based continuation, sunset clauses, reversible modules, renewal requirements, and periodic reauthorization can all make provisionality practically effective. Each mechanism has limitations. Frequent review can create instability. Sunset clauses can produce artificial deadlines. Staged expansion can delay benefits. The relevant design depends on consequence, uncertainty, institutional capacity, and the cost of reopening.

The legitimacy of provisional closure also depends on the authority to close. Participation and contestability from Section 10.12, responsibility from Section 10.13, and justice from Section 10.14 remain active. A technically well-documented closure can still be practically weak if the body making the decision lacks legitimate standing, if affected positions were systematically excluded, or if burdens are transferred to actors with little voice and limited exit.

Proposition 10.485 (Proportionality of closure architecture). *The documentation, participation, monitoring, review, reversal, and reopening architecture associated with provisional practical closure should become more explicit as consequence, irreversibility, uncertainty, duration, distributional asymmetry, and dependence increase.*

The proposition avoids making every closure administratively heavy. Routine low-consequence decisions can rely on concise records and ordinary supervisory revi-

sion. High-consequence collective commitments warrant richer closure architecture because later correction is more difficult and the cost of losing provenance is higher.

10.17.4 Residual Uncertainty

Residual uncertainty persists after closure because closure stabilizes action rather than eliminating epistemic incompleteness. Section 10.8 introduced the residual uncertainty profile as a traceable account of uncertainties remaining at a decision point. Practical closure carries that profile forward into implementation, where uncertainty can change status as new manifestations emerge.

Some uncertainty becomes less important after closure. A parameter range can prove operationally insensitive. A feared implementation barrier can fail to materialize. Other uncertainty can become more important. A weakly understood feedback can begin to dominate system response. An affected group can become visible. A local adaptation can alter the mechanism through which the intervention operates. Closure should therefore permit the uncertainty profile to evolve rather than freezing the pre-decision representation.

Residual uncertainty also needs ownership. If every unresolved issue is merely recorded without a responsible monitoring position, the register can become archival rather than practical. The closure architecture should connect material uncertainties to detection pathways, review intervals, contingency plans, and responsible roles where feasible. The responsible position need not solve the uncertainty alone; its function can be to ensure that relevant signals enter the reopening pathway.

Definition 10.486 (Uncertainty carriage). *Uncertainty carriage* is the continued linkage after practical closure between materially relevant residual uncertainties and the monitoring, interpretation, contingency, responsibility, and reopening arrangements through which those uncertainties can later affect praxis.

Uncertainty carriage prevents a common closure failure in which uncertainty is acknowledged in the decision document but disappears from operational practice. Once implementation begins, teams can focus on delivery metrics that are easier to measure than the uncertain relations that most affect safety, justice, or long-term consequence. A credible closure architecture keeps significant uncertainty connected to practical attention.

The form of carriage should vary with the uncertainty. Parameter uncertainty can be linked to sensitivity thresholds. Mechanism uncertainty can motivate process tracing or comparative monitoring. Boundary uncertainty can require observation beyond the immediate implementation unit. Uncertainty concerning affected positions can require ongoing participation and complaint channels. Normative uncertainty can require deliberative review rather than additional quantitative measurement. Systemic uncertainty can justify redundancy, stress testing, or tighter constraints on scale.

Residual uncertainty can also be distributed asymmetrically. Institutions can experience confidence because they control the implementation process while affected actors remain uncertain about access, safety, future dependency, or remedy. Closure records should preserve these positional differences rather than averaging them into

one confidence statement. The uncertainty of a position with limited exit or high exposure can carry greater practical significance even if that position represents a small population.

Unexpected events create another challenge. A closure architecture cannot pre-specify every signal that should matter. Monitoring therefore needs some capacity for anomaly recognition beyond the variables anticipated at closure. Open reporting, protected escalation, qualitative observation, external review, and preservation of unusual cases can help institutions notice events that do not fit the original model.

Proposition 10.487 (Residual uncertainty after closure). *Where materially relevant uncertainty remains after practical closure, the practical warrant for continued commitment is strengthened when the uncertainty remains connected to proportionate detection, interpretation, contingency, and revision capacity rather than being treated as resolved by the act of closure itself.*

The proposition turns uncertainty into an ongoing governance object. Closure can simplify coordination, but it should not erase epistemic remainder from the practical system that now acts under it.

10.17.5 Residual Disagreement

Practical closure can occur without consensus. Sections 10.5, 10.12, and 10.14 have already shown that judgment, participation, and justice can contain durable disagreement concerning evidence, values, interpretation, priority, burden, authority, or acceptable risk. Closure requires a way to coordinate action when some of those disagreements remain materially unresolved.

Residual disagreement should first be distinguished from mere procedural loss. A minority can disagree because it was outvoted even though its reasons were heard and preserved. Another group can appear to agree because participation was inaccessible, dissent was unsafe, or the practical vocabulary excluded its concern. These situations differ substantially. The closure record should therefore preserve the provenance of agreement and disagreement rather than infer legitimacy from the final vote or signature alone.

Definition 10.488 (Residual practical disagreement). *Residual practical disagreement* is a materially relevant divergence in evidence judgment, interpretation, value, priority, authority, consequence assessment, or practical orientation that remains after proportionate inquiry and deliberation at the point of authorized closure.

Residual disagreement can have different practical statuses. Some disagreement does not affect the present action. Participants can endorse the same intervention for different reasons. Some disagreement supports conditions on implementation, such as stronger monitoring or narrower scope. Some concerns warrant a formal minority report or protected dissent channel. Other disagreements challenge the legitimacy of the decision itself and can justify appeal, external review, or non-participation.

The practical significance of disagreement depends partly on what later evidence could reveal. A dissenting position can identify a mechanism that the majority considers unlikely. If the mechanism later appears, the preserved dissent becomes diagnostically valuable. A minority can also identify justice concerns that become visible

only after implementation. Treating dissent as part of institutional memory therefore supports learning as well as participation.

Definition 10.489 (Disagreement carriage). *Disagreement carriage* is the preservation after closure of materially relevant dissent, its grounds, standing, practical implications, and available review pathways so that later evidence or consequence can reconnect the unresolved disagreement to institutional judgment.

Disagreement carriage should not create permanent veto by default. Coordinated action can require that an authorized body assign provisional priority among incompatible positions. The relevant discipline is to avoid rewriting the resulting priority as prior unanimity. An institution can state that a decision was authorized despite unresolved disagreement and record why the chosen orientation was accepted for the present horizon.

Residual disagreement also has a temporal structure. Some conflicts diminish as consequences become observable. Others deepen because implementation changes who bears burden or who possesses power. New disagreement can emerge from actors who were not previously affected. Closure should therefore preserve routes for new standing to arise where the relational field materially changes.

A further issue concerns the burden of dissent. Repeatedly requiring marginalized or less powerful actors to restate the same objection can shift the maintenance cost of institutional memory onto those actors. Where a dissent has been formally recorded, later review should be able to recover it without requiring complete re-performance of the original participatory labor. This is one reason why traceability and representation records matter.

Proposition 10.490 (Closure with preserved disagreement). *Collective practical closure can remain provisionally legitimate under residual disagreement when materially relevant dissent has received appropriate standing, its grounds and implications remain traceable, the authority for provisional priority is explicit, and viable pathways exist for later review where consequences or evidence materially change the dispute.*

The proposition links closure to pluralism without requiring unanimity. Practical coordination becomes possible while disagreement remains available as part of the institution's epistemic and normative memory.

10.17.6 Conditions for Revision

Revision changes an existing practical commitment while retaining enough continuity that the process remains recognizably the same practical trajectory. Section 10.8 defined decision revisability, decision revision triggers, and revision capacity. Practical closure extends those concepts to the broader closure state, including problem formulation, ends, implementation, monitoring, responsibility, and institutional arrangements.

Revision can vary in depth. Parameter revision adjusts scale, timing, thresholds, or implementation details. Design revision changes the means while retaining the broad end. Orientation revision changes priorities or the interpretation of the problem. Governance revision reallocates authority, participation, or responsibility. Deep revision can reopen assumptions that were previously stabilized as part of the closure

itself. The closure architecture should therefore avoid treating all revision as minor adaptation.

Conditions for revision can be pre-specified where the relevant uncertainty is known. A threshold can trigger dose reduction, scale adjustment, additional review, or temporary suspension. A scheduled review can reconsider the commitment after new evidence accumulates. A contractual clause can require renegotiation after a defined external change. Pre-specification reduces the risk that actors reinterpret unfavorable evidence merely to preserve prior commitment.

Some revision conditions necessarily emerge later. A new affected population can appear. A previously unknown interaction can be discovered. An institutional capacity can fail. A legal or normative standard can change. A better alternative can become reachable. The revision architecture therefore needs both predefined triggers and a pathway for recognizing unanticipated developments as materially relevant.

Revision also requires authority. Monitoring can reveal a problem without anyone having power to alter the commitment. Front-line actors can observe harm while escalation channels remain weak. Evaluators can identify failure while funding or governance arrangements lock the intervention in place. Closure should therefore connect detection to effective revision rights and clarify which actor can initiate, authorize, implement, and review a revision.

Definition 10.491 (Closure revision condition). A *closure revision condition* is a pre-specified or subsequently recognized change in evidence, consequence, value, capacity, affected position, institutional arrangement, or practical possibility that materially alters the warrant for one or more elements of an existing practical closure while leaving continued participation in the broader practical trajectory feasible.

The final clause distinguishes revision from exit and some forms of reversal. Revision modifies the shared commitment. Exit changes an actor's relation to it. Reversal seeks to undo or repair implemented effects. These responses can occur together, but their practical objects differ.

Revision should also account for path dependence. A formally revisable closure can become increasingly difficult to change as sunk costs, organizational identity, infrastructure, contractual commitments, expectations, or political reputation accumulate. The review interval should therefore be sensitive to the possibility that waiting for stronger evidence will also reduce the capacity to respond to that evidence.

At the same time, excessive revisability can undermine action. Constant reconsideration can destabilize cooperation, make long-term investment impossible, exhaust participants, and prevent a sufficiently stable intervention from generating interpretable evidence. Revision architecture should balance corrigibility with the continuity needed for responsible implementation and learning.

Proposition 10.492 (Revision under practical continuity). *Practical closure should support revision when the warrant for a materially relevant element has changed while preserving sufficient continuity of responsibility, records, and institutional function for the revised trajectory to remain intelligible and accountable.*

Revision therefore represents the ordinary adaptive pathway of provisional closure. Reversal becomes relevant when modification is insufficient because an implemented commitment itself should be rolled back, restored, repaired, or terminated.

10.17.7 Conditions for Reversal

Reversal concerns the relation between closure and implemented consequence. Section 10.10 distinguished reversibility, partial reversibility, reversibility asymmetry, rollback capacity, and irreversibility. Practical closure must translate those concepts into governance conditions under which rollback or restoration becomes appropriate.

Reversal is not simply revision in the opposite direction. A revised programme can continue on a modified path. Reversal seeks to terminate or undo a prior commitment, restore an earlier condition where possible, or reconstruct a materially acceptable state after the commitment has become unsuitable. Because full restoration is frequently impossible, practical reversal often includes repair, compensation, rehabilitation, transition, or redesign rather than literal return.

Conditions for reversal can arise from severe harm, failure of an essential assumption, loss of authorization, discovery of unacceptable risk, inability to meet a protected value threshold, emergence of a substantially safer alternative, implementation breakdown, or evidence that expected benefits cannot plausibly justify continuing burdens. The relevance of each condition depends on the closure object and consequence profile.

Definition 10.493 (Reversal condition). A *reversal condition* is a material development indicating that continuation or ordinary revision of an implemented commitment is no longer sufficiently warranted and that rollback, restoration, repair, termination, or transition to a substantially different practical configuration requires active consideration.

Active consideration matters because a reversal trigger need not automatically mandate reversal. Rollback can itself create harm. People can have adapted to the intervention. Dependencies can have formed. Benefits can be distributed unevenly. An institution can discover that ending a flawed programme abruptly would expose vulnerable actors more severely than staged transition. Reversal judgment should therefore include the consequences of reversal itself.

The reversibility profile should be updated over time. A closure that was highly reversible at implementation can become less reversible as infrastructure, routines, legal rights, expectations, or relationships accumulate. The practical system should monitor not only performance but also changes in the cost and distribution of reversal. A shrinking reversibility window can justify earlier review even before failure becomes decisive.

Definition 10.494 (Reversal pathway). A *reversal pathway* is the specified sequence of authority, detection, decision, operational rollback, restoration, repair, compensation, transition, and post-reversal monitoring through which a practical commitment can be materially reduced, terminated, or reconstructed.

The pathway should distinguish positions. An intervention can be reversible for the institution while irreversible for affected subjects. Ending the intervention may stop future exposure but cannot restore lost opportunity, damaged trust, disclosed information, ecological loss, or accumulated dependence. A reversal record should therefore preserve residual harm and identify which consequences remain after rollback.

Reversal also requires preservation of the capability to return or transition. Technical knowledge can be lost after adopting one system. Alternative suppliers can disappear. Staff can be retrained away from prior skills. Data can become incompatible. Rights can be reorganized around the new arrangement. Option-preservation analysis from Section 10.10 therefore becomes part of closure design when future reversal is expected to remain important.

Proposition 10.495 (Reversal-sensitive closure). *Where a practical commitment derives part of its warrant from the possibility of later rollback, the closure architecture should preserve a credible reversal pathway and monitor changes in recoverability, affected positions, and residual harm throughout implementation.*

The proposition prevents reversibility from functioning as a purely verbal assurance. A closure justified as experimental, temporary, or reversible becomes weaker if the practical conditions of reversal are allowed to disappear during implementation.

10.17.8 Conditions for Exit

Exit differs from revision and reversal because its principal object is the actor–arrangement relation. Section 10.9 defined practical exit as termination or substantial relocation of an actor’s membership, attachment, or exposure within a practical arrangement. Practical closure should specify when exit is available, what capacities make it effective, and what responsibilities persist after departure.

Exit can provide protection against unacceptable burden, coercion, persistent failure, or loss of trust. It can also preserve autonomy where continued participation depends on consent. Yet exit is unevenly distributed. Some actors possess mobility, alternative institutions, financial reserves, legal rights, technical portability, or social networks that make departure feasible. Others are bound by necessity, dependency, geography, status, caregiving obligations, sunk investment, or the absence of alternatives. Formal exit rights can therefore coexist with very unequal effective exit capacity.

Conditions for exit can be voluntary, contractual, institutional, ethical, or protective. A participant can choose to leave after a change in terms. A professional can withdraw when an arrangement violates a protected standard. An institution can end a partnership after governance failure. An affected subject can require a protected opt-out where participation would otherwise impose disproportionate risk. Each case requires attention to the burdens transferred to those who remain.

Definition 10.496 (Closure exit condition). *A closure exit condition is a specified or subsequently recognized circumstance under which an actor can justifiably terminate or materially relocate its participation, membership, exposure, or commitment within an arrangement governed by an existing practical closure.*

Exit conditions should connect to exit capacity. A right to leave can be practically empty if data cannot be transferred, benefits are forfeited, essential services disappear, retaliation is likely, or switching costs are prohibitive. Where meaningful exit forms part of the legitimacy of closure, the institution should protect the practical conditions that make exit usable.

Exit also creates obligations of transition. A service provider leaving a region can

need to preserve continuity for dependent users. A member withdrawing from a collective can possess information or responsibilities that require handoff. A funder ending support can create abrupt burden for organizations that built capacity around the commitment. Exit can therefore require notice, data transfer, transition support, compensation, preservation of records, or staged reduction depending on the relation.

The *exit remainder* developed in Section 10.9 remains central. Departure changes the field for those who stay. Resources, legitimacy, capability, coordination, and burden can all shift. An exit decision should therefore evaluate both the departing actor's claim and the consequences distributed across the remaining arrangement.

Closure architectures can also misuse exit. Institutions can treat the theoretical possibility of leaving as sufficient answer to concerns about domination or burden even where practical exit is highly unequal. Conversely, powerful actors can use credible exit to extract favorable terms while less mobile actors absorb the resulting costs. Exit should therefore complement, rather than replace, voice, contestability, accountability, and repair.

Proposition 10.497 (Exit-sensitive practical closure). *Where continued participation materially depends on the availability of exit, practical closure should preserve effective exit capacity proportionate to the dependence involved and should account for transition obligations and the burden transferred to positions that remain.*

Exit can sometimes resolve a local conflict without reopening the shared arrangement. In other cases, repeated exit, asymmetric exit, or the departure of critical actors can signal that the closure itself requires reconsideration. This possibility leads to reopening deliberation.

10.17.9 Reopening Deliberation

Reopening deliberation restores one or more previously stabilized questions to active practical judgment. It is broader than ordinary revision because the institution reopens the grounds of closure rather than merely modifying implementation. The reopened object can include the problem formulation, evidential basis, ends, authority, justice profile, action space, institutional arrangement, or the legitimacy of continued commitment itself.

Reopening can be triggered by evidence, consequence, dissent, institutional change, value change, legal development, failure of an essential assumption, emergence of a new affected position, deterioration of trust, loss of capacity, or transformation of the wider practical situation. A scheduled review can also reopen deliberation without a crisis. Periodic reopening can be valuable where long-horizon consequences are difficult to observe during the original decision period.

Definition 10.498 (Reopening condition). *A reopening condition is a material development, scheduled review point, or valid contestation event that requires one or more previously stabilized elements of practical closure to return to active inquiry, deliberation, judgment, or authorization.*

Reopening requires standing. An affected actor can observe a problem while lacking access to the institution capable of reconsidering the decision. Employees can

fear retaliation. External researchers can identify evidence but lack an authorized channel. Future consequences can be borne by populations not represented in the original process. The closure architecture should therefore specify who can initiate reopening, how evidence enters the process, which body has authority to respond, and what protections apply to dissent and escalation.

Reopening also requires memory. The practical closure dossier from Definition 10.484 enables later actors to reconstruct the earlier state rather than deliberating from a decontextualized present. The earlier reasons, assumptions, uncertainty, disagreement, and authority should remain distinguishable from later knowledge. This continuity supports the post-action re-epistemization developed in Section 10.16.

A reopened process should identify its scope. New evidence about one implementation mechanism does not necessarily reopen every normative premise. A legitimacy challenge can require broader reconsideration than a parameter update. Scope discipline protects both stability and responsiveness. It prevents small anomalies from destabilizing an entire institution while also preventing institutions from classifying deep problems as minor operational issues merely to avoid review.

Definition 10.499 (Reopening pathway). *A reopening pathway is the institutional and procedural sequence through which a reopening condition can be recognized, submitted, assessed, authorized for renewed deliberation, connected to preserved closure provenance, and translated into a revised, reversed, exited, continued, or newly closed practical configuration.*

The result of reopening need not be change. Deliberation can conclude that the existing commitment remains sufficiently warranted. Such reaffirmation should still update the closure record because the evidential and practical field has changed. Reopening can therefore produce continuation with stronger justification, narrower scope, new safeguards, revision, reversal, exit arrangements, or a new practical orientation.

Reopening also has costs. Frequent reopening can generate instability, strategic obstruction, process fatigue, and uncertainty for actors who depend on durable rules. Powerful actors can weaponize review procedures to delay protections or exhaust less-resourced participants. The threshold for reopening should therefore be proportionate to consequence and should distinguish materially relevant contestation from repetitive procedural disruption. Protected routes for urgent escalation can coexist with ordinary review intervals.

Proposition 10.500 (Reopenable practical closure). *A practical closure is more robustly provisional when materially relevant changes in evidence, consequence, value, affected position, authority, capability, or institutional condition can reach a legitimate reopening pathway without requiring the practical system to lose all continuity each time reconsideration occurs.*

The proposition completes the section's architecture. Practical closure is neither indefinite openness nor terminal finality. It is a governed stabilization in which commitment, responsibility, and coordination become possible while uncertainty, disagreement, revision, reversal, exit, and later deliberation remain structurally connected to the practical history that produced the closure.

This account also completes the philosophical architecture required before the

book turns from application-dominant praxis to application methodology. Chapter 10 has developed the practical situation, problem formation, judgment, ends, action spaces, decision under incomplete knowledge, action and non-action, risk, power, participation, responsibility, justice, institutional praxis, research–application coupling, and practical closure. Section 10.18 now organizes the transition from these conceptual conditions toward the methodological architectures through which decisions, interventions, evaluations, and adaptive processes can be designed and conducted in Chapter 11.

10.18 From Applied Praxis to Applied Methodology

Sections 10.1–10.17 have developed application-dominant praxis as a domain-general architecture for consequential action under incomplete knowledge, plural values, unequal power, distributed agency, institutional dependence, and revisable closure. The role of the present section is to convert that philosophical architecture into a set of methodological requirements without yet selecting the concrete decision, modelling, participatory, intervention, monitoring, or evaluation techniques developed in Chapter 11. Its objective is to identify what an applied methodology must preserve when practical philosophy is translated into procedures, representations, criteria, roles, records, and sequences of action. The discussion proceeds through six movements: the relation between practical philosophy and method, decision methodology, intervention methodology, evaluation methodology, adaptive methodology, and the transition to decision and intervention methodologies. The method is architectural and derivative. Each methodological requirement is traced back to a practical condition already established in this chapter so that technique remains accountable to the praxis configuration it serves.

The transition from philosophy to method is consequential because operationalization can alter the object it seeks to represent. A decision rule can compress plural values into a criterion. A diagnostic procedure can stabilize one problem formulation. A model can privilege observable variables over less legible relations. A participatory process can redistribute voice. An intervention protocol can determine which capacities become relevant. An evaluation framework can make some effects durable in institutional memory while leaving others weakly represented. Applied methodology therefore participates in praxis rather than merely implementing conclusions produced elsewhere.

Definition 10.501 (Applied methodology). An *applied methodology* is an organized and revisable architecture of procedures, representations, criteria, roles, tools, records, and sequencing rules through which a practical orientation is translated into diagnosis, decision, intervention, observation, evaluation, learning, and possible revision within a consequential relational field.

Definition 10.501 makes three features explicit. First, methodology includes organizational and evidential arrangements as well as analytical techniques. Second, method is embedded in a practical sequence whose stages can alter later possibilities. Third, applied methodology remains revisable because the situation, evidence, values, institutions, and consequences can change while action proceeds.

Table 10.18: Transition from application-dominant praxis to applied methodology

Methodological domain	Inherited practical condition	Required methodological function	Characteristic discipline
Practical philosophy and method	Situated judgment under incomplete knowledge, plural values, power, responsibility, and justice	Translate practical commitments into inspectable procedures without erasing their provenance or scope	Explicit assumptions, scope, authority, uncertainty, and revisability
Decision methodology	Action space, epistemic sufficiency, thresholds, urgency, risk, disagreement, and closure	Organize comparison and commitment among practically reachable alternatives	Decision-object clarity, consequence sensitivity, threshold provenance, and residual uncertainty
Intervention methodology	Relational transformation, timing, scale, depth, power, capacity, and institutional dependence	Design and conduct action through specified targets, mechanisms, safeguards, and implementation pathways	Mechanism visibility, implementation responsibility, option preservation, monitoring, and repair
Evaluation methodology	Ends, heterogeneous values, distributed consequences, generated evidence, and historical change	Reconstruct what changed, for whom, through which pathways, and with what practical significance	Multi-dimensional evaluation, attribution restraint, provenance, and explicit evaluative authority
Adaptive methodology	Dynamic situations, uncertainty, feedback, reversibility, institutional learning, and reopening	Connect monitoring and new evidence to governed changes in decision or intervention	Revision triggers, protected constraints, memory, rollback capacity, and controlled adaptation
Integrated applied methodology	Coupled decision, intervention, evaluation, learning, and closure	Coordinate multiple methods across the practical lifecycle while preserving differentiated epistemic and normative functions	Method fit, pluralism, interface governance, traceability, and recoupling with research

Table 10.18 summarizes the principal transition developed in this section. The table does not prescribe particular methods. It identifies the practical-philosophical conditions that concrete methods in Chapter 11 will need to operationalize.

The transition summarized in Table 10.18 also clarifies the boundary between Chapters 10 and 11. Chapter 10 specifies the practical conditions that methods must respect. Chapter 11 develops families of methods and explains how they can be selected, combined, limited, monitored, and revised. The distinction preserves a direction of accountability: practical methodology should be justified by the structure of the practical problem and the responsibilities attached to action, rather than by the mere availability or technical sophistication of a method.

10.18.1 Practical Philosophy and Method

Practical philosophy supplies the architecture through which a practical situation becomes intelligible as an object of responsible action. It identifies the relation among incomplete knowledge, judgment, ends, action spaces, risk, power, participation, responsibility, justice, institutional capacity, and closure. Method gives this architecture operational form. The relation is therefore neither one of simple deduction nor one of methodological autonomy. Philosophical commitments constrain method, while methodological practice can expose ambiguities, conflicts, and hidden assumptions that require philosophical revision.

A practical philosophy can remain too abstract for action if it does not specify how its distinctions enter inquiry and decision. A methodology can become normatively

opaque if it converts those distinctions into procedures without preserving the reasons for them. The methodological transition should therefore retain what can be called *practical provenance*: why a method is being used, which practical object it addresses, which assumptions make it relevant, whose authority supports its use, which uncertainties remain, and how its outputs will participate in consequential judgment.

Definition 10.502 (Practical methodological requirement). A *practical methodological requirement* is a condition that an applied method or methodological arrangement should satisfy because a materially relevant feature of the practical situation, responsibility structure, uncertainty, value configuration, power relation, or closure architecture would otherwise be lost, distorted, or rendered difficult to govern.

This definition creates a disciplined route from philosophy to procedure. If risk is distributed unequally, the method should represent exposure and recovery capacity across positions. If practical disagreement remains unresolved, the method should avoid presenting one aggregate score as if it erased that disagreement. If consequences are partly irreversible, the method should represent timing, staging, and rollback limits. If problem formulation remains contestable, the method should retain a pathway for revising boundaries and categories. Methodological design thereby becomes a response to the architecture of praxis.

The same principle constrains formalization. A mathematical model can support decision when its variables, assumptions, uncertainty, and domain of relevance correspond sufficiently to the practical object. A historical reconstruction can reveal path dependence that a cross-sectional model would miss. A participatory method can disclose affected relations inaccessible through administrative data. A simulation can explore branching trajectories whose direct observation is impossible before action. Each method gains practical relevance through fit to an epistemic and practical function, rather than through membership in a methodological hierarchy.

Definition 10.503 (Method–praxis fit). *Method–praxis fit* is the degree and manner in which a method's representational assumptions, evidential demands, temporal structure, scale, decision function, participation requirements, and revision capacity correspond to the practical object and responsibility structure for which the method is used.

Method–praxis fit is contextual. A coarse method can be adequate for rapid protective action when the cost of delay is high and the action is easily revisable. The same method can be inadequate for an irreversible structural intervention. A highly detailed model can also have weak fit if its data requirements exclude affected positions, its temporal horizon misses delayed effects, or its outputs cannot be interpreted by the actors responsible for implementation. Methodological adequacy therefore depends on consequence, usability, and governance as well as analytical sophistication.

Method combinations require the same discipline. Chapter 7 established methodological pluralism within research-dominant praxis. Application-dominant praxis inherits that pluralism while adding consequence-sensitive constraints. Historical, interpretive, qualitative, quantitative, formal, computational, participatory, and experimental methods can occupy different functions within one applied architecture. Their outputs can converge, conflict, or remain partly incomparable. Combination should preserve those differences when they matter for judgment.

Proposition 10.504 (Practical derivation of method). *An applied method is more adequately justified when its selection, scope, assumptions, evidential function, practical use, and revision pathway can be reconstructed from the practical object and responsibility structure it is intended to serve.*

Proposition 10.504 does not imply that every methodological choice can be deduced uniquely from philosophy. Several methods can satisfy the same practical requirement, and a single method can serve several functions. The proposition instead establishes a burden of explanation: methodological choice should remain traceable to practical need.

10.18.2 Decision Methodology

Decision methodology operationalizes the movement from a practical situation and action space toward a sufficiently warranted commitment. Its object is broader than selecting one alternative from a fixed list. The list itself can be incomplete, unequally reachable, historically produced, or transformed through action. Ends can remain plural. Evidence can be heterogeneous. Urgency can change the value of delay. Risk can be distributed across actors who possess different authority and recovery capacities. Decision methodology therefore has to preserve the conditions under which alternatives become practically comparable and commitment becomes responsible.

A decision methodology should first specify its *decision object*. The object can be a binary authorization, a choice among several designs, a sequence of contingent commitments, a threshold for escalation, a temporary protective measure, a portfolio of actions, or a decision to preserve inquiry. Different decision objects require different representations of consequence, uncertainty, reversibility, and timing. Treating them as one generic optimization problem can conceal these distinctions.

Definition 10.505 (Decision-method architecture). *A decision-method architecture is the organized relation among a decision object, practical alternatives, evidential inputs, evaluative criteria, uncertainty representations, affected positions, decision authority, thresholds, temporal conditions, consequence structures, and revision or re-opening pathways through which a practical commitment is formed.*

The decision-method architecture should preserve the distinction developed in Section 10.8 between epistemic sufficiency and epistemic completeness. Methods for decision can help identify whether available evidence is sufficient relative to the consequence profile of the contemplated action. They cannot convert incomplete knowledge into completeness merely by producing a numerical output. The resulting recommendation or ranking should therefore retain the uncertainty, assumptions, and practical thresholds on which it depends.

Decision methodology should also distinguish criteria from values. Criteria operationalize some aspects of what actors care about, yet a criterion rarely exhausts the value it represents. A participation score can imperfectly represent voice. A risk metric can omit distribution or recoverability. A cost measure can exclude dependence, maintenance, or future option loss. Method design should therefore document the relation between evaluative criteria and the broader practical values from which they were derived.

The architecture should also accommodate incomplete commensurability. Section 10.14 developed justice-sensitive comparison through thresholds, priorities, partial orderings, protected values, and preserved remainder. Decision methodology can operationalize such structures without forcing all practical values into one common unit. In some cases, eliminating unacceptable options, establishing protected constraints, or identifying a set of sufficiently supported alternatives can be more faithful to the practical situation than computing a unique maximizer.

Decision authority is another methodological variable. A technically sophisticated comparison can remain practically weak if the persons who supply evidence, bear risk, authorize action, implement the decision, and review consequences occupy different positions and their interfaces are poorly specified. Decision methods should therefore connect output to an authority and responsibility architecture. The method should make clear who can interpret the result, who can depart from it, what reasons are required for departure, and how disagreement enters the record.

Definition 10.506 (Decision-method fit). *Decision-method fit* is the correspondence between a decision method and the decision object's action space, consequence structure, value plurality, uncertainty, temporal horizon, reversibility, affected positions, authority, and practical closure requirements.

Decision-method fit also changes over time. A method suitable for initial screening can become inadequate after new evidence appears. A robust comparison can become unnecessary once uncertainty narrows. A temporary heuristic can require replacement before scale expands. Decision methods should therefore be treated as components of a decision process rather than permanent decision rules.

Proposition 10.507 (Decision methodology under incomplete knowledge). *Decision methodology can support warranted practical commitment under incomplete knowledge when it preserves the relation among evidence, uncertainty, values, thresholds, authority, consequence, and revision strongly enough that the closure produced by the method remains inspectable and reopenable.*

Chapter 11 develops this architecture through practical diagnosis, goal and criterion specification, evidence thresholds, decision analysis, scenario construction, robustness, adaptive decision-making, optimization with explicit limits, formal and quantitative models, interpretive analysis, and participatory decision methods. The present section supplies the practical requirements to which those methods will answer.

10.18.3 Intervention Methodology

A decision authorizes or selects a practical orientation; intervention methodology organizes the transformation through which that orientation is enacted in a relational field. This distinction matters because implementation is itself generative. Actors interpret the intervention, institutions adapt, capacities are mobilized or exhausted, incentives and expectations change, unforeseen relations become salient, and new action possibilities emerge. Intervention methodology must therefore represent the path of transformation rather than treating implementation as execution of a static instruction.

The first requirement is specification of the intervention object. An intervention can target a state, relation, constraint, capacity, institution, rule, infrastructure, information structure, timing condition, or combination of these. The apparent surface problem and the generative target can differ. A symptom can be visible at one position while the relations producing it are located elsewhere. Intervention methodology should therefore connect target selection to the relational and historical diagnosis developed earlier in the chapter.

Definition 10.508 (Intervention-method architecture). An *intervention-method architecture* is the organized specification of an intervention's target, mechanism, enabling conditions, constraints, scale, timing, depth, authority, implementation pathway, affected positions, expected and unintended trajectories, monitoring structure, revision conditions, repair capacity, and exit or reversal provisions.

Mechanism visibility is central. An intervention that changes an outcome without an intelligible account of how the change is expected to occur can be difficult to monitor and repair. The mechanism need not be completely known before action, especially under urgency. The methodology should nonetheless identify the mechanism assumptions that matter for implementation and the observations that would indicate materially different dynamics.

Timing, scale, and depth are methodological decisions rather than neutral implementation details. Acting earlier can preserve options while increasing uncertainty. Acting later can improve knowledge while allowing harm or lock-in to deepen. Small-scale action can protect against widespread error while missing interactions that appear only at larger scales. Deep intervention can transform generative conditions while increasing irreversibility and institutional burden. Intervention methodology should keep these dimensions explicit enough for responsibility and evaluation.

Power also enters intervention design. The actors who can compel compliance, allocate resources, define implementation categories, select sites, control infrastructure, or suspend the intervention can shape the practical trajectory independently of the nominal design. Methods should therefore identify the practical authority and dependence relations through which the intervention becomes executable. Participation can alter these relations by generating local knowledge, consent, co-design, distributed monitoring, or contestability.

Intervention methodology should also preserve action-space consequences. Section 10.7 showed that action can generate, expand, contract, or foreclose later possibilities. A method that evaluates only immediate target attainment can therefore miss a central consequence of intervention. Intervention design should ask which future actions become easier, harder, dependent, irreversible, or newly possible because the intervention occurred.

Definition 10.509 (Intervention-method fit). *Intervention-method fit* is the correspondence between an intervention method and the target's relational structure, mechanism, temporal dynamics, scale, depth, institutional capacity, power configuration, reversibility, monitoring needs, and consequence profile.

Intervention methods should include failure and repair pathways where consequence makes them material. Section 10.16 treated practical failure as an epistemic event, while Section 10.17 distinguished revision, reversal, exit, and reopening. The

intervention architecture should therefore preserve implementation traces and assign responsibility for detecting divergence. A repairable intervention has a materially different risk profile from an intervention whose failure becomes visible only after relevant options have been foreclosed.

Proposition 10.510 (Intervention as governed transformation). *An intervention methodology more adequately represents application-dominant praxis when it governs the transformation pathway itself, including mechanism, implementation, power, monitoring, adaptation, and residual consequence, rather than treating implementation as a neutral passage from decision to outcome.*

Chapter 11 develops these requirements through target selection, timing and sequencing, scale, intervention depth, intervention design, pilots and experiments, monitoring, feedback, repair, rollback, and integrated intervention design. The present subsection establishes why these are methodological objects rather than secondary implementation details.

10.18.4 Evaluation Methodology

Evaluation methodology reconstructs the practical significance of what followed decision and intervention. It links observed change to the ends, assumptions, affected positions, mechanisms, responsibilities, and closure conditions that organized action. Evaluation therefore exceeds the measurement of terminal outcomes. Application can change relations, capabilities, institutions, burdens, risks, action spaces, meanings, trust, and future generativity even when the original target measure changes little. Conversely, a favorable indicator can coexist with harmful relational or distributional transformation.

An evaluation should first specify its evaluative object. The object can be immediate outcome, process quality, implementation fidelity, relational change, capacity formation, institutional learning, justice, risk reduction, option preservation, long-horizon consequence, or some combination. These objects can require different evidence and temporal horizons. Evaluation methodology should preserve the difference rather than treating one indicator family as a universal proxy for practical success.

Definition 10.511 (Evaluation-method architecture). *An evaluation-method architecture is the organized relation among evaluative objects, criteria, evidence, comparison structures, causal or interpretive claims, affected positions, temporal horizons, evaluative authority, uncertainty, and revision pathways through which the significance of practical consequences is reconstructed.*

Evaluation also has a standpoint. Section 10.11 identified power to evaluate as a distinct locus of practical power. Selecting the criterion, baseline, time horizon, attribution rule, and unit of analysis can change the institutional meaning of the same practical history. Evaluation methodology should therefore record who defined the criteria, who supplied evidence, who can contest the interpretation, and which consequences remain weakly represented.

Attribution requires restraint. Practical fields change for many reasons. Actors adapt strategically. External events alter conditions. Several interventions overlap.

Institutional learning can modify implementation while the evaluation is underway. A measured difference can therefore support different causal accounts. Formal causal inference can be valuable where assumptions are sufficiently supported; historical and interpretive reconstruction can be necessary where the mechanism depends on context, meaning, institutional sequence, or path dependence. Evaluation methodology should align the strength of attribution with the evidential architecture available.

Evaluation should also compare consequences with the original closure dossier. This preserves the *ex ante* state developed in Sections 10.16 and 10.17. Later actors can then distinguish three questions: whether the original decision was warranted given what was known, whether implementation followed the authorized architecture, and whether later consequences justify revision. These questions can yield different answers.

Definition 10.512 (Evaluation remainder). An *evaluation remainder* is a materially relevant consequence, value, disagreement, uncertainty, or affected position that remains unresolved, weakly represented, or outside the adopted evaluation architecture after an evaluative judgment has been produced.

The evaluation remainder prevents closure from erasing what the method could not adequately compare. It can include delayed effects, contested values, low-frequency harm, unobserved populations, qualitative changes, or mechanisms whose evidential status remains uncertain. Preserving such remainder allows later monitoring and research to revisit the evaluation as new evidence becomes available.

Evaluation also produces practical effects. A metric can redirect organizational attention. A ranking can alter incentives. A finding can justify continuation, funding, withdrawal, or redesign. Public evaluation can change legitimacy and trust. The evaluation method is therefore part of the practical field it studies. Reflexive evaluation should monitor these consequences where they are material.

Proposition 10.513 (Evaluation with practical provenance). *Evaluation supports responsible application more strongly when its objects, criteria, evidence, authority, uncertainty, standpoint, and unresolved remainder remain connected to the practical history from which the intervention and its closure emerged.*

Chapter 11 will operationalize these requirements through outcome, relational, downstream, delayed, structural, capacity, constraint, option-space, generative, and historical evaluation, alongside failure detection and institutional repair.

10.18.5 Adaptive Methodology

Application-dominant praxis unfolds in fields that can change while action is underway. New evidence appears, actors adapt, institutions learn, capacities shift, effects propagate across scales, and previously latent consequences become visible. Adaptive methodology organizes the relation between such change and practical revision. Its purpose is disciplined responsiveness: preserving enough continuity for coordinated responsibility while allowing materially relevant developments to alter the practical pathway.

Adaptation requires more than monitoring. A system can collect large amounts

of information without possessing an authorized pathway through which evidence changes action. An adaptive methodology should therefore link observation to interpretation, thresholds, authority, feasible alternatives, and implementation capacity. The relevant question is not simply whether a signal was detected, but whether the practical architecture can respond proportionately before the consequence becomes difficult to reverse.

Definition 10.514 (Adaptive applied methodology). An *adaptive applied methodology* is an applied methodological architecture in which specified observations, thresholds, practical developments, or scheduled reviews can trigger governed changes in decision, intervention, monitoring, evaluation, or closure while preserving provenance, responsibility, and continuity across versions of the practical configuration.

Adaptive design should distinguish what is open to revision from what is protected. Safety constraints, rights, evidential minimums, record-preservation requirements, or other commitments can remain stable while parameters, sequencing, scale, or implementation details change. This distinction prevents adaptation from becoming unconstrained opportunism. It also protects affected actors from repeated alteration of basic conditions merely because an institution possesses technical capacity to change them.

Triggers should be interpretable. A threshold can be quantitative, qualitative, institutional, relational, or composite. A new harm report can matter even when aggregate indicators remain stable. A coordination failure can require redesign before outcome measures deteriorate. A change in affected populations can require renewed participation. Adaptive methodology should therefore preserve multiple signal types and specify how conflicting signals are handled.

Reversibility and option preservation remain central. Adaptation is easier when interventions are staged, modular, observable, and supported by rollback or fallback capacity. Deep commitments can still be adaptive, but the cost and delay of revision increase as infrastructure, dependence, expectations, and institutional routines accumulate. The design of adaptability should therefore occur before lock-in where the consequence profile warrants it.

Definition 10.515 (Adaptive governance rule). An *adaptive governance rule* specifies the observation or event that can initiate change, the actor or institution authorized to interpret it, the range of permissible responses, the responsibilities attached to modification, the record required for traceability, and the conditions under which broader deliberation must be reopened.

Adaptive methodology can also fail through excessive reactivity. Frequent local changes can make effects difficult to interpret, exhaust implementers, undermine trust, and fragment institutional memory. Stability itself can have practical value where actors coordinate around predictable conditions. Adaptation should therefore be proportionate to the significance of the change and should preserve sufficient temporal continuity for evaluation and learning.

This produces a distinction between *adaptation* and *drift*. Adaptation remains connected to an explicit practical orientation, evidence, responsibility, and record. Drift occurs when the practical configuration changes cumulatively without adequate authorization, interpretation, or traceable relation to the original closure. Drift can

emerge through many small implementation changes even when no actor intentionally changes the overall policy or intervention.

Definition 10.516 (Methodological drift). *Methodological drift* is the cumulative transformation of an applied method, criterion, implementation rule, or evaluative practice through local changes whose combined practical significance is insufficiently represented in authorization, provenance, or closure records.

The possibility of drift makes versioning important. Each materially significant methodological state should remain reconstructable enough to identify what changed, why it changed, who authorized it, what evidence supported the change, and which consequences followed under that version. Such records also support the research–application recoupling developed in Section 10.16.

Proposition 10.517 (Governed adaptation). *Adaptive methodology strengthens application-dominant praxis when responsiveness to new evidence and consequence is coupled to explicit triggers, protected commitments, authorization, traceability, and proportionate pathways for revision, reversal, exit, or reopening.*

Chapter 11 develops these requirements through robust and adaptive decision-making, monitoring, feedback, staged intervention, revision, failure detection, repair, rollback, and exit. The adaptive architecture developed here explains why those techniques should operate as connected components rather than isolated tools.

10.18.6 Transition to Decision and Intervention Methodologies

The preceding subsections complete the conceptual transition from application-dominant praxis to applied methodology. Practical philosophy supplies the conditions of responsible action; methodology translates those conditions into inspectable operations. Decision methodology organizes commitment. Intervention methodology organizes transformation. Evaluation methodology reconstructs practical significance. Adaptive methodology governs change across time. Their integration creates a practical lifecycle in which diagnosis, judgment, action, observation, evaluation, learning, and closure remain connected without becoming identical.

Definition 10.518 (Integrated applied methodological architecture). An *integrated applied methodological architecture* is a coordinated configuration of diagnostic, decision, intervention, monitoring, evaluative, participatory, interpretive, formal, and adaptive methods whose differentiated functions are linked through shared practical provenance, responsibility, uncertainty management, consequence tracking, and revision pathways.

Integration should preserve methodological differentiation. A diagnostic model does not become an evaluative criterion merely because the same variables appear in both. A participatory process does not become causal evidence solely because participants report change. A simulation used to explore scenarios does not acquire empirical validation through practical usefulness alone. A quantitative indicator and an interpretive account can illuminate different aspects of the same intervention. Integration concerns governed interfaces among methods rather than fusion into one epistemic language.

This principle also applies to method selection. Chapter 11 begins by specifying

ing practical orientation, decision objects, intervention objects, method selection, method combination, and revisability. It then develops practical diagnosis, goals and criteria, evidence thresholds, decision analysis, scenarios, robust and adaptive decision-making, optimization with explicit limits, formal and quantitative models, historical and interpretive analysis, and participatory methods. These families address different parts of the practical architecture established in Chapter 10.

The later sections of Chapter 11 move from decision toward intervention. They address target selection, timing and sequencing, scale, intervention depth, intervention design, experimental and pilot intervention, monitoring, feedback, evaluation, failure detection and repair, exit and rollback, AI-assisted decision support, and integrated intervention design. The chapter closes by identifying the limits of domain-general method and preparing the transition toward economic praxis. The sequence is therefore methodological rather than merely taxonomic: it follows the lifecycle of practical action from diagnosis through commitment, transformation, observation, revision, and eventual domain specialization.

The integration of methods also requires an interface record. Different methods can use different boundaries, units, temporal horizons, categories, and uncertainty representations. A result can change meaning when transferred from one method to another. A forecast can become a scenario input; a participatory account can alter a criterion; a monitoring signal can trigger model revision; an evaluation finding can reopen the original problem formulation. These transfers should remain reconstructable.

Definition 10.519 (Methodological interface record). *A methodological interface record documents a materially relevant transfer among applied methods, including the object transferred, its original function, transformation or aggregation applied during transfer, assumptions introduced, uncertainty preserved or altered, receiving function, responsible actors, and consequences for later judgment or action.*

Methodological interface records are especially important where automated or AI-assisted systems participate in practical workflows. A machine-generated forecast, classification, optimization, or synthesis can travel quickly across institutional stages. The practical meaning of the output can change while the original assumptions and uncertainty become difficult to recover. Chapter 11 therefore treats AI-assisted decision support within the same provenance, responsibility, contestability, and revisability architecture rather than as a separate source of practical authority.

The final requirement is recoupling. Applied methodology should retain a route back toward research when practical experience reveals questions that embedded learning cannot responsibly resolve. Section 10.16 developed research-return triggers and praxis recoupling records. Chapter 11's methods should therefore produce records capable of supporting renewed inquiry, including negative results, model mismatch, failed interventions, emergent categories, unexplained distributional effects, and long-horizon anomalies.

Proposition 10.520 (Methodological continuity across praxis modes). *The transition from application-dominant praxis to applied methodology remains compatible with later return toward research-dominant praxis when methods preserve sufficient provenance, uncertainty, failure information, version history, and practical context for their*

outputs and consequences to become legitimate objects of renewed inquiry.

Proposition 10.520 closes Chapter 10's numbered argument. Application-dominant praxis has been developed from its basic relation to research-dominant praxis through practical contradiction, situation, problem formation, judgment, ends, action spaces, decision, action and non-action, risk, power, participation, responsibility, justice, institutions, research–application coupling, practical closure, and finally methodology. The resulting architecture remains domain-general. It establishes a landscape within which consequential action can be organized while knowledge, values, institutions, and practical conditions remain historically open.

Chapter 11 now takes this landscape as its practical foundation and develops concrete decision and intervention methodologies. The next task is methodological specification: how to diagnose a practical situation, construct criteria, establish evidential thresholds, compare alternatives, build scenarios, reason under deep uncertainty, select intervention targets, choose timing and scale, design and monitor interventions, evaluate effects, detect failure, repair harm, preserve exit and rollback, and integrate human and AI-assisted decision support. The substantive economic specialization remains deliberately deferred until the transition from general method to economic praxis at the end of Part IV.