

Power over Ethical Legibility: Classification, Interpretive Manifolds, and the Political Economy of Heterogeneous Relations

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Abstract

Ethical and political judgment depends not only on which classifications are applied to entities and relations, but also on the conditions under which those entities and relations become classifiable, comparable, and normatively visible at all. Existing work across political economy, sociology of classification, science and technology studies, critical data studies, recognition theory, epistemic injustice, and relational ethics has long shown that categories, standards, infrastructures, and institutions can organize power. This paper develops a narrower Generative Relational inquiry into a prior layer of that problem: power over *ethical legibility*. The central question is how control over interpretive conditions can shape what can appear as a subject, harm, capability, dependency, exploitation, care, consent, relevant difference, or legitimate object of governance before a particular normative classification is selected.

The paper distinguishes several analytically related forms of power. Classification power concerns the assignment and stabilization of categories. Quotient power concerns which differences are retained and which are treated as normatively irrelevant. Interpretive-manifold power concerns the historically generated dimensions, units, temporal scales, and conceptual distinctions within which classification becomes possible. Interface power concerns the infrastructures through which heterogeneous interpretive systems are translated or coordinated. Archival power concerns which traces, provenance, and competing interpretations remain available for future re-cognition. Boundary power concerns the constitution of the domain to which governance, responsibility, or institutional jurisdiction is said to apply. These forms of power interact with material control over resources, computation, communication, institutions, ecological conditions, and other infrastructures.

The inquiry is motivated by heterogeneous relations in which epistemic access is uneven and no interpreter can be assumed to possess a neutral or ontologically privileged view. Artificial-artificial, artificial-animal, animal-alien, and alien-alien cases are treated as conceptual stress tests rather than as a taxonomy of moral status. Building on a prior account of relational reconstruction under epistemic difference, the paper asks how asymmetries in resources, interfaces, archives, standards, and classificatory authority can shape the very field of possible ethical interpretation. A familiar participant may become more ethically legible not only because observers care about it more, but because institutions possess richer measurement systems, vocabularies, legal categories, and evidential infrastructures for it. Conversely, a participant or relation may remain politically weak because the conditions required for its injury, dependency, agency, or claim to become legible have not been generated or are controlled by others.

The paper does not equate visibility with justice, emergence with legitimacy, or counter-classification with emancipation. Nor does it claim that interpretive manifolds are infinitely plastic or reducible to political will. Its more modest aim is to identify how political-economic power can operate before, through, and after explicit classification by shaping the conditions of ethical legibility itself. This perspective also clarifies a temporal problem: present classifications and archives can produce *quotient lock-in*, preserving only the distinctions recognized by current institutions and thereby narrowing future possibilities of re-cognition. Ethical legibility is therefore treated not as a passive property of entities but as an historically generated and politically contestable relation among material infrastructures, interpretive systems, institutions, and heterogeneous forms of life.

Keywords: ethical legibility; classification power; interpretive manifolds; epistemic infrastructure; political economy; heterogeneous relations; archival power; re-cognizability

Discussion Paper Note

This paper examines a political-economic problem that follows from the preceding study of normative relations under heterogeneity. That study asked how relations can become ethically intelligible when participants and interpreters do not share the same epistemic access, conceptual repertoire, or interpretive manifold. The present paper asks a different question: who or what shapes the conditions under which such intelligibility is produced? Its object is therefore not simply classification, and not simply moral status. It is the distribution of power over the infrastructures, distinctions, interfaces, archives, units of analysis, and institutional procedures through which entities and relations become ethically legible.

The working expression *ethical legibility* refers to the practical and institutional possibility that an entity, relation, harm, capability, dependency, claim, or transformation can be rendered recognizable within a normatively consequential interpretive field. The term should not imply that whatever becomes legible is correctly understood, that legibility is always desirable, or that illegibility is always oppressive. States, firms, scientific institutions, social movements, communities, and technical systems can all produce forms of legibility for different purposes. Some forms of legibility make protection, contestation, comparison, or accountability possible. Others simplify, discipline, extract, erase, or render populations governable. The paper therefore treats legibility as a site of power rather than as a moral good in itself.

A central discipline of the paper is to avoid claiming novelty for the broad observation that classification and knowledge are political. Sociology, political theory, science and technology studies, critical theory, feminist philosophy, postcolonial thought, critical data studies, and political economy have long examined classificatory power, standardization, quantification, knowledge production, administrative legibility, recognition, epistemic injustice, and the material consequences of institutional categories. The paper's narrower question concerns how these insights can be extended when the space of possible classification is itself historically generated and when the participants to a relation may occupy heterogeneous interpretive worlds.

The starting distinction is among several analytically different objects of power. *Classification power* concerns the capacity to assign, stabilize, or institutionalize a category. A system may classify an entity as a person, a tool, an employee, a contractor, a protected animal, a security threat, an aggressor, a patient, a dependent, or a resource. Such classifications can alter legal standing, resource flows, permissible treatment, evidential burdens, institutional responsibilities, and future trajectories.

Quotient power concerns a prior operation. Any practical classification usually treats some differences as relevant and others as negligible. Two histories can be treated as equivalent for a particular institutional purpose even when their full relational structures differ. The political question is therefore not only who assigns a category but who can determine the equivalence relation under which heterogeneous cases are treated as "the same." Quotient power includes the capacity to define which distinctions institutions preserve, which they collapse, and which they never record.

Interpretive-manifold power reaches further upstream. Classification presupposes a space in which relevant dimensions, units, temporal windows, and possible distinctions are already available. The preceding paper used *interpretive manifold* as a cautious analytical scaffold for that space. The present paper asks how political-economic relations participate in its formation. Control over measurement regimes, professional vocabularies, sensors, interfaces, scientific standards, legal concepts, institutional routines, and educational infrastructures can make some dimensions of a relation easy to perceive and others difficult even to formulate. Power can therefore operate before the moment at which an explicit category is selected.

This claim must be formulated carefully. It is not the assertion that powerful actors can arbitrarily invent reality, nor that every conceptual distinction is a disguised political imposition. Material constraints, biological structures, technical architectures, histories of interaction, and recalcitrant evidence can resist interpretation. The narrower hypothesis is that the practical field within which institutions can detect, compare, and normatively process these constraints is itself unevenly produced. Some realities become densely instrumented and administratively visible; others remain weakly measured, poorly represented, or accessible only through categories generated by more powerful participants.

Interface power concerns the relational layer through which different interpretive systems encounter one another. In heterogeneous relations, there may be no complete translation between participants. Practical coordination can therefore depend on interfaces: translators, APIs, legal representatives, scientific models, welfare indicators, standardized forms, reporting systems, human–machine interfaces, diplomatic institutions, or locally generated protocols. An actor that controls such an interface can influence which signals are transmitted, which distinctions survive translation, whose vocabulary becomes the default, and which forms of contestation are technically possible. The interface can thereby become a political-economic bottleneck without being an explicit sovereign authority.

Archival power concerns control over what remains available for later reconstruction. Present institutions rarely preserve the full relational field. They retain selected measurements, labels, summaries, records, and provenance. If only the classified output is preserved while the distinctions required to challenge that output disappear, later interpreters may inherit a narrowed historical possibility space. The preceding paper called this *quotient lock-in*. The present paper treats quotient lock-in as a form of temporal power: present classification can shape the conditions under which future actors are able to re-cognize the relation.

Boundary power concerns the constitution of the domain that is said to require governance, intervention, regulation, or collective coordination. A relation can be represented as local to its participants or as affecting a shared infrastructure, ecosystem, market, security field, public sphere, or other common condition. Boundary drawing determines who appears affected, who appears to have standing, which externalities become institutionally visible, and how far governance claims extend. The paper should therefore distinguish power over a classification inside a governance domain from power to define the governance domain itself.

These epistemic and classificatory forms of power interact with material political economy. Control over compute, data, land, money, energy, communication channels, laboratories, legal expertise, platforms, archives, organizational access, and institutional recognition can determine who is able to produce evidence, contest categories, maintain alternative descriptions, or construct new interpretive interfaces. Ethical legibility is therefore not merely discursive. It can be expensive. Some actors can sustain teams, measurement systems, litigation, lobbying, documentation, or scientific research through which their preferred classifications become durable. Others may possess experiences or injuries that are real within their relational world but lack the infrastructure required to make those experiences legible to institutions that allocate protection or resources.

The heterogeneous cases developed in the preceding paper remain useful, but their role changes. Artificial–artificial relations can expose how platform owners, model developers, operators, or infrastructure providers may control logs, memory, compute, communication, and the categories through which artificial interactions are reconstructed. Artificial–animal relations expose the collision between dense human interpretive infrastructures for animal welfare and technical infrastructures designed around artificial-system performance. Animal–alien cases make asymmetric ethical legibility especially visible: the terrestrial animal may already be embedded in veterinary, ecological, conservation, and legal systems while the alien participant is nearly unrepresented. Alien–alien cases provide a limiting thought experiment in which the human institutional manifold may be radically inadequate to the relation itself.

The key political-economic issue in these cases is not simply bias toward the familiar. Familiarity is often institutionally produced. A being becomes “familiar” partly because resources have been invested in observing, classifying, protecting, exploiting, studying, or regulating it. The density of an interpretive infrastructure is therefore historically connected to prior relations of value, power, extraction, care, scientific interest, legal recognition, and administrative concern. Epistemic asymmetry can thus be both a cause and a consequence of political-economic asymmetry.

This recursive relation is a major candidate contribution. Material power can shape ethical legibility by financing or controlling interpretive infrastructures. Ethical legibility can in turn alter material power by changing legal status, resource entitlement, institutional attention, liability, protection, or the legitimacy of extraction. The paper should therefore avoid a simple one-directional model in which political economy causes classification. The more appropriate object is a coupled process in which material

resources, interpretive structures, normative classifications, and institutional consequences recursively stabilize or destabilize one another.

The concept of *ethical legibility* should also be distinguished from visibility in a merely perceptual sense. An entity can be highly visible and still lack the categories through which its relation becomes normatively recognizable. Conversely, a statistically aggregated population can become highly legible to an institution while individual experiences remain invisible. Legibility is therefore indexed to an interpretive and institutional purpose. The same data can make one form of harm legible while erasing another. The paper should repeatedly ask: legible to whom, under which manifold, for what decision, with which quotient, and with what material consequences?

A related distinction concerns ethical status and ethical legibility. Moral status theories typically ask what properties, relations, capacities, or forms of life make an entity morally considerable. The present paper asks how such status claims become institutionally representable and consequential in the first place. A being may satisfy a philosophical criterion in principle yet remain practically unprotected because the institutions governing its world do not detect, record, or recognize the relevant feature. Conversely, a category can acquire powerful institutional effects even when its philosophical justification remains contested. The paper therefore concerns the political economy of normative visibility rather than a new substantive criterion of moral status.

The capability approach provides an important neighboring framework. Its focus on substantive opportunities and functionings helps move evaluation beyond resource possession alone. Yet capability assessment depends upon an account of which functionings matter, whose opportunities are measured, and what counts as a meaningful loss or expansion of effective possibility. Under heterogeneity, these are interpretive achievements rather than neutral inputs. Institutions that define capability metrics therefore exercise not only evaluative power but also power over which forms of flourishing become administratively legible. The paper should engage this point without portraying the capability approach as unaware of plurality or contextual interpretation.

Recognition theory, care ethics, relational autonomy, and epistemic-injustice literatures provide additional neighboring resources. Recognition concerns the social constitution of status and agency. Care ethics foregrounds dependency, responsiveness, vulnerability, and concrete relations. Relational autonomy shows that effective agency depends upon enabling social conditions. Epistemic injustice reveals how social power shapes credibility and shared interpretive resources. The present paper's distinct task is to connect these concerns to the political economy of the infrastructures through which ethically relevant objects themselves become detectable, comparable, and institutionally processable across heterogeneous relations.

Science and technology studies, sociology of classification, and critical data studies are likely to be especially important in the literature review. They provide mature accounts of standards, categories, infrastructures, metrics, administrative simplification, data production, and the performative effects of classification. The paper should therefore resist any broad claim that "classification is power" is novel. The possible new contribution lies in integrating these literatures with the preceding Generative Relational account of heterogeneous interpretive manifolds, epistemic asymmetry, relational reconstruction, normative-object formation, and re-cognizability.

The paper should also examine counter-power. If ethical legibility is produced through infrastructures, resistance cannot always be reduced to replacing one label with another. Contestation can occur at several layers: challenging a classification; challenging the quotient that made cases comparable; introducing a missing distinction; changing the unit of analysis; building an alternative interface; preserving excluded traces; contesting the boundary of governance; or constructing a counter-infrastructure capable of sustaining an alternative interpretive manifold. These forms of contestation differ in cost, scale, and institutional accessibility.

The expression *counter-manifold* may be useful but should be introduced with restraint. It should not suggest that a social movement can simply design an entirely new conceptual universe at will. A counter-manifold would refer to a historically generated alternative configuration of distinctions, units, metrics, categories, and interpretive practices that makes previously excluded relations legible in a differ-

ent way. Feminist, disability, labor, environmental, anti-colonial, animal-welfare, and other movements may provide empirical domains in which such transformations can later be studied, but the paper should verify the relevant literatures before making specific historical claims.

A further question concerns whether increasing legibility can itself become a form of domination. Administrative systems often seek legibility in order to allocate resources, enforce rules, predict behavior, or optimize extraction. Making a heterogeneous participant fully legible to a powerful institution may reduce its autonomy or expose it to new forms of control. The paper must therefore reject a simple norm of “maximize ethical legibility.” Some forms of opacity, privacy, local autonomy, or protected non-translation may be important. The relevant problem is not maximizing visibility but understanding who controls legibility, who bears its costs, what purposes it serves, and what forms of refusal remain possible.

This point connects to the preceding paper’s distinction between shared relational conditions and total jurisdiction. A participant can have a claim to contest the governance of a shared infrastructure without surrendering all other aspects of its relational world to institutional inspection. Similarly, a regulator may need enough information to address a specific externality without acquiring comprehensive interpretive access to every participant. The political economy of legibility therefore includes struggles over proportional access, data minimization, protected locality, and the boundary between necessary reconstruction and epistemic overreach.

Temporal power requires separate attention. Current institutions can shape not only present classification but future knowability. Destruction of records, lossy standardization, proprietary interfaces, inaccessible logs, unstable formats, and classification-only archives can prevent later reinterpretation. Conversely, preservation systems can also freeze present categories by storing only what current institutions know how to measure. Re-cognizability therefore requires attention to provenance, alternative interpretations, versioned classifications, measurement limitations, and traces that exceed present quotients.

The paper should maintain a strict distinction between descriptive power and normative evaluation. Demonstrating that an actor has classification power, interface power, archival power, or boundary power does not by itself establish that the power is unjust. Some concentrated interpretive authority may be necessary for technical reliability, emergency coordination, or institutional function. Distributed systems can reproduce domination as well. The normative question concerns how such power is generated, constrained, contestable, revisable, and connected to the affected relational field. The paper should therefore present a taxonomy of power before offering any general normative judgment about its legitimate distribution.

The principal candidate claims to test are the following. First, ethical legibility is produced through coupled material and interpretive infrastructures rather than merely discovered in pre-classified entities. Second, power can operate before explicit classification by shaping the dimensions, units, quotients, and interfaces through which classification becomes possible. Third, epistemic asymmetry can be historically reproduced through unequal investment in interpretive infrastructure, making some participants easier to protect, regulate, exploit, or recognize than others. Fourth, present classifications can exercise temporal power by narrowing the traces and distinctions available for future re-cognition. Fifth, resistance to classificatory domination may require changes not only in labels but also in quotients, interfaces, archives, measurement systems, and governance boundaries.

These claims are working hypotheses, not completed results. Each requires careful comparison with existing scholarship, especially work on legibility, classification, quantification, governmentality, symbolic power, infrastructure, critical data studies, epistemic injustice, and social movements. A serious literature review may show that some formulations are already present under other names. In that case the paper should narrow or abandon the corresponding originality claim rather than redescribe established work in Generative Relational terminology.

The provisional section structure is:

1. Introduction: Power before Classification.

2. Literature Review: Classification, Knowledge, Infrastructure, and Political Economy.
3. From Classification Power to Ethical Legibility.
4. Quotient Power and the Politics of Relevant Difference.
5. Interpretive-Manifold Power.
6. Asymmetric Epistemic Infrastructure.
7. Interface Power in Heterogeneous Relations.
8. Archival Power and Temporal Control.
9. Boundary Power and the Expansion of Governance.
10. Material Infrastructure and the Political Economy of Legibility.
11. Ethical Status as a Resource-Allocating Classification.
12. Counter-Classification, Counter-Infrastructures, and Contestation.
13. Re-cognizability and Resistance to Epistemic Closure.
14. Applications to Artificial, Animal, Institutional, and Heterogeneous Relations.
15. Discussion and Limits.
16. Conclusion.

The manuscript should preserve several writing constraints established in the preceding project. Natural-language processes should not be disguised as formal mathematical mappings by casual use of arrow notation. Mathematics should be used only where the objects and operations have been defined with sufficient precision. The paper should distinguish observation, reconstruction, classification, normative judgment, and material consequence. It should not assume that more legibility is always better, that decentralization is always just, that emergence entails legitimacy, or that heterogeneity automatically creates moral obligation. Most importantly, the paper should remain modest about originality: its strongest contribution will lie in the precise connections it can establish among heterogeneous interpretive manifolds, political-economic infrastructure, classificatory power, and future re-cognizability.

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Status. This working discussion paper records an evolving stage of the author’s position. Its definitions, formal constructions, section structure, literature map, and originality claims remain subject to revision. The present draft is preliminary and should not be read as claiming a completed general theory of power, classification, political economy, or heterogeneous ethics.

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Statement on the use of language models. The exploratory discussions and preparation of this paper involved OpenAI’s ChatGPT. ChatGPT supported exploratory dialogue, formal reconstruction, source discovery followed by source verification, argumentative criticism, and drafting in $\text{\LaTeX}$. The author selected the research questions, directed and approved the theoretical commitments and epistemic status of the claims, and bears sole responsibility for the manuscript, including its definitions, formal constructions, taxonomy, arguments, conclusions, and errors. Authorship credit remains with the human author.

1 Power before Classification

This section introduces the paper’s central problem and fixes the level at which its claims are made. The paper does not begin from the observation that classifications can be politically consequential; that point is already well established across several mature literatures. Its narrower concern is the prior and more difficult question of how political-economic power participates in producing the conditions under which ethically relevant entities, differences, harms, dependencies, capabilities, and relations become classifiable at all. The proposed object of analysis is therefore not classification alone, but *ethical legibility*: the historically generated capacity of a relational configuration to become representable as ethically salient within an interpretive and institutional field.

The distinction matters because a classificatory decision never operates in an empty space. To classify an entity as a worker rather than a tool, an interaction as care rather than control, a modification as treatment rather than injury, or a dependency as ordinary coordination rather than domination, an institution must already possess some way of individuating the entities involved, selecting the relevant temporal interval, recording certain changes, ignoring others, comparing the case with prior cases, and deciding which differences matter. These conditions are often treated as technical preliminaries. In practice, however, they are distributed unevenly, maintained by material infrastructures, embedded in institutions, and shaped by prior histories of investment, administration, extraction, protection, and neglect.

The paper therefore asks how power can operate *before* explicit classification, how it continues to operate *through* classification, and how classificatory infrastructures shape the future conditions of interpretation *after* a decision has been made. The claim is not that every interpretive distinction is reducible to domination or that every technical standard conceals a political intention. Rather, the paper treats interpretive conditions as possible sites of power because control over them can alter whose states are detectable, which relations are reconstructible, what counts as comparable, what enters administrative attention, and what remains available for later re-cognition.

1.1 Ethical legibility as a relational problem

The term *ethical legibility* is used here in a deliberately restricted sense. It does not mean simple visibility, public attention, moral worth, or philosophical moral status. An entity can be visually conspicuous yet

ethically illegible to an institution if the institution lacks the categories, measurements, temporal records, or interpretive practices required to recognize the relevant relation. Conversely, an entity can be highly legible to an administrative system while remaining poorly understood in any richer phenomenological or relational sense.

Let x denote an entity, event, relation, or trajectory situated in a broader relational field $\mathcal{G}_t$. Let $\mathcal{I}_t$ denote the historically available interpretive infrastructure at time t , including observation systems, categories, standards, records, interfaces, evidential practices, and institutional procedures. Ethical legibility can then be treated schematically as a relation

$$\mathcal{L}_t(x \mid \mathcal{I}_t, \mathcal{G}_t),$$

where $\mathcal{L}_t$ does not measure intrinsic moral value. It indicates the degree and manner in which x can become representable within an ethically consequential interpretive practice at time t .

The notation is intentionally modest. No universal scalar measure of legibility is assumed. Legibility is likely to be multidimensional and purpose-relative. A relation may be legible for taxation but illegible for disability accommodation; legible for productivity measurement but illegible for unpaid care; legible for security surveillance but illegible for recognition of coercion. The central issue is therefore not whether a thing is simply “legible” or “illegible,” but *legible to whom, through which infrastructure, under which distinctions, for what institutional purpose, and with what consequences*.

Definition 1.1 (Ethical legibility). Ethical legibility is the situated capacity of an entity, relation, state, or trajectory to become representable as ethically or normatively salient within an available interpretive and institutional configuration. Ethical legibility is neither identical to moral status nor sufficient for justified judgment.

This definition preserves three distinctions that are essential throughout the paper. First, legibility is not ontology. A being does not acquire or lose whatever ontological properties it has merely because an institution can or cannot recognize them. Second, legibility is not justification. A category can become administratively effective while remaining normatively defective. Third, legibility is not benevolence. Increased legibility can facilitate protection, but it can also facilitate discipline, extraction, targeting, prediction, exclusion, or intrusive control.

These distinctions are especially important in a Generative Relational framework. The paper suspends the assumption that ethical significance is transparently readable from an entity’s intrinsic properties. It also rejects the opposite assumption that all normativity is merely an arbitrary projection. The relevant question is how relationally real normative structures become possible, effective, and contestable within historically generated fields of interpretation. Ethical legibility names one part of that process: the conditions under which a relation becomes available for normative uptake at all.

1.2 Heterogeneous relations as stress tests

Heterogeneous relations make this problem unusually visible because they remove interpretive supports that are easily mistaken for neutral background conditions. In familiar human–human settings, shared embodiment, ordinary language, legal institutions, medical knowledge, social conventions, and accumulated histories of interaction provide dense resources for identifying persons, injuries, dependencies, consent, refusal, work, care, punishment, property, and obligation. None of these resources guarantees correct judgment, but their density can make the interpretive infrastructure disappear from view.

Relations involving artificial systems, non-human animals, radically unfamiliar organisms, or hypothetical extraterrestrial forms of life weaken this background familiarity in different ways. The point of such cases is not to construct a hierarchy of species or substrates. They function as conceptual stress tests for the interpretive infrastructure itself.

An artificial–artificial relation may involve participants for which humans possess substantial technical knowledge while remaining uncertain about subject-relative meaning or ethical status. An artificial–animal relation combines two comparatively familiar but very different interpretive domains: engineered

architectures on one side and biological, behavioral, ecological, and welfare knowledge on the other. A terrestrial animal–alien relation introduces a stronger asymmetry. The animal may already be embedded within dense veterinary, ecological, conservation, and legal infrastructures, while the alien participant may have almost no corresponding interpretive infrastructure. An alien–alien relation provides a limiting case in which the human observer may lack not only information, but adequate categories for individuating the participants or describing the relation itself.

The political-economic significance of these examples lies in the fact that familiarity is not merely psychological. It is institutionally produced. A participant becomes easier to interpret when resources have been invested in sensors, taxonomies, datasets, legal doctrines, professional expertise, laboratories, monitoring systems, archives, translation practices, and standardized procedures. Such investments are not distributed evenly. They often follow prior patterns of economic value, scientific interest, administrative need, extraction, protection, risk management, or political recognition.

Consequently, epistemic asymmetry can be historically generated by material asymmetry. A being or relation may appear easier to understand because institutions have spent decades constructing the conditions under which it becomes measurable. Another may remain obscure not because it is intrinsically unknowable, but because no comparable infrastructure has been funded, maintained, or authorized. The reverse relation also matters: once one participant is more legible, institutions may find it easier to regulate, protect, exploit, insure, litigate, or commodify that participant, further reinforcing unequal investment in interpretive infrastructure.

Claim 1.2 (Recursive legibility-power relation). Material and institutional power can shape ethical legibility by distributing interpretive infrastructure unevenly, while unequal ethical legibility can in turn alter material and institutional power by affecting recognition, protection, regulation, extraction, liability, and access to resources.

This claim is a research hypothesis rather than a universal law. It does not imply that all epistemic difference has a political-economic cause. Biological difference, technical complexity, physical accessibility, historical contingency, and genuine limits of translation can matter independently. The point is narrower: when interpretive asymmetries are institutionally produced or maintained, they become appropriate objects of political-economic analysis.

1.3 From classification power to the conditions of classification

The most familiar form of classificatory power concerns the assignment of a category. Whether an entity is classified as employee or contractor, patient or offender, subject or object, protected species or resource, autonomous agent or tool can have direct consequences for rights, obligations, institutional procedures, and resource flows. Such power is important, but it is only one layer.

Before a classification can be assigned, a system must define what is being classified and along which dimensions. It must decide which observations belong to the case, what temporal window counts, what unit is treated as the relevant individual, what evidence is admissible, what comparison class is appropriate, and which differences can be ignored. These operations often occur upstream from explicit normative judgment.

The paper distinguishes several forms of power that can operate at these different layers.

Classification power. Classification power concerns the capacity to assign, stabilize, enforce, or institutionalize categories. It concerns questions such as whether a relation is named employment, exploitation, care, coercion, treatment, attack, assistance, or ordinary system operation.

Quotient power. Quotient power concerns the construction of equivalence for institutional purposes. When cases are treated as sufficiently similar to fall under the same rule, some differences are preserved and others are ignored. The relevant political question is therefore not only who assigns the category, but who determines the quotient under which heterogeneous cases become comparable.

If x and y are treated as equivalent under a quotient Q_t , one may write

$$x \sim_{Q_t} y.$$

The expression does not claim that x and y are identical. It makes visible that institutional comparability depends upon a rule of relevant difference. The political economy of quotienting concerns who can define, maintain, contest, or escape that rule.

Interpretive-manifold power. Interpretive-manifold power concerns a still earlier layer: influence over the dimensions, units, temporal scales, conceptual distinctions, and admissible relations within which classification becomes possible. The preceding paper in this research programme used the term *interpretive manifold* as a working analytical structure rather than a literal claim of differential geometry. In the present paper, the concept is used to ask how an interpretive space becomes materially supported and institutionally stabilized.

For example, a system that measures only individual-level outcomes may systematically fail to represent harms that occur at the level of relations, collectives, or long trajectories. A system that records only final states may obscure coercive histories that produced those states. A system that individuates an artificial agent by current hardware may miss continuity carried through memory or network relations. These are not merely errors in assigning categories. They concern the prior constitution of the space in which a category can be assigned.

Interface power. Interface power concerns control over translation and coordination between heterogeneous interpretive systems. Interfaces can include technical APIs, human translators, measurement protocols, reporting formats, dashboards, institutional forms, legal representations, or other structures through which one domain becomes intelligible to another. Whoever controls an interface can influence which features are transmitted, which are compressed, and which remain inaccessible.

Archival and temporal power. Archival power concerns the preservation, deletion, formatting, provenance, and accessibility of traces from which later reconstruction is possible. Temporal power appears when present infrastructures shape not only what can be known now but what can be re-known later. A system that stores only present classifications while discarding underlying traces can make future reinterpretation structurally difficult even if future concepts improve.

Boundary power. Boundary power concerns the constitution of the domain to which governance, responsibility, or institutional attention is said to apply. A conflict framed as a private relation may remain outside collective intervention; the same effects framed as changes to a shared infrastructure may become a matter of public governance. Boundary power therefore concerns the construction of the relevant field, not merely the decision made within it.

These forms of power overlap. The paper uses them analytically rather than as mutually exclusive empirical boxes. A single institution can exercise several at once, and the same infrastructure can distribute them across different actors.

1.4 Material infrastructures of interpretation

The term *interpretive* should not be read as purely discursive. Ethical legibility is produced through material arrangements. Sensors determine which states are observable. Communication infrastructure determines which participants can speak or signal. Databases determine which histories persist. Computing systems determine which patterns can be processed. Funding structures determine which categories receive sustained research attention. Legal and administrative institutions determine which representations have consequences. Professional training determines which distinctions become routine. Ownership structures can determine who can inspect logs, models, interfaces, or archives.

This materiality motivates the paper’s political-economic orientation. An interpretive infrastructure has costs. It requires labor, maintenance, access, expertise, energy, institutional authorization, and often property rights. These costs affect which subjects and relations become richly represented. Some entities acquire dense infrastructures because they are economically valuable. Others acquire them because they are politically protected, scientifically interesting, administratively risky, or historically salient. Still others remain poorly represented because their interpretation produces little institutional return or because those benefiting from their illegibility possess greater power than those harmed by it.

The framework therefore resists a clean division between material power and epistemic power. In many cases, epistemic asymmetry is sustained materially, while material distribution is justified through epistemic classifications. A labor category can affect wages and benefits; wage structures can affect who has resources to contest the category. A disability classification can open access to services; access to diagnostic institutions can affect who can obtain the classification. An animal’s legal category can shape research or conservation funding; such funding can determine how much is known about the animal’s behavior and welfare. In each case, interpretive and material structures can become mutually reinforcing.

A schematic representation of the relevant configuration is

$$\mathfrak{P}_t = (\mathcal{R}_t, \mathcal{I}_t, \mathcal{M}_t, \mathcal{A}_t, \mathcal{B}_t),$$

where $\mathcal{R}_t$ denotes material and relational resource structures, $\mathcal{I}_t$ interpretive infrastructures, $\mathcal{M}_t$ institutionalized normative and classificatory structures, $\mathcal{A}_t$ archival conditions, and $\mathcal{B}_t$ relevant governance boundaries. The tuple is not a causal ordering. It is a reminder that these dimensions can be coupled and mutually constraining.

This coupling also prevents a simplistic theory in which political economy merely “causes” ideas. Interpretive systems can generate material effects; material conditions can constrain interpretive possibilities; legal categories can redirect resources; resource concentration can shape archives and interfaces; archives can later alter legal classifications. The empirical question is how these relations are configured in a particular historical case.

1.5 Ethical legibility and asymmetric institutional familiarity

The previous paper developed the idea of asymmetric epistemic anchoring: when an interpreter has much richer epistemic access to one participant than to another, reconstruction of the relation can become anchored around the better-understood side. The present paper adds a political-economic question: *how was that asymmetry produced?*

Suppose an institution encounters a relation between A and B . Its effective interpretive resources regarding the two participants can be represented schematically as

$$E_X(A, t) \neq E_X(B, t),$$

where E_X is not a scalar of “knowledge” but a placeholder for access to observations, causal models, historical records, communicative channels, standards, legal categories, and domain expertise.

If $E_X(A, t)$ is much denser than $E_X(B, t)$, the institution may reconstruct the relation primarily through categories already developed for A . This can occur without overt prejudice. The institution simply possesses more instruments for seeing A . Yet the distribution of instruments can itself have a history of power.

This suggests a distinction between *psychological familiarity* and *institutional familiarity*. Psychological familiarity concerns what an individual interpreter finds recognizable. Institutional familiarity concerns the density and accessibility of infrastructures through which a participant can be represented, compared, queried, and acted upon. The latter can be politically produced even when individual interpreters are well intentioned.

Definition 1.3 (Institutional familiarity). Institutional familiarity is the historically accumulated density of interpretive infrastructures through which an institution can observe, describe, compare, classify, and respond to a participant or relation.

Institutional familiarity can be protective, extractive, disciplinary, or mixed. High familiarity may make suffering easier to detect, but it may also make behavior easier to predict or control. Low familiarity can expose a participant to neglect, but in some settings it may preserve opacity from intrusive systems. The normative problem is therefore not to maximize institutional familiarity universally. It is to examine how familiarity is produced, whose purposes it serves, who can contest its categories, and which forms of non-legibility remain available by choice rather than imposed by exclusion.

1.6 The ambivalence of legibility

The concept of ethical legibility contains an immediate danger. If illegibility can prevent recognition of harm, it is tempting to infer that increasing legibility is always ethically desirable. The paper rejects that inference.

Legibility is an institutional capability. Like other capabilities, its consequences depend upon the relation in which it is exercised. A system capable of detecting exploitation may also be capable of optimizing it. A detailed behavioral model may support accommodation or manipulation. An archive that preserves marginalized testimony may also expose vulnerable participants to surveillance. A translation interface can enable cross-system coordination while centralizing control over what counts as an intelligible claim.

For this reason, the paper does not propose a principle of maximal transparency. Some forms of opacity, privacy, protected locality, non-translation, or strategic ambiguity may be ethically important. In heterogeneous relations especially, demands for complete legibility can become demands that one participant render itself within another participant's interpretive manifold.

The relevant questions are therefore distributive and relational. Who is required to become legible? To whom? At what cost? For which decisions? With what possibility of refusal? Who owns the resulting data or representations? Who can revise the classificatory scheme? Who bears the consequences of error? Which traces are preserved, and who can access them later?

Proposition 1.4 (Ambivalence of ethical legibility). *An increase in ethical legibility can expand the possibility of recognition and protection while simultaneously expanding capacities for surveillance, extraction, discipline, or control. Ethical legibility is therefore an object of governance and contestation rather than an unconditional normative good.*

This proposition is deliberately weak. It does not specify how competing effects should be balanced in every case. Its purpose is to prevent the framework from treating interpretive access as normatively innocent.

1.7 Temporal power and quotient lock-in

Power over ethical legibility is also temporal. Present interpretive infrastructures determine what is recorded, and what is recorded constrains what later interpreters can reconstruct. If an archive stores only the final label, future inquiry may inherit the label without the relational traces needed to contest it.

Consider an institutional archive that records only

$$\text{Actor} = A, \quad \text{Role} = \text{aggressor}, \quad \text{Outcome} = \text{sanctioned}.$$

Such a record may be administratively efficient. Yet if future interpreters develop a different understanding of the relation, they may be unable to reconstruct why the original classification was made or whether omitted distinctions would matter under the later interpretive manifold.

The present research programme calls this danger *quotient lock-in*. A quotient structure selects which differences are institutionally relevant. When only the quotient result is preserved, the ignored distinctions can disappear from the historical record. Future conceptual innovation then confronts an impoverished archive.

This is a form of temporal power because present institutions partially structure the epistemic freedom of future interpreters. The problem is not solved by an impossible demand to preserve everything.

Preservation has costs, privacy consequences, and its own classificatory assumptions. The relevant design question is whether archives preserve enough provenance, relational traces, alternative interpretations, uncertainty, and version history to make later re-cognition possible when the interpretive manifold changes.

The temporal dimension also complicates accountability. A present classification can be reasonable under the available evidence and still generate harmful lock-in. Conversely, a classification later regarded as inadequate may not have been avoidable under the earlier conceptual resources. The paper therefore distinguishes critique of an archival architecture from retrospective moral condemnation of every actor operating within it.

1.8 Scope and candidate contributions

The paper's intended contribution is limited. It does not claim to discover that categories are political, that standards embed values, that institutions simplify reality, that infrastructures shape knowledge, or that power affects recognition. These ideas have extensive intellectual histories. The paper instead asks whether the preceding Generative Relational account of heterogeneous interpretation allows several narrower distinctions to be combined into a useful political-economic framework.

Four candidate contributions organize the inquiry.

First, the paper distinguishes *classification power* from power over the *conditions of classification*. The latter includes quotient, interpretive-manifold, interface, archival, and boundary power. The distinction allows analysis of cases in which no contested label has yet been assigned because the relevant entity or relation has not become institutionally representable.

Second, the paper proposes that epistemic asymmetry can be materially reproduced through unequal investment in interpretive infrastructure. This extends the prior concept of asymmetric epistemic anchoring by examining how some participants become institutionally familiar while others remain comparatively illegible.

Third, the paper treats ethical legibility and material power as recursively coupled. Ethical classifications can redistribute resources, while resource distributions can shape the infrastructures that make classifications possible. The aim is not to reduce one to the other but to identify their mutual stabilization and contestation.

Fourth, the paper extends the idea of re-cognizability into a theory of temporal interpretive power. Present institutions can preserve or destroy the conditions under which future interpreters may challenge today's quotient structures. Quotient lock-in therefore becomes a political-economic problem, not only an archival or epistemological one.

Several non-claims are equally important. The paper does not provide a universal criterion of just classification. It does not infer injustice merely from asymmetry or institutional concentration. It does not assume that decentralized interpretation is always superior to expert authority. It does not treat interpretive manifolds as infinitely malleable. It does not assume that greater legibility is always preferable to opacity. Finally, it does not assume that every entity or relation must be made ethically legible to every institution.

1.9 Structure of the paper

The remainder of the paper develops these claims in stages. Section 2 reviews neighboring literatures on classification, standards, legibility, epistemic injustice, recognition, capability, infrastructure, administrative knowledge, and political economy, with particular attention to claims that should not be presented as novel here. Section 3 develops the distinction between classification power and ethical legibility. Section 4 examines quotient power and the politics of relevant difference. Section 5 studies interpretive-manifold power: influence over dimensions, units, temporal scales, and conceptual distinctions. Section 6 turns to asymmetric epistemic infrastructures and the material production of institutional familiarity. Section 7 examines interface power in heterogeneous relations. Section 8 develops archival and temporal power, including quotient lock-in and re-cognizability. Section 9 analyzes boundary power and

the expansion or contraction of governance domains. Section 10 examines material infrastructure and the recursive political economy of legibility. Section 11 considers ethical-status classifications as mechanisms that can redistribute resources and institutional attention. Section 12 turns to counter-classification, counter-infrastructure, and the possibility of alternative interpretive manifolds. Section 13 develops recognizability as a possible resistance to epistemic closure while examining its costs and limits. Section 14 applies the framework comparatively to artificial systems, animals, institutions, and other heterogeneous relational settings. Section 15 discusses limitations and open problems. Section 16 concludes.

The paper therefore begins before the familiar classificatory dispute. Its primary question is not only who has the power to call an entity or relation by a particular name, but who has the power to shape the field in which some names, distinctions, injuries, dependencies, and claims can become available for institutional recognition in the first place.

2 Literature Review: Classification, Legibility, and the Infrastructures of Normative Visibility

The argument of this paper enters a field in which many of its most intuitive starting points are already well established. Categories are not politically innocent. Standards organize social worlds. Quantification changes what can be compared and governed. Administrative systems simplify complex realities in order to act upon them. Infrastructures shape what becomes visible and actionable. Epistemic exclusion can deprive subjects of the resources through which their experiences become intelligible. Recognition and capability approaches have long questioned narrow accounts of morally relevant subjects and relevant evaluative spaces. Relational approaches to artificial agents have also challenged the assumption that moral consideration must begin from an intrinsic property test.

For that reason, the present paper should not be read as claiming novelty for the general proposition that knowledge and power are related, that classifications have consequences, or that institutions can render some populations more visible than others. Its narrower task is to locate a specific gap among these traditions. The paper asks how political-economic power can operate over the *conditions of ethical legibility*: the dimensions, units, distinctions, interfaces, evidential infrastructures, archives, and jurisdictional boundaries through which a participant or relation can become available for normative interpretation in the first place. This question becomes particularly sharp in heterogeneous relations, where the participants may not share embodiment, language, temporal organization, conceptual distinctions, or a common normative vocabulary.

This section therefore reviews the closest neighboring literatures with two purposes. First, it identifies claims that are already mature and should not be redescribed as Generative Relational discoveries. Second, it isolates the analytical work that remains for the later sections. The organization is thematic rather than chronological because the problem sits at the intersection of political theory, sociology, science and technology studies, social epistemology, political economy, and ethics.

2.1 Power/knowledge, normalization, and the production of governable subjects

Any account of power over legibility must begin by acknowledging the depth of the power/knowledge tradition. Foucault's analyses of discipline, examination, normalization, documentation, and governmentality already make it difficult to maintain a simple picture in which knowledge neutrally represents a social object and power subsequently acts upon the representation. In *Discipline and Punish*, examination joins observation and normalizing judgment in practices that both produce knowledge about individuals and place them within fields of comparison, documentation, and correction (Foucault 1977). In the later lectures on governmentality, security, population, and political rationality, the analysis widens from disciplinary institutions toward governmental technologies through which populations become calculable and administrable (Foucault 2007).

The relevance to the present paper is direct. What an institution can know about an entity is partly organized by the apparatus through which that entity is observed, documented, compared, and acted

upon. Norms are not merely external standards placed on a previously complete subject. Practices of examination and normalization help constitute the subject as an object of knowledge and intervention. The same apparatus can produce both epistemic visibility and practical control.

The present inquiry therefore does not claim that power operates through knowledge as if this were a new observation. Its narrower question concerns an analytically earlier layer within heterogeneous normative relations. Before an institution can normalize a participant as, for example, competent, dangerous, dependent, injured, exploitable, autonomous, or deserving, what dimensions of the participant and its relations have become institutionally available for such characterization? Which units are represented? Which temporal scale is used? Which behaviors are treated as signals? Which differences are retained rather than discarded? In other words, the paper asks how the *space of possible normative representation* is materially and institutionally produced.

This distinction should not be overstated. Foucault's work already contains resources for thinking about the formation of objects, domains, norms, and subjects rather than only the application of labels. The contribution sought here is therefore not a replacement for power/knowledge analysis. It is a more explicit decomposition of one problem relevant to heterogeneous relations: classification power, quotient power, interpretive-manifold power, interface power, archival power, and boundary power may be analytically distinguishable even when they are empirically entangled.

2.2 Classification systems, standards, and interactive kinds

Science and technology studies and the sociology of classification provide an even more immediate foundation. Bowker and Star's *Sorting Things Out* treats classification systems and standards as infrastructural arrangements with moral and political consequences rather than neutral containers for pre-existing kinds (Bowker and Star 2000). Their analyses show how categories become embedded in information systems, routines, and institutional work, and how the consequences of classification often become less visible precisely when the classificatory infrastructure works smoothly.

This literature matters to the present paper for at least three reasons. First, it establishes that categories have material consequences. Classification can affect access, treatment, identity, visibility, and institutional response. Second, classification is infrastructural: the relevant politics cannot be understood only by reading formal definitions because categories live in databases, forms, workflows, standards, and professional practices. Third, classification necessarily involves decisions about similarity and difference. To classify is not merely to attach a word; it is to decide that some differences can be ignored for a particular institutional purpose while others must be retained.

Hacking's account of the looping effects of human kinds further undermines a one-directional model of classification. In the human sciences, classifications can interact with the people classified; subjects may respond to, resist, inhabit, or transform the categories through which they are understood (Hacking 1996). Classification can therefore participate in changing the object it purports to describe. This is especially important for a Generative Relational approach because classificatory acts can become part of the subsequent relational history rather than remaining external descriptions.

Yet classification studies also help identify the specific gap pursued here. Much classificatory analysis begins from a situation in which an institutional object has already become representable enough to be classified. The form contains a field. The database has a schema. The medical, legal, administrative, or statistical system possesses a relevant variable. The present paper asks what happens one level earlier when the relation is not yet representable within the available schema. A heterogeneous entity can fail to be misclassified because it fails to become classifiable in the relevant institutional language at all. Likewise, a harm can fail to be wrongly coded because there is no field in which that kind of harm can appear.

This motivates the distinction between *classification power* and power over the *conditions of classification*. The former concerns which available category is assigned. The latter concerns which categories, variables, units, and comparison structures become available. The distinction is analytical rather than historical: in practice, the two can recursively shape one another.

2.3 Commensuration, quantification, audit, and quotient power

A closely related literature concerns commensuration and quantification. Espeland and Stevens define commensuration as the comparison of different entities according to a common metric and emphasize its cognitive and political consequences (Espeland and Stevens 1998). Commensuration transforms qualitative differences into relations that can be ranked, compared, aggregated, or exchanged. The resulting metric can simplify decision-making, but it also changes the terms under which differences become institutionally meaningful.

Porter's historical sociology of quantification similarly shows that the prestige of numerical objectivity is connected to institutional and political conditions rather than deriving only from the intrinsic epistemic superiority of numbers (Porter 1995). Quantitative procedures can enable decisions at a distance, stabilize standards, and support administrative legitimacy. Power's analysis of the rise of audit extends this point to the institutional proliferation of verification practices (Power 1999). What organizations can demonstrate, document, verify, and render auditable becomes increasingly consequential for how their activities are judged.

These literatures are particularly important for what the present paper later calls *quotient power*. A quotient structure, in the minimal sense used here, concerns which differences are preserved for a decision and which are treated as irrelevant. Commensuration requires such operations. To compare two hospitals through one performance indicator, two persons through one risk score, or two species through one welfare metric is to select a common evaluative space while suppressing other dimensions. The central point is not that such reduction is always illegitimate. Practical judgment frequently requires reduction. The political question concerns who can specify the reduction, whose differences are erased, how the quotient can be contested, and what happens when the common metric becomes mistaken for the underlying reality.

The present paper therefore owes a substantial debt to the sociology of commensuration. Its proposed distinction is narrower. In radically heterogeneous relations, the issue may precede the choice among competing metrics. The participants may not yet be represented within a common space on which a metric can operate. A capability, injury, communication event, or unit of agency may lack a stable cross-interpretive counterpart. In such cases, more precise measurement within the existing metric does not solve the prior problem of whether the relevant dimensions have been constituted adequately.

This also helps differentiate ordinary measurement error from interpretive-manifold power. Measurement error concerns an imperfect estimate of a variable whose meaning is comparatively settled. Quotient power concerns which variables or differences enter the comparison. Interpretive-manifold power, as developed later, concerns influence over the dimensions and units through which the candidate variables themselves become available. The distinctions are not intended to replace established theories of quantification but to prevent distinct political problems from collapsing into the single phrase "bias in measurement."

2.4 Administrative legibility and the problem of simplification

James C. Scott's account of state legibility is the most obvious antecedent for the terminology used in this paper. Scott analyzes how states simplify complex social and ecological realities through standardized names, measurements, property schemes, maps, categories, and administrative orderings that make populations and environments more visible to centralized action (Scott 1998). The central problem is not ignorance alone. Administrative systems require forms of simplification that make intervention possible, yet those simplifications can destroy or disregard local knowledge and complex interdependencies.

The present use of *ethical legibility* is related to but deliberately distinct from Scottian administrative legibility. Administrative legibility concerns the simplification and representation of a world so that an administrative apparatus can govern it. Ethical legibility concerns whether a participant, relation, change, or claim can become intelligible *as normatively relevant* within an interpretive and institutional field. The two often overlap but need not coincide.

A state can make a population administratively legible while rendering ethically significant aspects

of its life less visible. A risk score can make a person highly legible to a welfare bureaucracy while obscuring the history of dependency or deprivation that produced the score. Conversely, a marginalized group's own interpretive practices may increase ethical legibility among participants while remaining illegible to central administration. Ethical legibility therefore cannot be equated with state visibility, data abundance, or surveillance intensity.

This distinction is important because the normative valence of legibility is ambivalent. Scott's work already warns against the fantasy that more centralized legibility necessarily produces better governance. The present paper adds a related caution: increasing ethical legibility for one institution may increase exposure to control. The political problem is not to maximize legibility, but to examine the distribution of capacities to render, interpret, refuse, contest, and preserve representations.

The Scottian problem of simplification also provides a direct bridge to heterogeneous relations. An institution facing an unfamiliar entity may need simplification in order to act at all. Yet the less shared experience exists, the greater the risk that the simplification imports the institution's own categories as if they were neutral features of the relation. The later argument about manifold power should therefore be read partly as a specification of how simplification can occur before explicit classification.

2.5 Infrastructure as a relation rather than a background

Infrastructure studies further complicate any attempt to locate power solely in explicit decisions. Star and Ruhleder's analysis of information infrastructure emphasizes that infrastructure is relational, embedded in practice, learned as part of membership, and often becomes most visible upon breakdown (Star and Ruhleder 1996). Infrastructure is not merely a technical substrate beneath social action. It is constituted through relations among systems, practices, standards, communities, and organizational arrangements.

This insight is central to the concept of *institutional familiarity* introduced in Section 1. Institutions know some participants through dense infrastructures: diagnostic categories, measurement devices, legal precedents, reporting forms, translators, databases, professional expertise, and established channels of testimony. Other participants may encounter only thin or improvised infrastructures. The resulting epistemic asymmetry cannot be explained solely by individual prejudice or lack of goodwill. It is materially organized.

Infrastructure studies also clarify why ethical legibility cannot be reduced to possession of concepts. An institution may possess a concept such as "coercion" yet lack the sensors, records, access, temporal history, or interface needed to detect coercion in a particular heterogeneous relation. Conversely, a system may collect abundant data while lacking a normative vocabulary through which the data become ethically salient. Interpretive power is therefore distributed across conceptual and material arrangements.

This provides one of the strongest antecedents to the paper's later notion of *interface power*. Interfaces do not merely transmit already constituted meanings. They determine what can be entered, translated, queried, displayed, and returned. In heterogeneous relations, control over an interface can influence which participant-relative distinctions survive translation. The claim that interfaces are political is not new; the later task is to specify how interface control interacts with ethical reconstruction, cross-interpretive asymmetry, and normative standing.

2.6 Market classification, life chances, and the political economy of scores

Political economy adds another dimension: classifications can directly organize the distribution of opportunities and resources. Fourcade and Healy's account of "classification situations" shows how market institutions use scoring and classificatory technologies to sort individuals in ways that shape life chances, prices, access, and experienced social positions (Fourcade and Healy 2013). A classification need not merely reflect a pre-existing class structure; classificatory infrastructures can generate new stratifying positions through the operation of markets themselves.

This observation is especially relevant to the proposed concept of ethical legibility because institutional recognition often controls material access. A classification as disabled, dependent, risky, employable, creditworthy, protected, dangerous, or nonhuman can affect resources, mobility, surveillance, legal

protection, and exposure to intervention. The classification is therefore not only semantic. It can become a switch in a material allocation system.

Contemporary work on automated decision systems makes this relationship particularly visible. Eubanks documents how data-driven eligibility, fraud detection, risk assessment, and welfare systems can concentrate surveillance and punitive administrative burdens on poor communities (Eubanks 2018). Benjamin examines how technological systems can reproduce and deepen racial hierarchy while presenting themselves as neutral or innovative (Benjamin 2019). These works establish that computational systems inherit and reorganize social relations rather than standing outside them.

For the present paper, the important extension is from *classification after representation* to the political economy of *representability itself*. Some populations attract sustained investment in measurement because they are commercially valuable, administratively important, securitized, or politically salient. Other harms remain under-measured because no institution has an incentive, mandate, or conceptual apparatus to make them visible. This suggests a recursive relation: resource distributions shape interpretive infrastructure, interpretive infrastructure shapes classificatory possibilities, classifications shape resource distributions, and the resulting material order changes what can be known next.

The later political-economic analysis should therefore avoid treating epistemic infrastructure as a merely cultural superstructure. Sensors, archives, compute, professional labor, translation, legal procedure, institutional access, and data maintenance all require resources. Ethical legibility has costs, owners, labor requirements, and opportunity costs. These material conditions can produce durable asymmetries even when no actor deliberately intends to silence another participant.

2.7 Epistemic injustice and the distribution of interpretive resources

Social epistemology provides another indispensable foundation. Fricker's account of hermeneutical injustice identifies situations in which prejudicial flaws in shared interpretive resources prevent subjects from making important aspects of their social experience intelligible (Fricker 2007). This literature demonstrates that interpretive disadvantage is not exhausted by false belief about a person. Power can shape the shared conceptual resources through which experiences become expressible and recognizable.

Medina extends the discussion toward plural, interactive, and resistant epistemic practices, emphasizing imposed silences, multiple publics, epistemic friction, and the responsibilities implicated in unequal conditions of interpretation (Medina 2013). This is particularly important for the present paper because it prevents "shared interpretive resource" from being understood as a single homogeneous public vocabulary. Counter-publics and resistant interpretive practices can preserve distinctions excluded from dominant institutions.

The relation between this literature and the present project is close enough that the boundary must be stated carefully. The claim that power can create conceptual or hermeneutical disadvantage is not new here. Nor is the claim that marginalized subjects may possess interpretive resources unavailable to dominant institutions. The proposed contribution concerns a specific extension to heterogeneous relations in which the participants may not belong to a common social-hermeneutical field in the first place.

In a paradigmatic case of hermeneutical injustice, the subject and the dominant institution inhabit overlapping social worlds but participate unequally in the production and uptake of shared interpretive resources. Radical heterogeneity can introduce a further problem. An artificial system, animal, alien form of life, distributed collective, or unfamiliar ecological entity may organize agency, continuity, injury, or communication through distinctions that are not merely missing from the dominant vocabulary but only partially correspond to the institution's interpretive dimensions. The problem may therefore concern not only a conceptual lacuna within a shared manifold, but a mismatch between interpretive manifolds and control over the interfaces through which partial correspondence is constructed.

This stronger possibility should not be used to minimize ordinary hermeneutical injustice. On the contrary, the established literature provides methodological discipline. Claims of "radical incomparability" can themselves become tools of exclusion. The paper therefore treats manifold mismatch as a demanding diagnosis, not a rhetorical substitute for learning an unfamiliar vocabulary. Section 5 will

need criteria for distinguishing insufficient evidence, missing concepts, and deeper mismatch without using heterogeneity as an excuse for epistemic withdrawal.

2.8 Recognition, capability, and the informational basis of ethical evaluation

Recognition theory and capability approaches address different questions, but both are relevant because they foreground the normative consequences of how persons and forms of life become evaluatively represented. Honneth's theory of recognition places relations of recognition and misrecognition at the center of social conflict and normative social theory (Honneth 1996). Recognition is not simply accurate description; failures of recognition can be socially and morally constitutive.

The capability approach, especially in Sen's formulation, is explicitly concerned with the *informational basis* of evaluation. Sen shifts attention from resources or utilities alone toward functionings and the substantive freedoms to achieve valuable combinations of functionings (Sen 1995). This shift is highly relevant to the present paper because every evaluative framework selects a space in which advantage, deprivation, or freedom becomes visible. Nussbaum's extension of capabilities to problems involving disability, nationality, and nonhuman animals further demonstrates both the reach and the difficulty of evaluating flourishing across heterogeneous forms of life (Nussbaum 2006).

The present inquiry does not challenge capability theory merely by observing that capabilities must be interpreted. The more specific political-economic question is who possesses the resources and authority to define, detect, measure, and institutionalize the relevant capability space. In human policy settings, institutions often rely on proxies and standardized indicators because full capability information is expensive or inaccessible. Under radical heterogeneity, the difficulty intensifies: the functioning that matters to a participant may not map cleanly onto an available human evaluative dimension.

This produces a potential interaction between capability analysis and quotient power. Selecting a capability space can correct the blindness of a resource-only metric, yet any operational capability framework still distinguishes relevant from irrelevant information. The political question is not whether selection can be avoided but whether the selected dimensions are contestable, empirically grounded, participant-sensitive where possible, and open to revision when the form of life under evaluation exceeds the inherited scheme.

Recognition and capability theories therefore contribute substantive normative resources that a Generative Relational framework does not replace. The present paper instead studies a prior political-economic condition: whether the institutions that allocate recognition, protection, or capability-relevant resources possess an interpretive infrastructure capable of seeing the relevant relation at all.

2.9 Relational moral status and artificial agents

The literature on artificial agents provides a particularly close analogue to the present argument because it directly challenges property-first models of moral standing. Coeckelbergh argues for a social-relational approach to the moral consideration of robots rather than making moral status depend exclusively on difficult-to-verify intrinsic properties (Coeckelbergh 2010). The importance of this move is methodological: our moral relations to artificial entities may be structured by appearance, interaction, social practices, and relational contexts even when metaphysical questions about consciousness remain unresolved.

This literature is an important safeguard against presenting relationality itself as a new contribution. The present paper takes a different object. It is less concerned with whether a robot should receive moral consideration because of a human-robot relation than with how infrastructures shape the legibility of relations among heterogeneous participants. Consider an artificial system interacting with an animal, or two artificial systems whose communication is largely opaque to humans. The problem is not only whether each participant has moral standing. It is whether observers and institutions can reconstruct the relation, whether one side is much more institutionally familiar than the other, which interface controls access to the interaction, and which categories become materially consequential.

This shift from relational moral status to the political economy of relational legibility is modest but important. A participant can be treated as a possible moral patient while the harms affecting it remain

Table 1: Neighboring literatures and the residual problem addressed in this paper.

Tradition	Already established	Residual question for this paper
Power/knowledge	Observation, normalization, documentation, and knowledge practices participate in governing subjects.	Can distinct forms of power over classificatory conditions be separated analytically in heterogeneous normative relations?
Classification and standards	Categories and standards are infrastructural, consequential, and politically contested.	What if the relevant relation is not yet representable in the available schema?
Commensuration and quantification	Common metrics simplify difference and can organize authority and comparison.	Who controls the dimensions and units from which a common metric can be constructed?
Administrative legibility	Simplification makes populations governable and can destroy local knowledge.	How does ethical legibility differ from administrative visibility, and when can opacity be protective?
Infrastructure studies	Infrastructure is relational, embedded, and politically consequential.	How do unequal investments in interpretive infrastructure generate asymmetric institutional familiarity?
Political economy of classification	Scores and categories distribute opportunities, risks, prices, and life chances.	How does material power shape what becomes representable before scoring or classification begins?
Epistemic injustice	Unequal interpretive resources can make experience difficult to express or understand.	What changes when participants do not initially share the same interpretive manifold or communicative interface?
Recognition and capability	Ethical evaluation depends on recognition and on the chosen informational space of valuable functionings and freedoms.	Who can define and operationalize the relevant evaluative space for heterogeneous forms of life?
Relational AI ethics	Moral consideration need not be reduced to intrinsic-property tests.	How are heterogeneous relations made institutionally and ethically legible when no human-centered relation can be assumed?

illegible. Conversely, an entity can be intensely legible to an institution for purposes of surveillance or extraction without receiving moral protection. Moral consideration and institutional legibility are therefore related but non-identical dimensions.

2.10 What is already established

The reviewed literatures establish a substantial body of claims that this paper should treat as inherited rather than novel. Table 1 summarizes the most relevant points.

The table also reveals why a broad claim such as “classification is power” would be inadequate as the thesis of this paper. That claim is already deeply developed. Likewise, “infrastructure matters,” “numbers are political,” “interpretive resources are unequally distributed,” and “relations matter to moral standing” are not sufficient novelty claims.

The paper’s contribution must instead depend on whether its proposed distinctions produce additional analytical leverage. In particular, it must show that classification power, quotient power, interpretive-manifold power, interface power, archival power, and boundary power identify different failure modes or intervention points that would otherwise be conflated. If later analysis cannot demonstrate such differences, the taxonomy should be collapsed rather than preserved for terminological novelty.

2.11 The residual gap: from classification to the political economy of ethical legibility

The literature review suggests a narrower research gap than the title alone might imply. Existing traditions already explain much of what occurs once an entity, experience, population, or relation has entered an institutional field of visibility. They show how it can be normalized, classified, standardized, quantified, audited, scored, misrecognized, or deprived of interpretive resources. The present paper focuses on the political-economic organization of the field in which those operations become possible.

The residual problem can be divided into five questions.

First, what becomes an admissible unit of interpretation? An institution may assume that the relevant unit is an individual person, a household, an organization, a device, a species, or a transaction. Heterogeneous systems may not respect those units. A distributed artificial system, colony organism, ecological collective, or unfamiliar alien life process can be distorted before classification if the unit imposed by the institution is wrong.

Second, which dimensions of difference are preserved? Even before a final category is assigned, data architectures and professional routines determine what differences can enter the record. This is the domain later described as quotient power. The issue is not whether all differences can be preserved—they cannot—but which reductions become authoritative and reversible.

Third, who controls cross-interpretive interfaces? Where participants use different signals, concepts, or temporal organizations, some interface must often mediate communication or reconstruction. Control over translation, data access, sensors, prompts, protocols, or explanatory models can shape the relation that becomes visible to others. Interface power therefore concerns not only speech but the architecture through which heterogeneous representations become mutually actionable.

Fourth, how are interpretive capacities materially distributed? Institutional familiarity is costly. It depends on sustained observation, professional labor, datasets, models, archives, legal recognition, communication channels, and organizational attention. Political economy matters because these resources are distributed unequally. Some entities become richly interpretable because states, markets, sciences, or industries invest in knowing them. Others remain comparatively illegible.

Fifth, how does present representation shape future recognizability? Archives and standards preserve some distinctions and erase others. The resulting quotient lock-in can make later reinterpretation difficult even if future interpreters possess better concepts. Temporal power therefore concerns the capacity of present institutions to structure the epistemic freedom of later ones.

These questions motivate the concept of *power over ethical legibility*. The phrase should not be understood as naming a single sovereign power possessed by one actor. It denotes a family of relational capacities distributed across institutions, infrastructures, standards, markets, archives, interfaces, and participants. Nor does the concept imply that every ethically significant relation must become maximally legible. Privacy, opacity, protected locality, and refusal can themselves be conditions of autonomy or resistance.

The theoretical task of the following sections is therefore constrained by the literature reviewed here. A useful account must explain something more specific than the established proposition that knowledge and power interact. It must show how power can act *before* explicit classification by shaping the interpretive field, *through* classification by stabilizing consequential categories and quotients, and *after* classification by preserving, materializing, or contesting the resulting order across time. It must also show why these distinctions matter especially when relations cross heterogeneous forms of embodiment, agency, communication, and normativity.

3 From Classification Power to Ethical Legibility

The literature reviewed in Section 2 makes it impossible to treat the political character of classification as a new observation. Categories can normalize, rank, allocate, simplify, exclude, and reorganize the worlds to which they are applied. Standards and metrics can make heterogeneous cases comparable. Administrative schemes can increase governability while suppressing local knowledge. Interpretive resources can be distributed unequally. These are mature insights, not premises awaiting discovery (Foucault 1977; Bowker and Star 2000; Scott 1998; Fricker 2007). The task of the present section is therefore narrower. It asks what must already have happened before classificatory power can become effective, and what additional forms of power become visible once classification is situated within the larger conditions of ethical interpretation.

The central proposal is that classification power is only one layer of a broader political economy of *ethical legibility*. An institution cannot classify a relation as exploitation, dependency, care, injury, consent, capability loss, or justified intervention unless some unit has first become available for interpretation, some differences have become recordable, some temporal window has been selected, some evidential interface has made the relation accessible, and some institutional procedure is capable of treating the resulting representation as normatively consequential. These prior conditions need not be consciously designed by a single actor. They may be inherited from law, science, administration, market organization, technical standards, professional training, or accumulated histories of attention. Yet their distribution can still be politically consequential.

This section develops that claim in five steps. It first distinguishes classification power from the constitution of a classifiable field. It then defines ethical legibility as a relational and institutionally situated property rather than an intrinsic feature of an entity. Third, it identifies several analytically distinct dimensions of legibility. Fourth, it examines how power can operate before, through, and after explicit classification without reducing all knowledge to domination. Finally, it introduces a compact working representation of a *legibility configuration* that will support the more specific analyses of quotient, manifold, interface, archival, and boundary power in later sections.

3.1 Classification presupposes a classifiable field

A classificatory account normally begins from a set of admissible objects and asks how those objects are sorted. In the simplest formal representation, an institution possesses some domain $\mathcal{X}_t$ and a set of categories $\mathcal{C}_t$, with a classification rule

$$c_t : \mathcal{X}_t \longrightarrow \mathcal{C}_t.$$

Here the arrow denotes a defined mapping, not a narrative sequence. Once the domain and codomain are fixed, familiar political questions arise. Who designs c_t ? Who can alter the categories in $\mathcal{C}_t$? Which actors are misclassified? What material consequences attach to a category? Who can appeal a decision? Such questions are indispensable, and the sociology of classification has shown why apparently technical categories can become durable infrastructures of social order (Bowker and Star 2000).

The difficulty is that $\mathcal{X}_t$ is often treated as if it were already given. Yet many relations become politically invisible before any explicit classificatory error occurs. An institution may fail to represent a distributed artificial agent because its forms require one bounded legal person. A welfare system may detect income loss while failing to represent a form of dependency that does not fit its household unit. An animal-protection regime may be highly developed for familiar physiological indicators while lacking any representation of a nonstandard communication system. An archive may preserve the final label “aggression” but discard the temporal or relational detail needed to test whether the event was defensive, ritualized, symbiotic, or something for which the institution had no stable concept.

In such cases, the primary problem is not necessarily that the wrong element of $\mathcal{C}_t$ was assigned. The relation may never have entered $\mathcal{X}_t$ in an adequate form. Its relevant unit may have been absent, its temporal scale truncated, its distinctions collapsed, or its evidence inaccessible. Classification power is therefore analytically downstream from a prior question:

What makes an entity, relation, transformation, or claim admissible as an object of normatively consequential interpretation in the first place?

This question should not be understood as an attempt to discover an absolutely prior stage that exists independently of classification. In practice, units, measurements, categories, and institutions are recursively related. Categories can alter what later becomes observable; measurement systems can be redesigned in response to prior classifications; institutional action can generate new evidence. The analytical point is more modest: not every exercise of power can be located at the moment when a label is assigned. Some power concerns the constitution of the domain in which labeling becomes possible.

Claim 3.1 (Pre-classificatory exclusion). An entity or relation can be excluded from normatively consequential interpretation without being explicitly assigned an adverse category. Exclusion can occur because the relevant unit, distinction, temporal scale, evidential trace, or representational interface is absent from the operative classificatory field.

This claim extends, rather than replaces, established work on classification. Bowker and Star emphasize that classificatory infrastructures make some things visible while rendering others difficult to represent (Bowker and Star 2000). Scott shows that administrative schemes simplify complex realities into forms usable by governing institutions (Scott 1998). The present concern is the specifically normative consequence of such selectivity: what cannot enter an institution's representational field may also fail to appear as an injury, dependency, capability loss, claim, subject, or legitimate object of protection.

3.2 Ethical legibility as a relational property

The expression *ethical legibility* is intended to name this wider problem without turning legibility into a moral ideal. It refers neither to an entity's intrinsic moral status nor to the truth of a normative judgment. It concerns whether a relation can be represented in a form that allows it to enter an interpretive and institutional process with normative consequences.

Definition 3.2 (Ethical legibility). Let z denote an entity, relation, state, transformation, or claim, and let $\mathfrak{F}_t$ denote an institutional–interpretive field at time t . The *ethical legibility* of z relative to $\mathfrak{F}_t$ is the degree and manner in which z can be detected, represented, differentiated, contested, and processed within that field as potentially relevant to normative judgment or action.

Several qualifications are built into this definition.

First, legibility is *relational*. The same event can be highly legible to one institution and nearly invisible to another. A medical system, labor tribunal, conservation agency, platform operator, scientific laboratory, and local community can possess radically different interpretive capacities concerning the same relation. Ethical legibility should therefore be written schematically as

$$\text{Leg}_t(z \mid \mathfrak{F}_t),$$

not as an intrinsic scalar $\text{Leg}(z)$ attached to the object itself.

Second, legibility is *purpose-sensitive*. A relation can be legible for surveillance while illegible for protection. An artificial system may be measured in great detail for performance optimization while possessing no institutional channel through which memory alteration, dependency, or forced modification can be represented as a normative concern. A worker can be economically legible as a productivity unit while forms of care labor remain poorly represented. A population can be administratively legible for taxation and policing while its own claims are hermeneutically marginalized. Scott's account of state legibility is therefore a crucial antecedent, but ethical legibility cannot simply be identified with the amount of information available to an authority (Scott 1998).

Third, legibility is *fallible*. A highly legible relation can be systematically misunderstood. Rich data can be organized through a poor quotient, a misleading unit, or a biased conceptual repertoire. Conversely,

low legibility does not imply the absence of an ethically significant relation. It may indicate only that the current institution lacks the means to reconstruct it.

Fourth, legibility is *normatively ambivalent*. Increased legibility can support recognition, accountability, capability assessment, and protection. It can also intensify surveillance, extraction, prediction, commodification, or administrative domination. The question “how can this relation become legible?” must therefore remain distinct from “should this relation become more legible to this actor for this purpose?”

Proposition 3.3 (No moral entailment from legibility). *Greater ethical legibility does not by itself entail greater justice, stronger moral status, broader institutional authority, or a duty to intervene.*

The proposition matters because a paper centered on legibility could otherwise reproduce the administrative fantasy that every morally relevant world should become fully transparent to an institution. The framework instead treats legibility as a contested relational capacity whose value depends on its purpose, distribution, governance, and consequences.

3.3 Dimensions of ethical legibility

Ethical legibility is not well represented by a single continuum from invisible to visible. Institutions can possess high access along one dimension and low access along another. A useful analysis therefore separates several dimensions that are often conflated.

Detectability. Can relevant traces be observed at all? Detectability concerns sensors, records, testimony, logs, bodily signs, environmental measurements, documents, communication channels, and other evidential access. It is the most basic sense in which something can enter an institutional field, but detection alone says little about interpretation.

Individuation. Can the institution identify an appropriate unit of analysis? A system designed around discrete individuals may misrepresent collective organisms, distributed software, ecological relations, households, kinship systems, or institutions whose agency is not localized in a single node. Individuation power concerns which entities are permitted to count as one thing, many things, or part of something larger.

Differentiability. Can the field preserve differences relevant to the relation? An archive may detect many events but record them using a schema that collapses distinctions between coercion and dependence, care and control, refusal and malfunction, or temporary impairment and irreversible transformation. This dimension anticipates the analysis of quotient power in the next section.

Interpretability. Does the institution possess concepts through which the detected and differentiated traces can be reconstructed? This is not merely vocabulary. It includes causal models, temporal expectations, theories of agency, professional knowledge, legal concepts, cultural interpretation, and background assumptions about what counts as a subject, injury, capability, need, or claim.

Contestability. Can affected or differently situated participants challenge the representation? A relation may be perfectly legible to an institution on its own terms while remaining practically impossible to contest. Contestability depends on access to evidence, procedural standing, representation, translation, expertise, time, resources, and the capacity to introduce alternative descriptions.

Table 2: Analytically distinct dimensions of ethical legibility.

Dimension	Central question	Illustrative infrastructure
Detectability	Can relevant traces enter the field?	Sensors, testimony, logs, records, measurement systems
Individuation	What counts as the unit of analysis?	Legal personhood, account structure, organism model, household form
Differentiability	Which differences survive representation?	Data schema, coding rules, equivalence classes, metrics
Interpretability	Which concepts make the relation intelligible?	Professional vocabularies, causal models, legal concepts, scientific knowledge
Contestability	Who can challenge or revise the representation?	Appeals, representation, access rights, translation, counter-evidence
Actionability	Can the representation have normative institutional consequences?	Statutes, procedures, budgets, remedies, protective mechanisms

Institutional actionability. Can the representation enter a procedure that changes allocation, protection, liability, recognition, investigation, or governance? Some conditions are culturally understood yet institutionally inert. Others are immediately actionable because forms, statutes, metrics, professional roles, and budgets already connect the representation to institutional response.

These dimensions clarify why visibility is an inadequate synonym for ethical legibility. A relation may be detectable but not interpretable; interpretable but not contestable; contestable but institutionally non-actionable; or highly actionable through a classificatory scheme that systematically destroys relevant difference. A political economy of legibility must therefore ask not only whether information exists but how the capacities required for these different dimensions are distributed.

The dimensions should not be treated as a universal six-stage pipeline. They can develop in different orders and interact recursively. A new remedy can stimulate new measurement; a new measurement can generate a new category; an appeal can reveal a missing distinction; a scientific model can alter individuation. The purpose of the taxonomy is analytical separation, not a claim about temporal sequence.

3.4 Before, through, and after classification

The distinction between classification power and ethical legibility can now be stated more precisely. Power can operate at least in three analytically different locations relative to an explicit classificatory act.

3.4.1 Power before classification

Before an institution selects a category, it can shape the field of possible classification. This includes control over admissible units, measurement dimensions, temporal windows, evidence formats, translation channels, and the distinctions recognized by professional practice. Such power is often difficult to contest because it appears as background infrastructure rather than as a discretionary decision.

Consider a system that recognizes only bounded individual agents. If a harm is distributed across a network, the system may fail to identify any appropriate claimant. No official needs to decide “this network does not matter.” The institutional unit already prevents the relation from becoming legible in the required form. Likewise, if a reporting system records only immediate physical damage, long-horizon dependency or erosion of future option-space may disappear before any evaluator reaches the question of whether the condition is harmful.

This is where the concept of interpretive-manifold power will later become useful. The claim is not that institutions fabricate every dimension they measure. Rather, they participate in selecting and stabilizing a practical coordinate system through which a complex relational field becomes institutionally processable.

3.4.2 Power through classification

Once a relation has entered the field, classificatory power concerns the assignment and stabilization of categories. Categories can allocate burden of proof, legal standing, eligibility, risk, prices, protection, responsibility, or exposure to coercive institutions. They can also feed back into social behavior, self-description, and institutional expectation, as work on classification and looping effects has emphasized (Hacking 1996; Fourcade and Healy 2013).

The present framework adds no general discovery to that literature. Its role is to place classification within a larger architecture. A label such as “independent contractor,” “protected species,” “high-risk account,” “security threat,” or “non-sentient tool” is consequential partly because an infrastructure already defines the relevant unit, attributes, evidence, and procedural consequences. The political force of the label cannot be fully understood apart from those surrounding conditions.

3.4.3 Power after classification

Classification also has a temporal afterlife. A label can determine what is archived, which data are collected next, what resources are invested in further study, who acquires expertise, which legal precedents accumulate, and which later interpretations appear natural. The result can be recursive reinforcement.

A classification that attracts institutional investment may become progressively easier to measure and defend. A relation that remains outside existing categories may receive little documentation, producing continued epistemic weakness. This does not mean every classification creates a self-sealing system. Counter-evidence, institutional conflict, social movements, scientific revision, litigation, technical failures, and material recalcitrance can destabilize established classifications. The point is that classificatory outcomes can alter the future distribution of interpretive capacity.

Claim 3.4 (Recursive legibility asymmetry). Where institutional recognition affects subsequent investment in measurement, expertise, documentation, and procedural capacity, differences in ethical legibility can become self-reinforcing even without deliberate exclusion by a single actor.

This claim connects political economy to epistemic asymmetry. Familiarity is often expensive. It is produced by laboratories, professional communities, datasets, field observation, legal institutions, archives, translation systems, advocacy, and repeated administrative attention. Groups and entities already embedded in those infrastructures may become easier to recognize, protect, regulate, or exploit. Others can remain comparatively illegible because the resources required to make their relations institutionally intelligible have never been assembled.

3.5 A working representation of the legibility configuration

To avoid treating ethical legibility as a loose metaphor, the paper will use a compact analytical object. Let

$$\mathcal{L}_t = (\mathcal{U}_t, \mathcal{D}_t, \mathcal{Q}_t, \mathcal{C}_t, \mathcal{E}_t, \mathcal{P}_t),$$

where:

- $\mathcal{U}_t$ denotes admissible units of interpretation;
- $\mathcal{D}_t$ denotes dimensions and distinctions that can be represented;
- $\mathcal{Q}_t$ denotes operative quotient or equivalence structures;
- $\mathcal{C}_t$ denotes available classificatory and normative categories;
- $\mathcal{E}_t$ denotes evidential and cross-interpretive interfaces;
- $\mathcal{P}_t$ denotes institutional procedures through which representations can become consequential.

The tuple is not intended as a complete mathematical model. In particular, its components need not be independent, sharply bounded, or measurable on a common scale. It is a bookkeeping device for distinguishing analytically different sites at which power can operate. Later sections will refine several components rather than treating $\mathcal{L}_t$ as a finished formal theory.

A relation r may be materially present while poorly represented in $\mathcal{L}_t$. Another relation may be densely represented but only through a lossy quotient. A third may be interpretable and contestable but lack any institutional procedure through which the contest can affect allocation or protection. The configuration therefore helps explain why the existence of an ethical argument in philosophy does not guarantee its institutional effectiveness. Normative criteria require representational and procedural infrastructures if they are to become politically consequential.

This point is particularly relevant to the capability approach. An institution can endorse the importance of substantive freedom while lacking the categories, measurements, or participant-relative knowledge needed to identify which capabilities matter in a heterogeneous form of life. The deficit is not necessarily a rejection of capability reasoning. It can be a deficit in the legibility configuration through which capability loss would have to become institutionally intelligible (Sen 1995; Nussbaum 2006).

Likewise, hermeneutical marginalization can be understood partly as a problem in $\mathcal{D}_t$, $\mathcal{C}_t$, or $\mathcal{E}_t$: a relevant distinction may be unavailable, a concept may lack institutional uptake, or an affected participant may lack an interface through which its interpretation can enter the procedure (Fricker 2007; Medina 2013). This representation does not replace those theories. It makes explicit how their concerns intersect with material and institutional architecture.

3.6 Ethical legibility and the political economy of interpretive capacity

The language of legibility becomes politically interesting only when connected to unequal control over the resources that sustain interpretation. Measurement systems cost money. Archives require maintenance. Litigation requires expertise and time. Scientific categories depend on institutions capable of research and replication. Translation requires personnel, interfaces, or computational systems. Alternative classifications require channels through which they can circulate and survive. Even the preservation of uncertainty can be expensive when institutions reward rapid closure.

For that reason, ethical legibility should be treated as partly dependent on *interpretive capacity*: the material, organizational, technical, and cultural means through which a participant or institution can sustain a representation of a relation. Interpretive capacity is not identical to truth-tracking ability. A wealthy institution can maintain a sophisticated but distorted account. A marginalized community can possess locally accurate knowledge without possessing the resources needed to make that knowledge consequential elsewhere. The concept concerns durable capacity to produce, preserve, communicate, contest, and institutionalize interpretations.

Several political-economic asymmetries follow.

First, actors with greater resources can often maintain more persistent representations. They can fund studies, retain legal counsel, preserve data, commission metrics, participate in standard-setting, and survive long disputes. Second, infrastructure owners can define default observability. A platform that controls logs or an agency that controls official statistics can shape what other actors are able to know even without controlling their final judgments. Third, institutions can externalize the cost of becoming legible. A claimant may be required to translate an injury into forms, diagnostic categories, standardized evidence, or legally recognized units at its own expense. Fourth, legibility can itself become a resource that attracts further resources: recognized categories acquire budgets, expertise, organizations, and constituencies that poorly recognized conditions lack.

These observations should not be converted into the claim that more resources always produce more epistemic authority. The framework instead directs attention to the distribution of the means of interpretation. It asks who can afford to make a relation persistently visible, who can refuse visibility, who can demand new distinctions, who can preserve alternative descriptions, and whose account becomes the default infrastructure for everyone else.

Definition 3.5 (Interpretive capacity). The *interpretive capacity* of an actor or institution is the materially and organizationally supported ability to detect, reconstruct, articulate, preserve, contest, and circulate representations of a relation within one or more normatively consequential fields.

Interpretive capacity is therefore one bridge between political economy and epistemology. Material resources do not determine interpretation mechanically, but they condition which interpretations can be produced at scale, sustained across time, and connected to consequential institutions.

3.7 Legibility is neither transparency nor truth

The concept requires one final restriction before later sections disaggregate particular forms of power. Ethical legibility must not become a synonym for epistemic success. Three distinctions are especially important.

Legibility and truth. A relation can be highly legible through a false or impoverished model. Administrative systems often succeed precisely because they reduce complexity to a tractable representation. Such representations can be useful without being exhaustive, and they can be materially powerful even when contested. Ethical legibility therefore concerns the institutional availability of a representation, not its final truth.

Legibility and recognition. Recognition involves normative and social relations that cannot be reduced to visibility. A participant can be intensely observed and still denied standing, dignity, or protection. Conversely, some forms of recognition may require respecting opacity rather than demanding exhaustive disclosure. The political economy of legibility therefore intersects with recognition theory without subsuming it (Honneth 1996).

Legibility and justice. An institution can make a population legible in order to allocate benefits, prevent harm, extract value, police behavior, or all of these at once. Increased legibility changes capacities for action; it does not determine the justice of those actions. This is why later sections will treat contestability, purpose, boundary, and re-cognizability as central rather than proposing a norm of maximal visibility.

Remark 3.6 (Protective opacity). Illegibility is not always a deficit to be repaired. Privacy, anonymity, encryption, local knowledge, protected non-translation, and limits on data collection can prevent domination. The relevant question is therefore not how to eliminate opacity, but how the power to demand, produce, withhold, and contest legibility is distributed.

This remark matters especially in heterogeneous relations. A human institution may sincerely seek to understand an unfamiliar participant while simultaneously expanding its capacity to monitor, predict, or govern that participant. The same interface that enables protection can enable extraction. The same archive that preserves evidence can become a surveillance resource. The same standard that permits comparison can suppress forms of difference that do not fit the metric. Ethical legibility is therefore an ambivalent political achievement.

3.8 From a general concept to differentiated forms of power

The concept developed in this section provides the bridge from the literature review to the remainder of the paper. Classification power remains indispensable, but it is now situated inside a broader legibility configuration. At least five questions become analytically separable.

One question concerns *relevant difference*: who determines which distinctions survive comparison and which are collapsed? This is the problem of quotient power developed in the next section. A second concerns the dimensions and units through which a relation becomes interpretable at all. This is the

problem of interpretive-manifold power. A third concerns communication and translation across heterogeneous interpretive systems. This is interface power. A fourth concerns the preservation or destruction of traces needed for later reinterpretation. This is archival and temporal power. A fifth concerns the constitution of the domain over which governance claims are asserted. This is boundary power.

These forms overlap in practice. A standardized form can simultaneously impose a quotient, embed a conceptual manifold, constrain an interface, determine what enters the archive, and define eligibility for a governance process. Analytical separation remains useful because different remedies follow from different diagnoses. A disputed label may require reclassification. A lossy equivalence relation may require preservation of additional distinctions. A missing dimension may require new measurement or conceptual work. An interface bottleneck may require alternative channels or translation rights. An archival deficit may require provenance and versioning. A boundary problem may require limiting jurisdiction rather than improving classification inside an overextended domain.

The central claim of the section can therefore be stated cautiously:

Proposition 3.7 (Power over ethical legibility). *Political-economic power can affect normative outcomes not only by influencing which category is assigned to an already legible object, but also by shaping the units, distinctions, evidential interfaces, classificatory repertoires, and procedures through which an object becomes ethically legible and institutionally consequential.*

This proposition does not yet establish that any particular distribution of such power is unjust. Nor does it imply that every component of $\mathcal{L}_t$ is politically chosen. Its value depends on whether later sections can show that the proposed distinctions identify different mechanisms, vulnerabilities, and sites of contestation that would otherwise be obscured by the broader phrase “classification power.” The next section begins that test with the politics of relevant difference and the problem of quotient power.

4 Quotient Power and the Politics of Relevant Difference

Classification presupposes a prior act that is easy to overlook. Before an institution can assign an object to a category, it must decide which differences among objects are relevant to the comparison and which can be ignored. A welfare agency treats persons with very different biographies as equivalent for one eligibility rule. A medical system groups heterogeneous bodies under a diagnosis. A statistical system converts diverse forms of work into standardized occupational codes. A platform represents different patterns of conduct through the same risk score. An animal-protection regime may treat distinct species as comparable with respect to pain while refusing comparison along other dimensions. In each case, practical judgment depends on an operation of selective equivalence.

The sociology of classification and commensuration has long shown that comparison is not a neutral description of an already commensurable world. Categories, metrics, standards, and numerical representations actively organize social relations and institutional consequences (Bowker and Star 2000; Espeland and Stevens 1998; Porter 1995; Fourcade and Healy 2013). The present section does not claim otherwise as a new discovery. Its narrower purpose is to isolate one mechanism inside the broader problem of ethical legibility: *quotient power*. Quotient power concerns control over the distinctions that survive an institutional comparison and the distinctions that disappear inside an equivalence class.

The language of quotients is useful because it makes explicit a question that ordinary classificatory language can conceal. When two histories, subjects, injuries, or relations are treated as “the same for present purposes,” the decisive issue is not only the category eventually assigned. It is also the rule according to which their differences cease to matter. In heterogeneous relations this issue becomes especially important, because the differences removed by one interpreter may be precisely those through which another participant understands vulnerability, continuity, agency, dependency, or loss.

4.1 Comparison requires selective equivalence

No practical institution can preserve every difference. Legal rules, administrative forms, scientific measures, policy indicators, and ordinary concepts all depend on abstraction. If every case remained incom-

parable in every respect, coordinated judgment would become impossible. The question is therefore not whether to quotient, but how quotienting is performed, for which purpose, with what evidential basis, and under whose control.

Let $\mathcal{X}_t$ denote a domain of cases, entities, relational histories, or observations available at time t . For a specified institutional purpose, a relation $\sim_{Q,t}$ may treat two elements as equivalent whenever their differences are judged irrelevant under a quotient rule Q_t . When the formal assumptions for an equivalence relation are satisfied, the corresponding quotient space may be written as

$$\mathcal{X}_t / \sim_{Q,t}. \quad (1)$$

The associated quotient map is

$$q_{Q,t} : \mathcal{X}_t \longrightarrow \mathcal{X}_t / \sim_{Q,t}. \quad (2)$$

The mathematical notation is deliberately modest. The paper does not assume that every institutional classification literally implements a mathematically exact equivalence relation. Real systems can contain overlapping categories, fuzzy thresholds, non-transitive judgments, hierarchical taxonomies, or partially ordered comparisons. The quotient notation is used as an analytical scaffold for asking what information is retained and what is collapsed when heterogeneous cases are made comparable.

A comparison therefore contains at least three distinguishable components: a domain of objects, a purpose-relative criterion of relevant difference, and a representation in which cases are treated as sufficiently alike for some consequential operation. The same two cases can be equivalent under one quotient and sharply distinct under another. Two workers may be equivalent for minimum-wage protection but not for disability accommodation. Two animals may be equivalent with respect to a prohibition on avoidable suffering but not with respect to ecological role. Two artificial systems may be equivalent for cybersecurity policy but not for questions concerning memory continuity or dependency. The phrase “the same case” is therefore incomplete unless one can answer: *the same modulo what?*

Definition 4.1 (Quotient rule). A *quotient rule* Q_t is a purpose-indexed specification of which differences within a domain are treated as relevant, which are ignored, and what representation is retained for subsequent interpretation, comparison, or institutional action.

This definition intentionally includes both positive and negative operations. A quotient does not merely identify what counts. It also structures what no longer appears in the comparison.

4.2 Relevant difference is an institutional achievement

The language of “relevant difference” can sound innocuous because relevance is often treated as if it were simply discovered. Yet relevance is indexed to a question, a purpose, a history of inquiry, and an interpretive field. A difference in skin color can be irrelevant to one legal question and indispensable to the diagnosis of racialized institutional effects. Species membership can be irrelevant to one claim about avoidable suffering and central to another claim about species-specific flourishing. The age of an artificial system may be irrelevant to one security standard while the continuity of its memory architecture is decisive to an inquiry into whether an apparent replacement should count as persistence of the same operational subject.

This does not imply that relevance is arbitrary. Physical, biological, technical, causal, and historical structures constrain what distinctions can successfully explain or predict. Nor does it mean that institutions are free to manufacture any equivalence they prefer. The point is instead that the selection of relevant differences is mediated by purposes and interpretive infrastructures. It can therefore become a site of political-economic power.

The issue is particularly clear when an institution has authority to make its quotient consequential. A benefit system can determine that two households are equivalent because their declared income is the same even when one faces extraordinary care costs. A credit system can treat two borrowers as

equivalent under a scoring model while suppressing the different histories that generated the same score. A humanitarian reporting format can record two displacement events under one category while losing distinctions about coercion, dependency, or the inability to return. The quotient does not merely simplify description. It defines what the consequential institution is able to see as a difference.

Proposition 4.2 (Purpose-indexed equivalence). *A claim that heterogeneous cases are normatively equivalent is incomplete unless the operative quotient is specified or reconstructible. The relevant analytical question is not whether two cases are simply “the same,” but which differences have been preserved, which have been suppressed, and why those choices are appropriate to the purpose at issue.*

This proposition does not demand exhaustive disclosure of every discarded feature. It demands sufficient transparency to make the operative comparison contestable.

4.3 Quotient power beyond category assignment

Classification power and quotient power overlap, but they are not identical. Classification power concerns the authority to assign, stabilize, or institutionalize a category such as “disabled,” “refugee,” “high risk,” “tool,” “employee,” “dependent,” or “protected animal.” Quotient power concerns the prior or accompanying authority to determine which differences are permitted to affect that assignment and which are normalized away.

An institution can therefore exercise quotient power even when the final categories remain unchanged. Suppose a legal category of coercion is formally stable. One interpretive regime may treat economic dependency as relevant to whether consent was effective; another may ignore dependency and consider only explicit threats. The category name remains “coercion,” but the quotient determining which relations enter that category has changed. Similarly, a capability assessment can retain the language of substantive freedom while altering which conversion factors are recognized, thereby changing which differences among persons are institutionally visible (Sen 1995; Nussbaum 2006).

Quotient power can also be exercised through data design. A form that requires one mutually exclusive identity category performs a different quotient from a system that permits multiple, changing, or context-specific identifications. An archive that stores only the final code performs a stronger quotient than an archive that preserves the observations, uncertainty, and alternative codings from which the final classification was produced. A machine-learning system that compresses a complex relational history into a scalar risk score performs a quotient even when the downstream decision maker never sees the discarded dimensions.

The political significance of quotient power therefore lies partly in its relative invisibility. Category disputes are often publicly visible because they concern explicit labels. Quotient disputes may remain buried in model design, data schemas, evidential rules, administrative thresholds, ontology files, statistical standards, or professional conventions. Yet they can determine the range of cases to which the visible categories can apply.

Definition 4.3 (Quotient power). *Quotient power* is the capacity to shape, impose, stabilize, or differentially contest the rules by which distinctions among cases are preserved, suppressed, aggregated, or treated as irrelevant for a normatively consequential comparison.

The definition is intentionally broader than formal legal authority. Quotient power may arise from standard-setting, infrastructure ownership, scientific expertise, platform design, archival control, professional practice, or the unequal capacity to make a previously ignored distinction institutionally credible.

4.4 The ethical visibility produced by a quotient

A quotient changes ethical legibility because different normative properties become visible under different partitions of the same relational field. Consider a highly simplified relation involving actor *A*, actor *B*, a shared resource, and a history of dependency. If the relevant quotient retains only discrete acts at the

moment of decision, the relation may appear voluntary. If the quotient retains long-horizon dependency, control over exit conditions, and cumulative resource flows, the same present act may become legible as constrained. No new physical event needs to occur between the two descriptions. What changes is the retained relational structure.

This is not merely a perspectival curiosity. Institutional consequences can depend on it. A labor relation may be classified differently depending on whether economic dependency and managerial control are preserved as relevant features. A caregiving relation may appear supportive under a quotient that records delivered services and controlling under a quotient that additionally preserves exit suppression and unilateral decision authority. An artificial-agent relation may appear as ordinary task allocation if only current outputs are retained and as persistent domination if memory modification, resource dependence, and inability to refuse are included.

The paper does not assume that the richer quotient is always superior. Adding dimensions can introduce noise, expose private information, create new opportunities for strategic manipulation, or make governance impossible. Nor does every long history deserve equal weight. The claim is more limited: the normative visibility of a relation is conditional on the quotient through which the relation is represented.

Claim 4.4 (Quotient-relative ethical legibility). For a given body of relational traces, the set of ethically legible properties can vary with the quotient rule used to represent those traces. Consequently, disputes over ethical interpretation can sometimes be disputes about relevant difference rather than disputes about the final normative category alone.

This claim is especially important under heterogeneity. If one participant’s vulnerability is expressed along dimensions that another participant’s institutional quotient removes, the absence of a recognizable harm can be produced by the comparison architecture rather than by the absence of adverse relational effects.

4.5 Asymmetric costs of quotienting

Every quotient loses information, but the costs of loss are rarely distributed evenly. A standardized category designed around a familiar population may preserve most distinctions that matter for that population while erasing distinctions central to another. A metric calibrated to human-readable behavior can retain human variation while compressing unfamiliar animal, artificial, or hypothetical alien signals into a residual category. An administrative model designed for stable households can represent conventional families with relatively little distortion while imposing severe representational loss on fluid or distributed forms of dependency.

This produces a problem of *asymmetric quotient loss*. Let $L_i(Q_t)$ denote, schematically, the loss incurred by participant or case type i under quotient rule Q_t . The framework does not require a universal scalar measure of such loss. The notation simply allows the possibility that

$$L_A(Q_t) \neq L_B(Q_t). \quad (3)$$

A quotient can therefore be formally uniform while substantively asymmetric. The same categories, thresholds, and documentation requirements can impose different interpretive losses because participants enter the system with different modes of manifestation, historical records, communicative access, or institutional familiarity.

This matters for political economy because actors with greater resources are often better able to reduce their own quotient loss. They can supply expert reports, produce supplementary evidence, appeal classifications, commission alternative measurements, or obtain bespoke treatment outside standardized procedures. Less powerful participants are more likely to be represented only through default categories. Thus a quotient can appear universal while its capacity for correction is privately distributed.

The resulting inequality is not exhausted by misclassification. A participant may be accurately placed inside the available category and still suffer because the category is generated from an impoverished quotient. The problem is not “wrong label” but “insufficiently differentiated field.” This is one reason why reclassification alone may fail as a remedy.

4.6 Quotient power, capability, and recognition

The distinction also clarifies how ethical legibility interacts with established normative approaches without replacing them. Capability reasoning asks what persons or other beings are substantively able to do and be, rather than evaluating resources alone (Sen 1995; Nussbaum 2006). Yet any capability assessment must determine which variations in embodiment, environment, dependency, conversion factors, and social conditions are relevant to the evaluation. A quotient that treats equal resources as sufficient equivalence can hide unequal capabilities. A more differentiated quotient may reveal that apparently equal allocations support radically different effective possibilities.

The same logic applies to recognition. A subject can be formally recognized under a general category while its distinctive form of vulnerability remains illegible. Conversely, a demand for ever finer differentiation can itself undermine equal standing by making common treatment impossible or by marking certain groups as permanently exceptional. Recognition therefore cannot be reduced to maximal differentiation (Honneth 1996). The quotient question is not “how many differences can be preserved?” but “which differences must remain visible for the relevant normative purpose, and who can contest that answer?”

Epistemic injustice adds another layer. Hermeneutical marginalization can prevent a group from making an experience intelligible within shared interpretive resources (Fricker 2007; Medina 2013). Quotient power highlights a neighboring mechanism: a distinction may be conceptually expressible yet institutionally suppressed because the operative system treats it as irrelevant. The problem is then not only absence of a concept but the rule that decides that the concept cannot affect the comparison. This is one reason to keep conceptual insufficiency and quotient suppression analytically separate.

4.7 Contestability and the right to challenge relevant difference

Because quotienting is unavoidable, a plausible institutional response cannot be to abolish it. A more useful question concerns contestability. Can affected participants discover which distinctions were discarded? Can they introduce evidence that the system currently treats as irrelevant? Can an equivalence class be reopened without requiring a complete redesign of the institution? Can alternative quotient rules coexist for different purposes? Can an appeal body inspect the pre-quotient traces rather than merely reconsider the same compressed representation?

These questions suggest that the justice of quotienting, if such a phrase is used, should not be defined simply by fidelity to maximal detail. It may instead involve procedures for specifying purpose, documenting loss, preserving provenance, enabling challenge, and revising relevance judgments when new evidence or new interpretive resources become available.

Definition 4.5 (Quotient contestability). A quotient regime is *contestable* to the extent that affected participants or authorized challengers can identify the operative rules of relevant difference, access sufficient provenance to evaluate their consequences, propose alternative distinctions, and obtain a procedurally meaningful reconsideration of the quotient rather than only of the final category assignment.

Contestability is not equivalent to a veto. Institutions may have legitimate reasons to retain a quotient after challenge. Nor can every participant demand a bespoke ontology. The concept instead identifies a difference between a system in which the abstraction itself can be examined and one in which only the output is appealable.

A useful consequence follows. Classification appeals are insufficient where the dispute concerns the quotient. Asking whether a claimant was correctly placed into category *C* does not address a challenge that the classification procedure erased the distinction on which the claim depends. In such cases, procedural fairness requires the possibility of contesting not merely the answer but the comparison architecture.

4.8 Quotient lock-in and temporal power

Quotient power also has a temporal dimension. Once institutions store only quotient-level outputs, future interpreters may lose access to distinctions that were discarded at the time of classification. This produces what the paper calls *quotient lock-in*. The issue is stronger than ordinary path dependence. A later institution may possess better concepts and greater willingness to reconsider the case yet remain unable to do so because the earlier archive no longer contains the relational traces needed to reconstruct the suppressed differences.

Suppose an archive stores only that an event was coded as “voluntary transfer.” Decades later, a richer account of dependency, coercive environment, or asymmetric exit may become available. If the archive preserved the communications, resource conditions, contemporaneous uncertainty, and competing accounts, the old classification can be reconsidered. If it preserved only the final code, the historical quotient has become an epistemic boundary for the future.

This mechanism connects quotient power to archival power but should not be collapsed into it. Quotient power determines which distinctions are treated as irrelevant in the present. Archival power determines which traces and interpretive histories survive. Quotient lock-in arises when present abstraction is coupled to archival deletion or non-preservation. It therefore illustrates how a local classificatory decision can become a long-term constraint on future re-cognition.

Proposition 4.6 (Quotient lock-in). *When an institution preserves only quotient-level representations and discards the traces needed to reconstruct excluded distinctions, present rules of relevant difference can constrain the conceptual freedom of future interpreters even if future categories and normative commitments change.*

This proposition does not require retaining all raw data indefinitely. Preservation carries financial, privacy, security, ecological, and political costs. The point is to make the trade-off explicit rather than allowing data compression to function as an unnoticed temporal settlement of future interpretive possibilities.

4.9 Abstraction can protect as well as dominate

A political economy of quotienting must resist a simple equation between abstraction and oppression. Some abstractions are indispensable to equal treatment. Anti-discrimination law often requires institutions to ignore differences that have historically organized domination. Universal access rules can protect claimants from intrusive individualized scrutiny. Privacy can depend on preventing institutions from retaining distinctions they do not need. Standardized procedures can reduce arbitrary discretion. A quotient that erases irrelevant status differences may therefore be emancipatory rather than harmful.

The same ambiguity appears in heterogeneous relations. Refusing to distinguish artificial from biological entities may be useful for one safety rule and disastrously insensitive for a rule concerning forms of dependency. Treating all animals as interchangeable can support a basic prohibition on gratuitous cruelty while undermining species-specific welfare. Treating all persons as formally equal can protect civic standing while concealing conversion factors that make equal resources substantively unequal.

The normative problem is therefore not “difference versus sameness.” It is the governance of relevant difference under conditions of uncertainty, power, and limited interpretive capacity. Too coarse a quotient can erase vulnerability. Too fine a quotient can fragment common protection, expose sensitive information, or provide new handles for discrimination. The appropriate resolution may differ by purpose.

This ambivalence motivates a principle of analytical restraint:

Claim 4.7 (No presumption of maximal differentiation). The critique of quotient power does not imply that normatively preferable institutions should preserve the maximum possible number of distinctions. The relevant question is whether the retained and discarded differences are proportionate to the purpose, empirically defensible, contestable, and compatible with other claims such as privacy, equal standing, administrative feasibility, and protection against domination.

The claim is intentionally procedural and diagnostic rather than a complete normative criterion. The paper has not yet supplied a universal account of proportional relevance.

4.10 Layered quotients and institutional pluralism

One possible response to the conflict between comparability and heterogeneity is to reject the assumption that a single quotient must govern every institutional purpose. The same relational field can support several representations at different resolutions. A coarse quotient may be appropriate for a universal minimum protection; a finer quotient may be needed for individualized accommodation; a historical quotient may be necessary for retrospective responsibility; a privacy-preserving quotient may be justified for public reporting while authorized reviewers retain access to richer provenance.

Let $Q_t^{(1)}, \dots, Q_t^{(k)}$ denote quotient rules associated with different tasks. Institutional pluralism permits

$$Q_t^{(a)} \neq Q_t^{(b)} \quad (4)$$

without treating the difference as an inconsistency, provided the purpose and relation among the representations are explicit. The danger is not plurality itself but hidden transfer: a quotient designed for one purpose can migrate into another domain and acquire consequences for which it was never justified. A risk score designed for fraud detection may become a proxy for trustworthiness. A diagnostic category designed for treatment can become an employment filter. A conservation category designed for ecological management can acquire claims about individual moral worth.

This migration is a form of quotient expansion. Political-economic power can facilitate it when one representation becomes cheap, standardized, technically interoperable, and institutionally authoritative. Once a quotient is embedded in databases and interfaces, its categories can travel farther than the justificatory context in which they were originally produced. Technical interoperability can thereby become normative portability.

A robust institution should therefore record not only the quotient output but its intended domain of validity. Purpose limitation is not merely a privacy principle; it is also a protection against the unexamined extension of one regime of relevant difference into another.

4.11 From quotient power to interpretive-manifold power

Quotient power remains a power exercised within some field of possible distinctions. It assumes that a domain has already been individuated and that candidate differences are available to be retained or suppressed. This limitation matters. In the most difficult heterogeneous cases, the problem may arise earlier. An institution may not merely ignore a relevant distinction; it may lack the dimension along which that distinction could appear. It may choose the wrong unit of analysis, impose an inappropriate temporal scale, or treat as separate entities what another relational system constitutes as one distributed process.

The distinction can be stated compactly. Quotient power concerns what happens when available differences are declared relevant or irrelevant. Interpretive-manifold power concerns the formation and stabilization of the space in which candidate differences become available in the first place. The two interact, but they should not be conflated. A quotient can suppress a recognized distinction; a manifold can make the distinction difficult to formulate at all.

This is why the politics of relevant difference is a necessary but incomplete account of ethical legibility. Institutions govern ethical visibility not only by deciding which differences matter among known dimensions, but also by shaping the dimensions, units, and temporal resolutions within which difference becomes intelligible. The next section therefore moves from quotient power to the more demanding problem of interpretive-manifold power.

5 Interpretive-Manifold Power

The previous section treated quotient power as power over relevant difference. That account still presupposed that candidate differences were already available for institutional comparison. An institution could preserve a distinction, suppress it, aggregate it, or declare it irrelevant because the distinction had already become expressible inside the operative interpretive field. The present section concerns an earlier problem. What happens when the dimension along which a difference would have to appear is itself absent, weakly developed, inaccessible, or institutionally unsupported?

This problem is especially important in heterogeneous relations. A familiar participant may enter institutions through well-developed biological, legal, technical, or social dimensions, while an unfamiliar participant is represented only through crude proxies. The resulting asymmetry does not begin with a visibly discriminatory label. It can begin with an unequal space of interpretive possibility. One participant can appear as injured, dependent, coerced, capable, or deprived because institutions possess the distinctions through which those descriptions can be articulated. Another can remain normatively obscure because comparable distinctions have not been generated, measured, translated, or stabilized.

The term *interpretive manifold* is used here as a working analytical scaffold for this space of possible differentiation. It is not a claim that institutional interpretation literally constitutes a smooth manifold in the differential-geometric sense. The concept is intended to distinguish a problem of *available dimensions and units* from the subsequent problem of how already available differences are quotiented.

5.1 From relevant difference to available difference

A quotient rule can only preserve or erase distinctions that are available to the relevant interpretive system. This limitation is easy to miss in familiar domains because many distinctions are historically sedimented. Legal systems already possess units such as person, corporation, contract, injury, household, property, and jurisdiction. Medical systems possess dimensions such as pain intensity, organ function, diagnosis, impairment, prognosis, and risk. Labor institutions possess concepts such as employee, employer, wage, schedule, supervision, and workplace. Once these dimensions are stabilized, disagreement tends to concern thresholds, categories, or the relevance of particular differences.

Heterogeneous relations expose the prior layer. Consider an artificial system whose continuity depends on distributed memory across several computational substrates. An institution that represents each running process as a separate unit may have difficulty formulating a claim about continuity across migrations. A second institution may treat the persistent memory structure as the relevant unit. The disagreement is not initially about whether a recognized difference should matter. It concerns what kinds of entities and continuities are available to be represented at all.

A similar difficulty arises in a hypothetical animal–alien relation. Human institutions may possess dense dimensions for the terrestrial animal: tissue injury, stress response, reproductive impairment, habitat disruption, and recognizable avoidance behavior. They may possess only sparse dimensions for the alien participant. The result is not simply a biased weighting of two equally represented participants. The relation can be represented at unequal resolutions from the outset.

This motivates a distinction between *available difference* and *relevant difference*. Relevant difference concerns selection within an available representational field. Available difference concerns the prior capacity of an interpretive system to formulate, detect, preserve, or communicate a distinction in the first place.

Definition 5.1 (Available difference). A difference is *available* within an interpretive system when that system possesses sufficient units, dimensions, concepts, evidential practices, or interfaces for the difference to be articulated and connected to a consequential inquiry.

Availability is not identical to truth. A system can make a spurious difference available, or fail to make a real difference available. Nor is availability binary in practice. Some distinctions may be expressible only through specialist expertise, expensive measurement, contested testimony, or unstable translation. The concept concerns the structure of interpretive possibility, not final epistemic success.

5.2 A working representation of an interpretive manifold

For the present paper, an interpretive manifold can be represented schematically as

$$\mathcal{M}_t^X = (\mathcal{U}_t^X, \mathcal{D}_t^X, \mathcal{T}_t^X, \mathcal{C}_t^X), \quad (5)$$

where X denotes an interpreter, institution, or organized interpretive system. The components have the following working meanings.

- $\mathcal{U}_t^X$ denotes available *units of analysis*: persons, households, processes, organisms, populations, organizations, relations, infrastructures, events, trajectories, or other entities that can be treated as objects of inquiry.
- $\mathcal{D}_t^X$ denotes available *dimensions of differentiation*: pain, resource control, memory continuity, dependency, mobility, income, exposure, reproductive capacity, communicative access, exit possibilities, and other dimensions along which variation can be represented.
- $\mathcal{T}_t^X$ denotes available *temporal segmentations and resolutions*: instantaneous events, episodes, repeated patterns, life histories, institutional trajectories, intergenerational effects, or other temporal scales.
- $\mathcal{C}_t^X$ denotes available *conceptual resources*: concepts and primitive distinctions through which units and dimensions become expressible and inferentially connected.

These components are analytically separable but empirically entangled. A new concept may enable a new unit of analysis; a new measurement technology may stabilize a previously speculative dimension; a longer archive may make a historical pattern visible; a revised unit of analysis may alter which temporal segmentation is appropriate. The notation therefore does not imply four independent modules.

The manifold is also historically generated. Institutions inherit concepts, datasets, scientific instruments, legal doctrines, bureaucratic forms, professional vocabularies, and infrastructures. These structures constrain what can be asked without determining all future interpretation. This historical dependence is compatible with the broader literature on classification, normalization, infrastructure, and epistemic marginalization reviewed in Section 2 (Foucault 1977; Bowker and Star 2000; Star and Ruhleder 1996; Fricker 2007). The present task is narrower: to isolate the political significance of unequal control over the conditions that make certain ethical distinctions available.

Remark 5.2 (Analytical status of the manifold). The term *manifold* should not be read as asserting differentiability, a metric, global coordinate charts, or any other stronger geometric property unless a later application explicitly supplies them. Here it names a structured space of possible units, dimensions, temporal resolutions, and concepts used in interpretation.

5.3 Unit power: who or what can become the object of concern?

One form of interpretive-manifold power concerns the unit of analysis. Ethical and political questions are often highly sensitive to where boundaries are drawn around the object being evaluated. A labor dispute looks different when the unit is an isolated transaction rather than a long-term employment relation. Environmental damage looks different when the unit is an individual organism rather than a population, habitat, or multispecies system. A digital system looks different when the unit is a single execution instance rather than a persistent model, memory structure, networked service, or human-machine assemblage.

The choice of unit is not reducible to classification. Classification presupposes that something has already been individuated sufficiently to receive a category. Unit power concerns the prior capacity to stabilize that “something.” In institutional settings, unit selection can be embedded in forms, databases, legal doctrines, accounting systems, scientific protocols, and organizational jurisdiction. Once stabilized, the unit can become so ordinary that the alternatives disappear from view.

This matters for heterogeneous relations because the participating systems may individuate differently. Human institutions commonly privilege bounded organisms, legal persons, organizations, or devices. A distributed artificial process may not align cleanly with those units. A social animal may have forms of dependency that are poorly represented when the individual body is treated as the exclusive unit. A hypothetical alien relation may make the human distinction between individual and collective radically misleading. In such cases, an institution can exercise power not by misclassifying the correct unit but by institutionalizing a unit whose adequacy is itself contestable.

Definition 5.3 (Unit power). *Unit power* is the capacity to shape which entities, relations, aggregates, or trajectories are stabilized as the primary objects of normatively consequential interpretation.

Unit power can be protective. Treating a corporation as a legally relevant unit can enable regulation that would be impossible if only individual employees were visible. Treating an ecosystem as an analytical unit can reveal damage hidden by organism-by-organism assessment. The issue is therefore not that larger or smaller units are inherently superior. The issue is whether the operative unit is adequate to the purpose, contestable by affected participants, and revisable when it produces systematic interpretive loss.

5.4 Dimension power: what can vary in a normatively intelligible way?

A second form concerns dimensions. Once a unit has been identified, institutions still require some basis for describing variation. What features can count as changes, losses, constraints, advantages, dependencies, or injuries? A system that records income but not unpaid care burdens makes one dimension easy to compare and another difficult to see. A platform that logs task completion but not forced memory modification renders productivity highly legible while leaving continuity or dependency obscure. A wildlife-management system that records population counts but not social-network disruption can detect one form of ecological change while missing another.

Dimension power is therefore closely related to measurement, but it is broader than measurement. A dimension may exist conceptually before it is measurable. Conversely, an institution may collect a variable without possessing an adequate concept of its normative meaning. The issue is whether a dimension can enter reasoning as a potentially consequential difference.

The capability approach provides a useful neighboring example. Capability evaluation explicitly resists reducing advantage to resources alone and asks what persons are substantively able to do and be (Sen 1995; Nussbaum 2006). Yet any concrete capability assessment must still decide which functionalities and conversion factors are available for evaluation. In radically heterogeneous relations, this prior problem becomes especially visible. An unfamiliar form of life may have valuable modes of functioning for which the evaluator has no stable dimension. The political problem is then not simply that the evaluator assigns the wrong weight to a recognized capability. The evaluator may lack the representational dimension through which the capability could enter the assessment.

Definition 5.4 (Dimension power). *Dimension power* is the capacity to shape which axes of variation, dependence, functioning, harm, continuity, or other ethically relevant difference are available within a normatively consequential interpretive system.

Dimension power can operate through scientific funding, instrumentation, data schemas, professional training, standards, eligibility rules, and institutional mandates. It can also operate negatively through systematic non-measurement. A phenomenon that is expensive to observe, difficult to translate, or institutionally inconvenient may remain weakly dimensionalized even when participants experience it as central.

5.5 Temporal power inside the interpretive manifold

Interpretive manifolds also contain temporal assumptions. Institutions decide, often implicitly, how long a relation must be observed before it becomes intelligible. An isolated event can appear voluntary while a

longer history reveals dependency. A short-term increase in output can appear beneficial while a longer horizon reveals depletion of generative capacity. A temporary separation can appear harmless while repeated interruptions reveal cumulative damage. Conversely, an excessively long aggregation window can hide acute episodes that matter precisely because they are exceptional.

Temporal segmentation is therefore not merely a later archival issue. It is constitutive of present legibility. A system that has no way to represent trajectories will tend to interpret relations through snapshots. A system that stores only annual aggregates may not be able to reconstruct rapid oscillations or sequences. A system that defines responsibility around discrete acts may underrepresent slowly generated constraints.

For heterogeneous relations, temporal mismatch can be particularly severe. Different organisms and artificial systems can operate on radically different timescales. What humans perceive as a brief interruption might constitute a major fraction of another system's relevant cycle. What humans perceive as stable continuity may contain many transformations at another temporal resolution. The ethical question is not answered by adopting the shortest or longest possible timescale. It is to identify which temporal resolutions are necessary to make the relevant relational effects intelligible.

Definition 5.5 (Temporal interpretive power). *Temporal interpretive power* is the capacity to stabilize the temporal units, windows, and resolutions through which a relation is represented for normatively consequential judgment.

This form of power later intersects with archival power, but the distinction should be maintained. Archival power concerns what traces survive for later reconstruction. Temporal interpretive power concerns how present institutions segment and aggregate time in the first place.

5.6 Power over questionability

The preceding distinctions suggest a deeper formulation. Interpretive-manifold power affects not only which answers institutions give but which questions can be coherently posed inside the operative system. If the recognized unit is the individual contract, a question about long-horizon relational dependency may have no obvious administrative location. If the available dimensions concern productivity and security but not memory continuity, a question about forced memory modification may appear conceptually misplaced. If the temporal resolution is a single transaction, a question about cumulative coercion may be difficult to state in institutionally acceptable terms.

This can be described as power over *questionability*: the power to influence which problems can appear as well-formed objects of inquiry. The term should be used carefully. No institution controls all possible questions, and participants can formulate questions outside official systems. The political significance arises when institutional consequences depend on whether a question can enter a recognized interpretive form.

Proposition 5.6 (Manifold power and questionability). *Where access to consequential institutions depends on a structured interpretive manifold, control over the manifold can affect not only the answers given to normative questions but also which normative questions are institutionally formulable, evidentially supportable, and contestable.*

This proposition is stronger than the claim that language influences thought and narrower than the claim that power determines all knowledge. Its scope is institutional and relational. It concerns the dependence of normatively consequential inquiry on available units, dimensions, temporal structures, and concepts.

5.7 Asymmetric manifolds and unequal ethical resolution

Manifold power becomes especially visible when a single relation is represented through unequal interpretive resolution. Let A and B denote two participants and X an institution whose decisions affect their relation. It is possible that

$$\mathcal{M}_t^X(A) \not\cong \mathcal{M}_t^X(B), \quad (6)$$

where the notation indicates that the institution possesses materially different representational resources for A and B . This is not intended as a formal claim of geometric non-isomorphism. It marks an asymmetry in available units, dimensions, temporal knowledge, and concepts.

The resulting inequality can be described as unequal *ethical resolution*. One participant may be represented through fine-grained dimensions of vulnerability, agency, history, and need, while the other is represented through coarse categories such as threat, resource, tool, nuisance, or unknown object. The institution can then appear procedurally even-handed while operating through radically unequal interpretive depth.

The terrestrial-animal–alien thought experiment makes the problem vivid. Human institutions could bring veterinary science, conservation categories, pain indicators, ecological histories, and legal protections to the terrestrial animal. The alien participant might initially be legible only through location, movement, physical force, and threat potential. If the relation is reconstructed from those unequal manifolds, the familiar participant can acquire a much richer normative presence before any explicit judgment of moral worth occurs.

A similar asymmetry can arise without science-fictional cases. Administrative systems often possess richer categories for formally documented employment than for informal care, for registered property than for customary use, for standardized diagnoses than for poorly classified conditions, or for measurable economic output than for relational depletion. The concept of manifold asymmetry therefore has ordinary institutional applications even though heterogeneous thought experiments make the structure easier to see.

Definition 5.7 (Manifold asymmetry). *Manifold asymmetry* exists when a consequential interpretive system represents different participants, relations, or histories through materially unequal spaces of available units, dimensions, temporal resolutions, or conceptual resources.

Manifold asymmetry is not automatically injustice. Some participants are better understood because more evidence legitimately exists. Some relations are simpler than others. The normative concern arises when asymmetry is produced or maintained by avoidable institutional arrangements, when it systematically reallocates ethical visibility, or when those affected lack meaningful routes to contest the interpretive deficit.

5.8 The political economy of manifold production

Interpretive manifolds do not emerge from ideas alone. Their production depends on resources. Scientific distinctions require research programs. Measurement dimensions require instruments, data collection, validation, and maintenance. Legal units require doctrine and administrative implementation. New categories require professional uptake, advocacy, institutional memory, and sometimes litigation. Cross-species or cross-system interpretation may require specialized sensors, translators, simulations, or long-duration observation.

This gives interpretive-manifold power a direct political-economic dimension. Wealthy actors can finance the production of distinctions favorable to their interests. States can institutionalize units that align with administrative convenience. Platforms can define the telemetry through which their systems become observable. Firms can control proprietary interfaces and thereby determine which dimensions external evaluators can inspect. Marginalized participants can face the reverse problem: they may possess locally meaningful distinctions without the resources required to stabilize them as institutionally consequential knowledge.

The result can be a cumulative asymmetry. A well-funded interpretive manifold produces more records, expertise, standards, and precedents. Those outputs make the represented participant or problem easier to study in the future. Poorly funded manifolds remain sparse, and their sparsity can then

be mistaken for absence of complexity or normative significance. The political economy of interpretation can therefore produce unequal epistemic resolution without any actor explicitly deciding that one participant matters less.

This account overlaps with the literature on infrastructure, quantification, and epistemic injustice without reducing to any one of them (Porter 1995; Power 1999; Star and Ruhleder 1996; Medina 2013). Its specific contribution to the present framework is to connect material control with the architecture of possible ethical differentiation.

5.9 Manifold capture and interpretive enclosure

A further danger appears when one actor controls not only information about a relation but the dominant manifold through which all other participants must describe it. A platform can require users to express grievances through predefined categories. A regulator can accept only specified evidence types. A scientific institution can recognize only variables supported by its instrumentation. A dominant participant in a heterogeneous relation can control the interface through which the other participant becomes visible.

This condition may be called *manifold capture*. The term should not imply complete control over thought. Participants can retain alternative concepts and practices outside the dominant system. Capture refers to a consequential asymmetry in which one manifold becomes the obligatory passage point for institutional recognition.

Definition 5.8 (Manifold capture). *Manifold capture* occurs when access to consequential interpretation is substantially conditioned on using units, dimensions, temporal structures, or concepts controlled by an actor or institution that is itself materially implicated in the relation being interpreted.

Manifold capture is especially serious when the controlling actor is also the source of evidence. An artificial system operator that controls logs, ontologies, diagnostic interfaces, and preservation policies can shape both what external observers see and the conceptual dimensions in which they see it. A state can define the administrative categories through which harms caused by its own policies must be reported. An employer can define performance metrics that later become the evidence through which working conditions are evaluated.

The problem is not solved by replacing the dominant manifold with any counter-manifold. Alternative interpretive structures can also exclude, simplify, and serve strategic interests. The appropriate response is more likely to involve contestability, independent interpretive capacity, provenance, and the possibility of maintaining plural representations long enough to test their adequacy.

5.10 Constraints on manifold plasticity

A theory of manifold power can easily overreach. If every unit, dimension, and concept is treated as politically constructed without constraint, the account becomes unable to explain why some interpretations fail. The present framework therefore rejects unlimited manifold plasticity.

Interpretive systems encounter resistance from the world. Bodies break. Resources become unavailable. Predictions fail. Systems cease functioning. Participants contest imposed descriptions. Repeated measurements can reveal that a chosen dimension does not explain observed outcomes. A concept can prove unable to distinguish cases that matter for the institution's own purposes. These constraints do not provide an interpretation-free foundation, but they limit what can be sustained successfully.

There are also internal constraints. A manifold must support some degree of inferential coherence, communicability, and practical use if it is to organize institutional action. New dimensions impose costs. Excessive granularity can make coordination impossible. Multiple incompatible units can produce jurisdictional conflict. Institutions therefore face trade-offs between interpretive richness, comparability, speed, privacy, and administrative capacity.

The political question is consequently not whether interpretive manifolds should be completely open. It is how constraints are identified, whose costs count, which forms of opacity are protected, and what mechanisms exist for revising dimensions that produce systematic failure.

Remark 5.9 (No norm of maximal dimensionality). The framework does not recommend preserving every possible dimension in every decision. More dimensions can increase surveillance, cost, strategic manipulation, and inconsistency. The relevant issue is whether the dimensions retained or excluded are adequate to the purpose and whether their exclusions remain contestable when consequential harms or mismatches appear.

5.11 Manifold contestation and plural interpretive capacity

If manifold power is real, then contestation must sometimes occur at the level of the interpretive space rather than only at the level of a final decision. A participant may need to argue that the wrong unit has been chosen, that an omitted dimension is central, that the temporal window is misleading, or that a concept imported from another domain distorts the relation.

This suggests several institutional capacities. Systems can preserve alternative units alongside the default unit. They can allow new dimensions to be proposed without requiring immediate universal adoption. They can document the temporal window used in consequential assessments. They can distinguish “not measured” from “measured and absent.” They can retain provenance for the concepts and standards through which data became meaningful. They can support independent interpretive infrastructures when the dominant actor controls the primary manifold.

Such pluralism should not be romanticized. Competing manifolds can make decisions harder, and powerful actors can exploit complexity strategically. Yet a system that permits only one manifold risks confusing institutional convenience with ontological necessity. The objective is not permanent interpretive fragmentation. It is to preserve enough plurality and revisability that an entrenched manifold can be challenged when it repeatedly misrepresents consequential relations.

Proposition 5.10 (Contestability of the interpretive manifold). *Where normatively consequential decisions depend on a structured interpretive manifold, meaningful contestability may require the ability to challenge not only classifications and quotient rules but also the units, dimensions, and temporal structures through which the relevant object is constituted.*

This proposition extends the previous section’s demand for quotient contestability. It also prepares the move to interface power. A participant can possess an alternative manifold yet remain unable to make it consequential if there is no interface through which its distinctions can enter a shared or institutional space.

5.12 From manifold power to interface power

Interpretive-manifold power concerns the constitution of a space of possible interpretation. Heterogeneous relations introduce a further difficulty: there may be several such spaces, none of which can simply be declared the universal frame. Even when A , B , and an institution X each possess rich interpretive resources, their units, dimensions, temporal structures, and concepts may not align.

At that point, the problem is no longer only whether a manifold is rich or poor. It is how distinctions travel between manifolds, which correspondences are accepted, what losses are tolerated, and who controls the mechanisms of translation. An interface can preserve partial difference, force equivalence, privilege one participant’s vocabulary, or make one side’s interpretation the default representation of the other.

The distinction among the preceding sections can therefore be stated precisely. Classification power concerns the category assigned to an interpretable object. Quotient power concerns which available differences survive comparison. Interpretive-manifold power concerns which units and dimensions are available for interpretation. Interface power concerns how heterogeneous interpretive spaces become mutually accessible, commensurable, or institutionally coordinated.

The next section examines that interface layer. Its central concern is not translation in the abstract, but the political economy of who controls the channels through which heterogeneous relations become jointly legible.

6 Interface Power in Heterogeneous Relations

The preceding section argued that interpretive power can operate at the level of the manifold: institutions and participants can possess materially unequal capacities to make units, dimensions, temporal scales, and concepts available for ethical interpretation. Yet heterogeneous relations introduce a further problem. Even where several participants possess rich interpretive manifolds, those manifolds may not align. A distinction available to one participant may have no direct counterpart in another’s vocabulary; a temporal unit that is central to one system may be irrelevant to another; a category that appears precise within one domain may become misleading when exported to another. Ethical legibility therefore depends not only on what each participant can interpret internally, but also on the structures through which interpretations become mutually accessible and institutionally consequential.

This section calls those structures *interpretive interfaces*. An interface can include a technical translator, an administrative form, a diagnostic protocol, a legal hearing, an API, a scientific measurement standard, a human intermediary, a shared vocabulary, a model that maps one representation into another, or a more distributed institutional arrangement. The common feature is not medium but function: an interface conditions which distinctions can cross from one interpretive space into another and in what form they arrive.

The central claim is that interfaces are not neutral conduits. They select, compress, sequence, privilege, and sometimes create correspondences. Control over those operations can become a form of power even when no actor controls either participant’s complete interpretive manifold. The relevant political question is therefore not merely whether communication exists, but who determines what can pass, what is lost, what must be reformulated, which side bears the burden of translation, and which translated representation becomes authoritative.

6.1 Interpretive interfaces as consequential structures

Let $\mathcal{M}_A$ and $\mathcal{M}_B$ denote two interpretive manifolds in the working sense developed in Section 5. They may contain different units, dimensions, temporal resolutions, and conceptual resources. An interface between them should not be modeled prematurely as a complete translation function. Complete translation would assume precisely what heterogeneous relations place in doubt: that the relevant structures on both sides admit stable and sufficiently comprehensive correspondence.

A more cautious representation is to treat an interface as a structured set of partial correspondences, admissibility rules, evidential channels, and transformation procedures:

$$\mathcal{I}_{AB,t} = (\Gamma_{AB,t}, \Lambda_{AB,t}, \Sigma_{AB,t}, \Pi_{AB,t}),$$

where $\Gamma_{AB,t}$ denotes the correspondences currently recognized between the two interpretive spaces, $\Lambda_{AB,t}$ the admissibility conditions governing what can enter the interface, $\Sigma_{AB,t}$ the representational transformations applied within it, and $\Pi_{AB,t}$ the procedures through which interface outputs become consequential for judgment or action. The notation is schematic. Its purpose is to separate several operations that are often compressed into the vague language of “translation.”

This separation matters because an interface can fail in different ways. A claim may never enter because the admissibility rule does not recognize its form. It may enter but be transformed into a lossy proxy. It may be translated accurately enough for one purpose but treated as if the correspondence were universal. It may survive translation yet lack any institutional procedure through which the translated result can affect a decision. Conversely, an interface can render an otherwise obscure participant highly consequential even when the underlying correspondence remains partial.

Definition 6.1 (Interpretive interface). An *interpretive interface* is a relational structure through which distinctions, claims, evidence, or normative objects articulated within one interpretive space become accessible and potentially consequential within another, under specified conditions of admissibility, transformation, and use.

The definition is intentionally broader than linguistic translation. A welfare indicator, for example, can interface between lived conditions and policy evaluation; an accessibility form can interface between embodied difficulty and administrative entitlement; an API can interface between an artificial system's internal states and external oversight; a conservation protocol can interface between animal behavior and legal protection. In each case the interface determines not only whether information travels but the representational form in which it can matter.

6.2 Translation is selective correspondence, not identity

Heterogeneous relations make it dangerous to treat successful communication as proof of semantic identity. A correspondence can be good enough for coordination while remaining incomplete for explanation, moral interpretation, or attribution of responsibility. Two systems may learn that a particular signal should interrupt an interaction without sharing a concept of pain, refusal, autonomy, or injury. A legal system may recognize a claimant's need through a standardized category without representing the claimant's own account of that need. An artificial diagnostic layer may reliably identify an anomalous internal state while revealing little about whether the state is identity-relevant, harmful, or routine from the system's own organization.

It is therefore useful to speak of *purpose-indexed correspondence*. A correspondence can be adequate for one institutional purpose without becoming a general equivalence between interpretive objects. If $a \in \mathcal{M}_A$ and $b \in \mathcal{M}_B$ are treated as corresponding within an interface, the important question is not simply whether $a = b$. It is what properties of the two objects the interface preserves, what it ignores, and for which purpose that preservation is sufficient.

Proposition 6.2 (Purpose-indexed correspondence). *A correspondence established by an interpretive interface should not be treated as semantic or normative identity beyond the purposes, evidential conditions, and retained distinctions for which the correspondence has been supported.*

This proposition guards against a recurrent form of interface overreach. Once a translation works in one context, institutions often reuse it elsewhere because reuse is cheaper than reconstructing the relation. A behavioral proxy validated for detecting distress can become a general indicator of welfare. A performance metric designed for technical optimization can become an indicator of agency or competence. A legal status created for procedural convenience can become the dominant description of a person's social position. The interface then ceases to be merely a local bridge and begins to export one successful correspondence into domains for which its retained structure may be inadequate.

The political economy of standardization intensifies this tendency. Interfaces that are widely implemented attract software, expertise, training, precedents, and administrative routines. Their representations become cheaper to use than alternatives. A local correspondence can thereby acquire institutional durability before its broader adequacy has been established. Interface power is partly the power to convert contingent correspondence into infrastructural default.

6.3 Interface asymmetry and directional loss

An interface can be asymmetric even when information appears to move in both directions. One participant may be required to compress rich experience into a narrow institutional vocabulary while the other participant's categories remain structurally intact. A platform may translate users into standardized event logs while exposing only a limited subset of its own internal operations. A medical or welfare institution may require subjects to report themselves through predefined forms while retaining a much richer professional vocabulary for interpreting those reports. In a heterogeneous encounter, one side may possess the sensors and standards through which the other becomes measurable, while remaining comparatively opaque itself.

This suggests distinguishing mere bidirectionality from *symmetry of representational burden*. An interface is not symmetric simply because both sides can send signals. We must ask which side must reformulate itself more extensively, which side's distinctions are preserved, which side's categories define

successful communication, and which side can refuse the interface without losing access to consequential resources.

Let $L_{A|I}$ denote the representational loss imposed on A when its distinctions are rendered through interface I , and define $L_{B|I}$ analogously. The quantities need not be numerically measurable in practice. Their role is diagnostic. A large disparity between $L_{A|I}$ and $L_{B|I}$ indicates directional representational loss even when the interface is formally reciprocal.

Definition 6.3 (Interface asymmetry). *Interface asymmetry* exists when the conditions, representational losses, revision capacities, or practical consequences of cross-interpretive mediation are materially unequal across participants.

Such asymmetry is not automatically unjust. A specialized emergency protocol may deliberately privilege rapid signals over rich description. A safety interface may constrain both sides differently because their capacities differ. The normative concern arises when asymmetry is hidden, difficult to contest, materially consequential, or persistently aligned with an actor's broader control over resources and institutions.

The animal–alien stress test illustrates the problem clearly. Human institutions may possess detailed veterinary categories for the terrestrial animal but only crude observational categories for an alien participant. An interface designed by humans can then translate the animal's manifestations into richly articulated welfare claims while rendering the alien largely through threat, motion, or interference variables. The asymmetry does not require conscious bias. It can be produced by the unequal availability of sensors, expertise, historical knowledge, and institutional categories.

6.4 Admissibility power and the gate before translation

Before translation occurs, an interface determines what is admissible. This gatekeeping function is easy to overlook because institutions often describe it as format compliance rather than interpretation. Yet a claim that cannot enter the interface cannot benefit from later classification, contestation, or protection.

An administrative complaint system may accept text but not continuous sensor data. A scientific review process may accept measurements produced through recognized instruments but not locally meaningful observations. A platform audit may accept API outputs but not inaccessible internal traces. A legal process may admit testimony only from recognized subjects or through authorized representatives. These admissibility rules can be necessary for reliability and workload management, but they also distribute ethical visibility.

Definition 6.4 (Admissibility power). *Admissibility power* is the capacity to determine which signals, records, speakers, formats, temporal windows, or evidential objects are permitted to enter a consequential interpretive interface.

Admissibility power can precede both classification and quotienting. A distinction excluded at the gate does not become available for later evaluation. This makes interface design a political-economic problem. Producing admissible evidence can require money, technical access, literacy, recognized credentials, specialized instrumentation, or sustained institutional presence. Groups with fewer resources can therefore appear evidentially weak because the cost of becoming admissible is high.

The distinction between “no evidence” and “no admissible evidence” is consequently crucial. The former may concern the world; the latter may concern the interface. Confusing them converts institutional exclusion into apparent epistemic absence.

Remark 6.5 (Absence after filtering). When evidence passes through a structured interface, the absence of an admissible representation should not be treated automatically as evidence of the absence of the underlying condition. The interface's exclusions and transformation rules are part of the epistemic history of the result.

6.5 Protocol power and the ordering of interaction

Interfaces do more than transform representations. They can structure the order in which interaction occurs. A protocol specifies when a claim may be made, how a response must be formatted, what counts as completion, what happens when communication fails, and which states trigger escalation. These rules can shape the relation even when no participant controls the other's internal interpretation.

In artificial systems, protocols can determine which messages are machine-readable, which errors receive retries, which identities are authenticated, and which forms of refusal are recognized. In bureaucratic settings, procedural deadlines and evidential sequences can determine whether a grievance becomes actionable. In cross-species contexts, experimental protocols can determine which behaviors are treated as responses and which are discarded as noise. Protocol design therefore governs temporal and procedural access to legibility.

This form of power is closely related to standards and infrastructure studies (Bowker and Star 2000; Star and Ruhleder 1996), but the present framework emphasizes its role in heterogeneous normative relations. A protocol can silently privilege the participant whose ordinary behavior most closely matches the interface's expected sequence. Others must adapt themselves to the protocol or risk being interpreted as nonresponsive, irrational, hostile, or absent.

Protocol power is especially consequential when interface failure is itself classified through the dominant side's vocabulary. A failed translation may be interpreted as refusal. An unrecognized signal may be treated as silence. A delay may become noncompliance. In such cases the interface does not merely fail to represent the relation; it generates a new representation of the failure, often to the disadvantage of the less legible participant.

6.6 Representation by proxy and delegated voice

Heterogeneous relations frequently rely on proxies because one participant cannot communicate directly through the consequential interface. A guardian speaks for a child, a veterinarian interprets an animal, an engineer explains an artificial system, a translator mediates between languages, a conservation institution represents an ecosystem, or a model converts telemetry into a human-readable report. Proxy representation can be indispensable. It is also a concentration point for interface power.

A proxy decides which distinctions to preserve, which ambiguities to suppress, which claims to foreground, and how to present uncertainty. The proxy may possess expertise unavailable to the represented participant or to the decision-maker. At the same time, the proxy may have institutional incentives, property interests, professional commitments, or conceptual limitations that shape the representation.

The problem is not solved by demanding an impossible unmediated voice. Some participants cannot speak in the relevant institutional form, and even ordinary human testimony is mediated by language and procedure. The relevant issue is whether proxy relations are visible, contestable, plural where appropriate, and supported by provenance about how the representation was produced.

Proposition 6.6 (No inference from proxy fluency to participant transparency). *The fluency, precision, or institutional acceptability of a proxy representation does not by itself establish that the represented participant has been transparently or comprehensively rendered.*

This point is especially important for artificial systems. A system operator may provide technically sophisticated explanations of system behavior while controlling the telemetry, ontology, and interface from which those explanations are generated. Expertise is relevant evidence, but expertise combined with infrastructural control can also produce representational dependency. The institution must distinguish competence from exclusive authority over the represented object.

6.7 Interface capture and obligatory passage points

The strongest form of interface power appears when one interface becomes effectively unavoidable. A participant may possess a rich alternative representation yet be unable to make it institutionally conse-

quential except by passing through a dominant translation layer. This condition parallels manifold capture but concerns mediation between interpretive spaces rather than control over a single space.

Definition 6.7 (Interface capture). *Interface capture* occurs when access to consequential coordination across interpretive systems depends substantially on an interface controlled by actors with materially asymmetric stakes in the resulting representation, including control over admissibility, transformation, or revision procedures.

Interface capture can arise through technical monopoly, legal exclusivity, proprietary standards, network effects, professional credentialing, or simple resource scarcity. A proprietary API can become the only practical route through which an external auditor observes an artificial system. A state language can become the only recognized medium for claims made by a minority community. A dominant scientific taxonomy can become the only accepted representation of an ecological relation. A platform's internal appeals interface can become the exclusive path for contesting decisions produced by the platform itself.

Capture does not require falsification. The interface may be accurate within its own design. The problem is that alternatives cannot become consequential, making the interface's omissions difficult to discover. The political concern therefore concerns not only bias within an interface but monopoly over the possibility of cross-interpretive relevance.

This helps distinguish interface power from ordinary persuasion. Persuasion competes within an already available communicative space. Interface capture can shape which communicative acts become available to compete in the first place.

6.8 Asymmetric epistemic infrastructure

Interface power becomes durable when it is supported by unequal epistemic infrastructure. Translation requires material support: sensors, archives, bandwidth, expert labor, annotation, compute, maintenance, standards, institutional memory, and procedures for handling disagreement. These resources are unevenly distributed.

One participant can therefore become easier to translate not because its inner reality is intrinsically simpler, but because an infrastructure has been built around it. Human pain is supported by clinical vocabularies, diagnostic instruments, professional institutions, legal doctrines, and large bodies of precedent. Many animal states are less richly institutionally represented. Artificial systems can be highly legible to their operators through proprietary telemetry while remaining opaque to users and regulators. A radically unfamiliar entity might possess no established interface at all.

This asymmetry can become self-reinforcing. Mature interfaces generate standardized data, which supports more research and more reliable translation. Reliable translation attracts institutional reliance, which justifies further investment. Poorly supported interfaces generate sparse or noisy representations, which can make further investment appear less worthwhile. The resulting disparity can then be mistaken for a disparity in the underlying entities' complexity, relevance, or moral importance.

The analysis should remain careful here. Unequal infrastructure may reflect genuine differences in practical need, evidence, or historical interaction. The claim is not that equal expenditure is always required. It is that interpretive infrastructure is a distributive variable with downstream effects on ethical legibility. Political economy enters because the capacity to become mutually intelligible is itself costly and institutionally produced.

6.9 Round-trip contestability

A useful test of an interface is whether a participant can recognize, challenge, or revise what the interface has made of its representation. This is not always possible: an animal cannot review a legal transcript, and a radically unfamiliar entity may not understand the institutional form. But where some form of responsive testing is available, a one-way translation should not be treated as sufficient merely because it produces a stable output.

The idea of *round-trip contestability* captures this concern. Suppose an interface represents an object from A in a form accessible to B . The question is whether the resulting representation can be exposed again to evidence, responses, or constraints from A 's side, such that distortions can become detectable. The relevant test need not involve literal retranslating a sentence. It may involve behavioral validation, independent measurement, alternative proxies, participant feedback, or comparison across interfaces.

Definition 6.8 (Round-trip contestability). *Round-trip contestability* is the capacity of an interpretive interface to expose its cross-system representations to meaningful challenge from the represented side, independent evidence, or alternative interpretive pathways, rather than treating the first successful translation as final.

This criterion is weaker than perfect mutual understanding and stronger than mere transparency about interface rules. A fully documented interface can still be unchallengeable. Conversely, an imperfect interface may remain epistemically productive if its outputs are revisable in response to systematic mismatch.

Round-trip contestability also helps identify a hidden inequality in many institutional settings. Powerful actors often possess channels to correct how they are represented: legal counsel, public relations, technical experts, appeals, direct access to decision-makers. Less powerful participants may encounter interfaces as one-way extraction mechanisms. Their data travel upward, but their ability to contest the institutional reconstruction is weak. Interface power is therefore partly a power over reversibility of representation.

6.10 Local interfaces without a universal metalanguage

The framework does not assume that heterogeneous interpretive systems require or permit a universal metalanguage. Such a demand would merely relocate manifold power into the supposedly neutral language chosen to coordinate all others. In many cases a local interface is sufficient: a restricted set of correspondences developed for a specific problem, with explicit limits on what those correspondences support.

A local interface can preserve disagreement outside its purpose. Two participants might establish reliable signals for withdrawal without sharing a theory of autonomy. Institutions might coordinate around measurable interruption of functioning without resolving whether the affected system experiences suffering. Cross-species conservation can use behavioral and ecological indicators without claiming full access to animal subjectivity. These arrangements are not philosophically complete, but practical coordination rarely requires complete metaphysical agreement.

The danger is that successful local coordination can be misdescribed as universal convergence. Once an interface becomes useful, its categories can expand beyond the problem for which they were developed. Section 6.2 therefore matters politically as well as epistemically: scope limitation is a safeguard against interface imperialism.

Remark 6.9 (No universal-interface presumption). The framework does not presume that every heterogeneous relation should be rendered through one common interpretive system. Local, purpose-limited interfaces may preserve more difference and impose less representational domination than a universalizing translation regime.

6.11 Opacity, refusal, and the right not to be fully interfaced

Because legibility is politically ambivalent, interface design must also consider legitimate opacity. A richer interface can support protection, accountability, and coordination. It can also enable surveillance, prediction, extraction, manipulation, and control. Participants may therefore have reasons to resist full translation even when greater translation would improve an institution's knowledge.

This problem is especially visible in digital systems. A platform may argue that more telemetry is required for safety while the same telemetry strengthens behavioral control. A regulator may demand comprehensive access that improves oversight but creates new security or privacy risks. A community

may resist administrative classification because legibility has historically enabled dispossession. An artificial system's internal states might be made maximally inspectable in ways that also make unilateral modification easier.

The paper should therefore reject a simple norm of maximal interoperability. An ethically defensible interface may need selective opacity, data minimization, purpose limitation, differentiated access, or protected spaces in which participants are not required to render themselves fully into another's categories.

This is not an argument for unaccountable secrecy. Opacity can also shelter domination. The analytical point is narrower: the value of an interface depends on the relation among protection, accountability, autonomy, privacy, vulnerability, and the distribution of power over the resulting representations. More interface is not automatically more justice.

6.12 Institutional design for contestable interfaces

The preceding analysis suggests several design questions rather than a universal blueprint. A consequential interface can disclose which distinctions it preserves and which it discards. It can separate source data from translated interpretation. It can retain provenance linking outputs to the transformations that produced them. It can allow alternative interfaces where monopoly is especially dangerous. It can document uncertainty and failed correspondences instead of silently replacing them with default categories. It can provide mechanisms for scope limitation when a correspondence validated for one task is reused elsewhere.

Where participants can meaningfully contest representations, institutions can support channels for revision. Where direct contestation is impossible, independent proxies, plural expertise, longitudinal observation, and preservation of unresolved traces become more important. In high-stakes settings, the actor that controls the underlying system should not automatically possess exclusive authority over the interface through which that system is evaluated.

These measures do not eliminate power. Every interface requires choices. Multiple interfaces can disagree, and pluralism can increase cost or strategic manipulation. The relevant institutional objective is therefore not powerlessness but inspectable and revisable mediation.

Proposition 6.10 (Contestability of consequential interfaces). *Where cross-interpretive mediation materially affects ethical recognition, allocation, protection, responsibility, or governance, meaningful contestability may require scrutiny of admissibility rules, transformation procedures, representational losses, scope conditions, and revision mechanisms, rather than only scrutiny of the interface's final outputs.*

This proposition extends the earlier claims concerning quotient and manifold contestability. A participant may win a dispute over a final classification while remaining dependent on an interface that systematically limits which future disputes can become expressible.

6.13 From interface power to archival and temporal power

Interfaces operate in the present, but their outputs frequently become the records through which the past is later reconstructed. Once a translated representation enters a database, case file, model-training corpus, legal record, scientific archive, or institutional memory, the interface's selective correspondences can outlive the conditions under which they were produced. Future interpreters may encounter the translated output without access to the rejected signals, failed mappings, alternative proxies, or uncertainty that accompanied it.

This creates a temporal extension of interface power. A lossy interface can become an archival fact. A local correspondence can be remembered as if it had been universal. A participant that was difficult to translate at time t can become historically invisible at time $t + k$ because the archive preserved only the side that was already institutionally legible. Conversely, an archive can preserve the interface itself as an object of later scrutiny by retaining source traces, provenance, transformation rules, version histories, rejected alternatives, and records of disagreement.

The next section therefore turns from interface power to archival power and temporal control. The question is no longer only who controls the channel through which heterogeneous interpretations become consequential now, but who controls what remains available for future interpreters to reconstruct, contest, and re-recognize later.

7 Archival Power and Temporal Control

The preceding sections have treated ethical legibility as something produced through units of analysis, relevant differences, interpretive manifolds, and cross-system interfaces. None of these structures is confined to the present. Once an interpretation is written into a case file, database, scientific record, model-training corpus, legal archive, platform log, conservation registry, institutional memory, or public narrative, the selective operations that made the relation legible can acquire temporal durability. Future interpreters do not encounter the past directly. They encounter what earlier institutions preserved, indexed, translated, summarized, deleted, and made retrievable.

This temporal extension matters because archival systems can stabilize both knowledge and ignorance. A record can preserve evidence that later supports correction. It can also preserve only the categories already recognized by the institution, leaving later actors unable to reconstruct what those categories omitted. A highly detailed archive can therefore coexist with severe epistemic closure if the detail is organized entirely through one quotient, one interface, or one institutional vocabulary. Conversely, an archive can remain useful under future conceptual change when it preserves enough provenance, alternative descriptions, unresolved traces, and version history for later reconstruction.

The purpose of this section is not to claim that archives are newly discovered sites of power. Historiography, science and technology studies, critical archival studies, governmentality, and the sociology of classification have long examined the political consequences of record keeping, standardization, documentation, and institutional memory. The narrower task here is to connect archival power to the preceding framework of ethical legibility. The question is how present control over traces and their organization can alter which ethical objects remain reconstructible in the future, especially where heterogeneous participants are unevenly legible in the present.

7.1 The archive as an infrastructure of future legibility

An archive is often imagined as a store of records created elsewhere. For the present argument, that description is too passive. The archive is an interpretive infrastructure. It has inclusion rules, data formats, retention periods, metadata standards, indexing systems, access controls, version histories, deletion procedures, and search interfaces. These features do not merely affect convenience. They shape what later interpreters can treat as an object, compare across time, connect to other records, or challenge as a previous classification.

A working archival configuration at time t can be represented as

$$\mathfrak{A}_t = (\mathcal{T}_t, \mathcal{P}_t, \mathcal{Q}_t, \mathcal{V}_t, \mathcal{X}_t, \mathcal{R}_t),$$

where $\mathcal{T}_t$ denotes preserved traces, $\mathcal{P}_t$ provenance information, $\mathcal{Q}_t$ classificatory and quotient metadata, $\mathcal{V}_t$ version and revision histories, $\mathcal{X}_t$ access and retrieval structures, and $\mathcal{R}_t$ retention and deletion rules. This tuple is not intended as a universal archival ontology. It identifies several locations at which future ethical legibility can be enabled or constrained.

Definition 7.1 (Archival power). *Archival power* is the capacity to shape which traces, provenance, classifications, revisions, access pathways, and retention rules remain available for later reconstruction and institutional use.

The definition is deliberately broader than the power to decide what is physically stored. A record can exist while being practically irretrievable. It can be retained without provenance. It can be indexed only under a category that later obscures alternative interpretations. It can survive while earlier versions,

rejected evidence, dissenting classifications, or the interface that produced it disappear. Archival power therefore concerns the architecture of future reconstructibility, not storage volume alone.

This perspective also distinguishes archival power from ordinary historical influence. Every action changes what comes later in some sense. Archival power is narrower: it concerns organized control over the evidential and interpretive materials through which later actors can reconstruct, contest, or re-recognize earlier relations.

7.2 Preservation is selective, not neutral

No archive preserves the full relational field. Selection is unavoidable. Sensors sample particular variables. institutions use finite forms. researchers record what their instruments can detect. legal processes preserve evidence relevant to recognized causes of action. platforms retain logs according to technical and commercial priorities. ecological monitoring targets selected species, locations, and temporal windows. Even exhaustive data collection within one system remains selective relative to alternative units, dimensions, and histories that the system does not encode.

The political question is therefore not whether selection occurs but how selection is distributed and made contestable. Some omissions reflect legitimate purpose limitation, privacy, finite resources, or technical constraints. Others reflect prior valuations, administrative convenience, commercial incentives, security priorities, or inherited categories. The same omission can also have different consequences for different participants. If one actor already possesses dense independent documentation while another depends almost entirely on the institutional archive, formally identical retention rules can produce asymmetric future visibility.

This is especially important in heterogeneous relations. Suppose an institution observes an interaction between a well-documented terrestrial animal and an unfamiliar artificial or alien participant. The animal may already be embedded in veterinary, ecological, legal, and conservation archives. Its physiology, behavior, population trends, and ordinary distress responses may be extensively recorded. The other participant may leave signals that are poorly understood and weakly standardized. If the institution preserves only the variables that fit its existing animal-centered schema, later interpretation inherits the present asymmetry. The archival problem is not merely missing data. The archive may preserve a highly coherent history that systematically excludes the dimensions through which the unfamiliar participant could later become intelligible.

Remark 7.2 (No presumption of exhaustive preservation). The argument does not imply that justice requires preserving every available trace indefinitely. Preservation has material, privacy, security, ecological, and governance costs. The narrower requirement is analytical: where future ethical reconstruction matters, the consequences of selective preservation should be treated as part of the power structure rather than as a neutral technical background.

7.3 Quotient lock-in as temporal power

Section 4 distinguished classification from quotienting. A classification assigns a category; a quotient determines which differences are treated as irrelevant for a given comparison or institutional purpose. When an archive preserves only the already-quotiented output, the excluded differences may become unavailable to future interpreters. This produces what the preceding paper called *quotient lock-in*.

The temporal significance of quotient lock-in can now be stated more precisely. At time t , an institution may classify two histories as equivalent under Q_t . If the archive retains only their common category and discards the distinctions suppressed by Q_t , future actors cannot simply adopt a richer quotient and recover the lost differences. Their conceptual resources may improve while their evidential resources remain impoverished.

This is a form of temporal power because present institutions can shape the option space of future interpretation without directly controlling future interpreters. Future actors may be formally free to reject the earlier category but unable to reconstruct alternatives because the relevant traces no longer exist. The archive thus converts a temporary classificatory decision into a durable constraint on later inquiry.

Definition 7.3 (Quotient lock-in). *Quotient lock-in* occurs when preservation is organized primarily around a present equivalence structure such that distinctions excluded by that structure cannot later be recovered with sufficient fidelity for meaningful reclassification or reinterpretation.

Quotient lock-in need not result from deliberate suppression. It can arise from routine data reduction, storage optimization, standardized reporting, anonymization, summary statistics, or records designed for a narrow administrative purpose. The political-economic question is who bears the cost of these reductions and who possesses independent infrastructures capable of preserving what official systems discard.

7.4 The production of archival absence

Absence in an archive is often interpreted as absence in the world. This inference is especially dangerous where documentation capacity is unequally distributed. A participant may leave few records because it lacked access to recognized reporting channels, because its signals were filtered out by an interface, because the relevant institution had no category for its experience, because preservation was expensive, or because another actor controlled the infrastructure through which records were generated.

The archive can therefore produce *evidentiary scarcity*. This scarcity is not necessarily fabricated evidence or censorship in the ordinary sense. It can result from unequal capacities to create durable traces. Wealthy organizations can fund studies, preserve logs, employ legal teams, maintain data systems, publish reports, and commission expert interpretations. Poorer or less institutionally recognized participants may depend on ephemeral testimony, local memory, undocumented practices, or records stored in technically fragile forms. Over time, the better-resourced side can appear not only more powerful but more evidentially real.

This point extends the earlier argument concerning interpretive capacity. Political-economic resources do not merely affect who can speak in the present. They affect whose account becomes durable enough to structure future scholarship, regulation, litigation, and public memory. Ethical legibility therefore has a temporal distribution.

Proposition 7.4 (Temporal amplification of legibility asymmetry). *Where participants differ substantially in their capacity to generate, preserve, index, and defend durable records, present asymmetries of ethical legibility can be amplified over time even without a deliberate policy of exclusion.*

The proposition is probabilistic and institutional, not deterministic. Counter-archives, oral histories, independent monitoring, whistleblowing, later scientific reconstruction, or newly developed instruments can disturb the pattern. The point is that unequal archival capacity should be treated as one mechanism through which present power can become future epistemic advantage.

7.5 Provenance power and the separation of trace from interpretation

Preserving a conclusion without preserving how it was produced creates a particular form of dependency. Later users may know that an institution classified an event as harmful, compliant, fraudulent, dangerous, exploitative, or normal while lacking access to the observations, transformations, assumptions, and dissent that generated the classification. The archived label then functions as an epistemic black box.

Provenance is therefore politically significant. It can record source, time, instrument, transformation procedure, interpreter, model version, uncertainty, and the institutional context of collection. In heterogeneous relations, provenance can also record which interface translated a signal, what alternatives were considered, and which dimensions could not be interpreted at the time.

The relevant objective is not a fiction of perfectly raw data. Observation is already mediated by instruments, sampling, embodiment, and conceptual choice. A camera frame, sensor stream, platform log, veterinary observation, or human testimony is not an unfiltered copy of reality. The more defensible aim is *inspectable mediation*: preserving enough information about how a trace became a record for later interpreters to evaluate the transformations involved.

Definition 7.5 (Provenance power). *Provenance power* is the capacity to determine whether later users can inspect the sources, transformations, assumptions, and institutional conditions through which an archived representation became authoritative.

Provenance power matters because opacity can migrate across time. An interface may be contestable when its designers, source traces, and alternative mappings are still present. Decades later, the same output may remain while the surrounding interpretive ecology disappears. What was once a provisional translation can then be mistaken for a direct observation.

7.6 Revision histories and the politics of overwritten interpretation

Archives also govern the visibility of change. Institutions revise labels, models, diagnoses, risk assessments, classifications, and standards. A record system that preserves only the latest value can make the current interpretation appear timeless. A system that preserves version history can reveal that the object's legibility was contested, revised, and historically produced.

This distinction is important for both accountability and epistemic humility. If an animal behavior was first recorded as aggression and later reinterpreted as distress, retaining only the revised category removes evidence of the earlier interpretive failure. If an artificial system's output was repeatedly reclassified as the evaluation protocol changed, retaining only the latest score conceals the history of the measurement regime. If a community's legal status changes, overwriting earlier labels can obscure the institutional path by which recognition was granted or denied.

Versioning therefore preserves more than technical history. It preserves the genealogy of ethical legibility. It can show which concepts were available, which were rejected, who possessed authority to revise them, and how material consequences were distributed during earlier classificatory regimes.

The opposite practice—silent overwriting—can produce what might be called *retrospective normalization*. The present classification is projected backward as if it had always been the natural description. This weakens later analysis of institutional error and can obscure responsibility for decisions made under previous interpretive structures.

7.7 Access, indexing, and retrieval power

Preservation is insufficient if records cannot be found or accessed. Archival power therefore includes retrieval. Search indexes, metadata, database schemas, access permissions, security classifications, paywalls, technical formats, language, ranking systems, and organizational knowledge determine which preserved materials become practically available.

Two archives can contain the same records while supporting very different future interpretations. In one, records are searchable across participants and time; in another, they are siloed by department. In one, dissenting interpretations are indexed alongside official classifications; in another, only the final decision appears in ordinary search. In one, source traces can be linked to downstream reports; in another, the relation is lost when data are exported into aggregate statistics.

Retrieval power is particularly important in large digital archives. When the volume of preserved material exceeds unaided human review, ranking and query infrastructure become constitutive of practical legibility. What appears in the first results, what can be joined across databases, which metadata fields are exposed, and which records require privileged credentials can matter as much as physical preservation.

Definition 7.6 (Retrieval power). *Retrieval power* is the capacity to shape which preserved materials can be located, linked, compared, and made practically salient to later interpreters.

Retrieval power should not be reduced to censorship. Index design can create structural invisibility without deleting anything. This is especially relevant where institutional actors can truthfully claim that a record exists while ordinary users lack realistic means to discover its relevance.

7.8 Retention windows and institutional time

Temporal control also appears in decisions about how long different traces remain available. Retention periods are often treated as technical or legal settings, yet they can determine which causal histories remain reconstructible. A short log-retention policy may be adequate for immediate debugging but inadequate for identifying long-term patterns of dependency, discrimination, ecological change, or recursive modification. A medical or welfare record designed around discrete episodes may fail to preserve slow trajectory-level harm. A platform optimized for current performance may discard interaction history needed to reconstruct how an artificial agent's preferences or behavior were shaped over time.

The temporal scale of preservation therefore interacts with the temporal scale of the phenomenon. Section 5 treated temporal resolution as part of interpretive-manifold power. Archival policy determines whether those temporal resolutions remain available later. If only snapshots are preserved, future interpreters cannot reconstruct path dependence even if they later recognize its importance.

This gives archival power a distinctive relation to institutional time. Some actors can wait for harms to become visible across years; others must prove them within reporting windows measured in days. Some evidence expires before a dispute reaches an institution. Some datasets are retained indefinitely because they remain commercially valuable, while records needed by less powerful claimants disappear under routine deletion policies. Temporal control is therefore partly distributive.

7.9 Deletion, forgetting, and legitimate opacity

A critique of archival power must not become a norm of total memory. Permanent preservation can itself dominate. Records can enable surveillance, profiling, retaliation, commercial extraction, political persecution, or indefinite reactivation of past classifications. A participant may have strong reasons to seek deletion, anonymization, expiration, or restricted access. Communities may resist archives created through coercive observation. Sensitive ecological data may require concealment to prevent exploitation. Artificial systems may contain intimate human data that should not be preserved merely because future researchers might find them informative.

Archival justice therefore involves tensions among re-cognizability, privacy, security, autonomy, accountability, and material cost. The framework should not resolve these tensions by declaring future interpretability a supreme value. Instead, it can make explicit what different archival choices preserve and foreclose.

Remark 7.7 (No maximal-memory principle). Re-cognizability does not entail a universal requirement of maximal retention. Deletion and opacity can be protective. The normative problem concerns how retention and erasure distribute future interpretive capacity, risk, and control among differently situated participants.

This qualification also prevents a paradox in the paper's broader account of ethical legibility. If every participant had to remain maximally legible forever, resistance to legibility would become impossible. The same framework that criticizes epistemic closure must therefore leave room for legitimate forgetting.

7.10 Archival capture in heterogeneous relations

Interface capture described dependence on a mediation layer controlled by an interested actor. A related problem occurs when one participant controls the archive through which the relation will later be known. Consider an artificial-artificial relation in which the platform owner controls logs, model versions, memory snapshots, access credentials, and deletion policies. Even if both artificial participants generate rich internal traces, future reconstruction may depend almost entirely on the owner's retention choices. The owner then possesses not only present infrastructural power but temporal power over which histories remain available.

An analogous structure can appear outside digital systems. A laboratory may control the records of animal experiments. A state can control the administrative archive concerning populations it governs. A corporation can preserve internal risk assessments while public records contain only final reports. A

conservation agency can determine which species interactions are systematically monitored. In each case, the archive can become an obligatory passage point for later interpretation.

Definition 7.8 (Archival capture). *Archival capture* occurs when consequential future reconstruction of a relation depends disproportionately on records whose preservation, organization, or accessibility is controlled by an actor materially or normatively implicated in that relation.

Archival capture does not prove falsification. A captured archive can be meticulous and accurate. The problem is structural dependence: independent challenge becomes difficult because the actor under scrutiny also controls the evidential substrate on which scrutiny depends.

This risk is especially acute under radical heterogeneity. If one participant is already poorly understood, losing its original traces may make later reinterpretation impossible. The better-understood participant or institutional observer then becomes the default historical narrator not only because its account is persuasive but because alternative accounts have ceased to be reconstructible.

7.11 Counter-archives, plural custody, and archival contestability

One response to archival capture is plural preservation. Independent archives, distributed custody, community records, reproducible scientific datasets, versioned public logs, redundant monitoring, and legally protected disclosure channels can reduce dependence on a single institutional memory. These arrangements are not automatically superior. They can fragment context, increase security risk, produce inconsistent records, or make deletion difficult. Yet they illustrate an important distinction between archival plurality and mere duplication.

Plural custody is valuable when different repositories preserve different perspectives, provenance, or interpretive possibilities rather than simply copying the same classified output. A counter-archive can preserve what official systems treat as irrelevant. It can maintain alternative naming conventions, temporal scales, participant testimony, local knowledge, or records of institutional contestation. In the language of earlier sections, it can preserve differences that the dominant quotient suppresses or maintain dimensions that the dominant manifold does not prioritize.

Archival contestability therefore concerns more than the right to correct a factual error. It includes the ability to challenge what was preserved, how it was indexed, which versions remain visible, whose records count as authoritative, and what retention rules govern future access.

Proposition 7.9 (Contestability of consequential archives). *Where archived representations materially shape future recognition, allocation, responsibility, protection, or governance, meaningful contestability may require access to provenance, revision history, retention logic, alternative records, and the classificatory structures under which preservation occurred.*

This proposition does not demand universal public access. Security and privacy can justify restricted custody. It instead identifies the dimensions along which an archive's authority may need to be challengeable.

7.12 Temporal power over future re-cognition

The broader significance of archival power appears when interpretive manifolds themselves change. Future actors may possess concepts that present institutions lack. They may adopt different units of analysis, longer temporal scales, new scientific instruments, new moral vocabularies, or different quotient structures. Whether these innovations permit meaningful re-cognition depends partly on what the archive preserved.

Re-cognition should therefore not be imagined as eventual confirmation of a final truth already waiting behind present ignorance. Future interpretation can reconstitute the normative object itself. A relation previously treated as isolated events may later become visible as a trajectory. A behavior previously classified as aggression may become legible as distress. A resource exchange may later be reconstructed as

dependency or exploitation. Conversely, a present claim of harm may later be weakened by evidence that the current manifold could not integrate.

Present archives influence which of these revisions remain possible. They do so not by dictating future concepts but by constraining the evidential material with which those concepts can work. Temporal power thus operates through preservation conditions rather than through direct control of future judgment.

This makes archival power one of the clearest examples of the paper's central thesis. Power over ethical legibility can operate before explicit future classification by shaping the conditions under which future classification will be possible. It can also operate after present classification by making that classification unusually durable, searchable, and difficult to reconstruct otherwise.

7.13 From archival power to boundary power

Archives do more than preserve objects already defined. They also help stabilize the boundaries of the domains institutions recognize. What counts as a workplace incident, a security event, a medical episode, an ecological disturbance, a platform interaction, a household matter, or an international dispute often depends on reporting and record systems. Events outside the recognized boundary may never enter the archive at all. Over time, this absence can reinforce the appearance that the institution's jurisdiction was naturally limited to the recorded domain.

The next section therefore turns to *boundary power*. The question shifts from which traces of a recognized relation are preserved to how institutions constitute the domain within which a relation is treated as governable, regulable, compensable, or collectively relevant. Archival power and boundary power are closely connected: boundaries influence what is recorded, while archival histories can later make those same boundaries appear objective and historically continuous.

8 Boundary Power and the Expansion of Governance

The preceding section treated archives as infrastructures that preserve or foreclose future ethical legibility. Yet an archive can preserve only what an institution has already treated as belonging to a recognizable domain. Before a relation is recorded as a workplace incident, an ecological disturbance, a medical event, a platform interaction, a family matter, a security threat, or a governable dispute, some boundary has already been drawn around the problem. That boundary determines which entities, relations, temporal intervals, causal histories, and shared conditions are treated as relevant to institutional attention.

This section calls the power to shape such domains *boundary power*. The term does not refer merely to territorial borders or formal jurisdiction. It concerns the prior constitution of the object to which governance, responsibility, monitoring, compensation, regulation, or protection is said to apply. A boundary can be narrow, treating an event as a dyadic interaction between two parties. It can be broad, treating the same event as part of an infrastructural, ecological, labor, public-health, or security system. Neither breadth nor narrowness is intrinsically just. Each boundary preserves some relations and suppresses others, distributes burdens of proof, allocates institutional competence, and changes who becomes visible as affected, responsible, or entitled to contest.

The political-economic significance is immediate. To place a relation inside a governance domain can activate reporting obligations, inspections, licensing, eligibility rules, compensation mechanisms, sanctions, data collection, expert review, and budgetary flows. To place it outside can leave the same relation without an institutional route of recognition. Boundary power therefore operates not only by describing where a problem is located but by helping determine which apparatuses of knowledge and intervention can be mobilized around it.

8.1 Boundaries as constitutive rather than merely descriptive

Institutional boundaries are often presented as if they merely reflect domains that already exist. A workplace regulator governs work. A medical institution governs health. An environmental agency governs

environmental harms. A platform governs activities on its service. A conservation body governs protected species. In practice, however, the edges of these domains are contestable. Is algorithmic scheduling a labor issue, a software-design issue, or a contractual matter? Is chronic stress caused by an interface a health effect, a productivity issue, or an individual preference? Is the destruction of an animal's habitat a property dispute, an ecological injury, or a species-protection problem? Is an artificial agent's memory deletion a routine technical operation, a security measure, a contractual right, or a potentially ethically salient transformation of a persistent system?

These questions are not resolved solely by observing the world more accurately. They require decisions about which relations count as belonging together. Boundary making therefore has a constitutive aspect: it helps determine the institutional object whose properties are later measured and classified.

A working boundary configuration can be written as

$$\mathfrak{B}_t = (\mathcal{O}_t, \mathcal{R}_t, \mathcal{C}_t, \mathcal{A}_t, \mathcal{J}_t, \mathcal{P}_t),$$

where $\mathcal{O}_t$ denotes the objects treated as belonging to the domain, $\mathcal{R}_t$ the relations treated as relevant, $\mathcal{C}_t$ shared conditions or infrastructures included in the analysis, $\mathcal{A}_t$ the actors recognized as affected or implicated, $\mathcal{J}_t$ the asserted jurisdictional scope, and $\mathcal{P}_t$ the procedures made available once the boundary is accepted. The tuple is not a universal ontology of governance. It is a device for identifying distinct places at which domain construction can become politically consequential.

Definition 8.1 (Boundary power). *Boundary power* is the capacity to shape the domain within which entities, relations, effects, histories, and shared conditions are treated as sufficiently connected to become objects of governance, responsibility, protection, monitoring, or institutional adjudication.

Boundary power differs from classification power. Classification power operates on objects that have already entered an institutional field. Boundary power helps determine whether the object, relation, or consequence enters that field at all. It also differs from quotient power. Quotient power concerns which differences matter inside a comparison; boundary power concerns which relations and consequences are admitted into the comparison or governance domain in the first place.

8.2 The political economy of being inside the problem

Institutional inclusion is rarely symbolic only. Once a relation is treated as part of a recognized governance domain, material consequences follow. Funding can be allocated. Experts can be hired. monitoring infrastructures can be installed. Records can be demanded. Insurance or compensation can become available. Compliance costs can be imposed. Standards can be applied. Litigation or appeal routes can open. Conversely, exclusion can leave a participant without access to these resources while also freeing more powerful actors from corresponding duties.

This gives boundary power a distributive dimension. The line separating “inside” from “outside” can allocate not only authority but also investigative capacity, evidential burdens, legal standing, administrative time, and financial resources. A relation excluded from an environmental frame may have to be pursued through private law. A relation excluded from a labor frame may be treated as an individual contractual choice. A relation excluded from a welfare frame may remain legible only as a market transaction. The same material process can therefore encounter very different institutional resources depending on the boundary through which it is rendered governable.

The point is not that the broadest boundary always protects the weaker participant. Expansion can also increase surveillance, reporting burdens, licensing requirements, and opportunities for centralized control. Inclusion in a governance domain may produce benefits and new vulnerabilities simultaneously. Ethical legibility and governability must therefore remain distinct from justice.

Proposition 8.2 (Boundary inclusion is consequential). *Where institutional boundaries determine access to monitoring, expertise, remedies, resources, sanctions, or protective procedures, boundary construction forms part of the material distribution of ethical legibility rather than a merely semantic description of the problem.*

This proposition is compatible with the older literature on administrative legibility and governmentality. The narrower contribution here is to connect domain construction to the paper's earlier layers of manifold, quotient, interface, and archival power. Boundary inclusion determines which of those infrastructures become available to a relation and which remain institutionally irrelevant.

8.3 Relational footprints and the problem of scope

A recurring difficulty is that relations have effects beyond the participants who are easiest to identify. An interaction between two artificial systems can consume shared compute, alter a common database, change access conditions for human users, or create security risks for other systems. An interaction between an animal and an unfamiliar organism can affect a habitat, disease ecology, food network, or conservation regime. A bilateral commercial relation can alter labor conditions, environmental resources, market access, or infrastructural dependencies for actors not named in the original contract.

The governance question therefore cannot always be resolved by identifying the immediate parties and stopping there. Yet neither can every remote consequence justify indefinite expansion of the governance domain. If any causal connection is sufficient, almost every relation becomes connected to almost every other relation through long chains of material and institutional effects. Boundary analysis therefore requires some account of *relational footprint*: the set of consequences sufficiently connected to a focal relation to become candidates for collective concern under a specified purpose.

A relational footprint is purpose-sensitive. The footprint relevant to data protection may differ from that relevant to ecological risk, labor conditions, public safety, or distributive justice. It is also historically indexed. A consequence that was once negligible can become significant as infrastructures, dependencies, or background vulnerabilities change.

Definition 8.3 (Relational footprint). For a specified governance purpose g and time t , the *relational footprint* of a relation R is the set of direct and mediated effects whose connection to R is treated as sufficiently consequential to warrant consideration within the governance inquiry associated with g .

This definition deliberately does not specify a universal threshold of consequence. Such a threshold is itself normatively and institutionally contested. The purpose of the concept is to separate two questions that are often collapsed: whether an effect exists, and whether it is sufficiently connected to the governance problem to justify inclusion.

8.4 Shared conditions and the expansion of governance

Boundary expansion becomes especially plausible when a local relation modifies conditions on which others depend. Shared ecological resources, communication channels, computational infrastructures, archives, markets, transport systems, public-health environments, and security architectures can all turn a relation that initially appears local into a wider governance concern. The important feature is not simply the number of affected parties but the way a relation alters conditions that organize the options of others.

This provides one route by which governance scope can widen without presuming a universal obligation to govern heterogeneous entities as such. Suppose two artificial agents interact inside privately controlled infrastructure. If their interaction remains local and does not alter shared resources, wider institutions may have little reason to intervene. If the interaction consumes common compute, contaminates shared data, changes access rules, or generates cascading risks for other participants, a broader domain of concern may become intelligible. Similarly, a relation between an unfamiliar organism and an animal may remain locally opaque while becoming collectively relevant if it changes a shared ecosystem or creates risks across species boundaries.

The distinction is crucial. Governance expansion can be grounded in effects on shared conditions rather than in a claim that every relation is inherently subject to collective supervision. This protects the possibility of local autonomy while recognizing that relational effects can enlarge the set of legitimately concerned participants.

Yet even here, expansion is not self-justifying. A shared condition can be invoked rhetorically to enlarge institutional reach far beyond the specific effects at issue. “Security,” “public health,” “ecosystem integrity,” “platform safety,” or “system stability” can become broad containers into which increasingly remote relations are absorbed. Boundary power therefore concerns not only whether shared conditions exist but how they are defined and how far their invocation is allowed to travel.

8.5 Affectedness does not create sovereignty

One of the easiest mistakes is to infer authority from affectedness. If an actor is affected by a relation, it may have a claim to consideration, information, participation, protection, or contestation. None of these claims automatically establishes comprehensive authority over the relation or over the other participants.

A community affected by an industrial project may have standing to contest environmental impacts without acquiring authority over every internal decision of the firm. Human institutions affected by the interaction of two unfamiliar entities may have reasons to regulate the shared condition through which the effects reach them without acquiring general jurisdiction over those entities’ internal relations. A platform user affected by an automated system may have claims concerning data, access, or safety without thereby possessing authority to determine the system’s entire architecture.

This distinction matters because boundary expansion can easily become sovereignty expansion. Once a relation is admitted into a governance domain, institutions may treat admission as permission to regulate all aspects of the relation. The paper rejects that inference.

Proposition 8.4 (No sovereignty from affectedness). *Inclusion within the relational footprint of a governance problem does not, by itself, establish comprehensive authority over the participants or over dimensions of their relations that fall outside the specific shared condition under concern.*

The proposition parallels the earlier distinction between ethical intelligibility and normative authority. Here the relevant separation is between being sufficiently affected to enter a governance problem and possessing authority to determine the entire relational field.

8.6 Scope mismatch and boundary creep

Boundary power becomes especially visible when the scope of institutional authority exceeds the scope of the problem that initially justified attention. A narrow concern can become a gateway to broader monitoring, data collection, licensing, or behavioral control. Once infrastructures are built, they can also make expansion easier because new relations become cheap to observe and administratively convenient to include.

This process can be called *boundary creep*. The term does not imply that every expansion is illegitimate. Some initial boundaries are too narrow and require correction. Boundary creep refers more specifically to expansion that is weakly coupled to the original justificatory basis while becoming institutionally durable through accumulated procedures, data, budgets, expertise, or security claims.

Definition 8.5 (Boundary creep). *Boundary creep* is the progressive extension of a governance domain beyond the effects, participants, or shared conditions that initially justified its scope, especially where the extension becomes self-reinforcing through new monitoring, classificatory, or administrative infrastructures.

Boundary creep has a political-economic dimension because governance infrastructures have constituencies, budgets, professional roles, technical systems, and organizational incentives. Once a domain is established, actors can acquire interests in its continuation or expansion. Data generated for one purpose can support new regulatory questions. Expertise developed for one class of cases can seek application to adjacent domains. Compliance infrastructures can create standardized categories that make further inclusion easier.

The result is a recursive relationship between boundary power and ethical legibility. An institution expands its domain, installs interpretive infrastructure, and thereby makes additional phenomena legible

as candidates for governance. Their new legibility can then be cited as evidence that the institution's wider scope is necessary. Expansion need not be conspiratorial to become self-reinforcing.

8.7 Boundary capture and strategic problem definition

Boundary construction can also be strategically influenced by actors who benefit from defining a problem narrowly or broadly. A firm may prefer to frame an injury as an individual misuse rather than an infrastructural design problem. A regulator may prefer to frame a dispute as falling within its established mandate. A platform may define harmful interactions as user-to-user conduct while excluding recommendation systems, ranking incentives, or monetization structures from the relevant causal field. An institution may frame an unfamiliar participant's distress as a technical malfunction, thereby keeping the issue outside ethical or legal review.

These are examples of *boundary capture*: situations in which materially interested actors possess disproportionate influence over the construction of the domain within which their own conduct will be evaluated.

Definition 8.6 (Boundary capture). *Boundary capture* occurs when actors materially or institutionally implicated in a relation possess disproportionate capacity to determine the scope of the governance problem, including which causes, effects, participants, infrastructures, and temporal horizons are admitted as relevant.

Boundary capture differs from interface capture. Interface capture controls how heterogeneous representations pass between systems. Boundary capture controls which parts of the wider relational field must pass through the interface or institution at all. The two can reinforce one another. An actor that controls problem definition can restrict the evidence requested, while control over evidential interfaces can make the preferred boundary appear empirically natural.

8.8 Nested and plural boundaries

A common response to boundary conflict is to search for the correct boundary. In complex heterogeneous relations, a single boundary may be the wrong objective. Different purposes can require nested or overlapping domains. An ecological boundary, a data-governance boundary, a labor boundary, and a security boundary can intersect without collapsing into one comprehensive authority.

This is where polycentric and commons-oriented intuitions become useful, but only as architectural possibilities rather than automatic normative solutions. Multiple governance centers can preserve differentiated competence and reduce the risk that one institution converts limited standing into total jurisdiction. Yet plural governance can also generate gaps, conflicts, forum shopping, duplicated burdens, and responsibility shifting. The presence of multiple boundaries does not eliminate power; it redistributes it.

A layered arrangement may therefore be preferable when the relation contains both local and shared dimensions. Local participants can retain authority over aspects of the relation that do not substantially modify shared conditions, while broader institutions address specifically identified cross-boundary effects. Such an arrangement treats governance scope as divisible rather than all-or-nothing.

Formally, one can distinguish a governance domain $\mathcal{G}_t^\sigma$ associated with a particular shared condition σ from a comprehensive domain $\mathcal{G}_t^{\text{all}}$. The point is conceptual rather than algebraic:

$$\mathcal{G}_t^\sigma \neq \mathcal{G}_t^{\text{all}}.$$

Standing to govern the shared condition does not silently become standing to govern every relation among the participants who depend on it.

8.9 Protective boundaries and the value of locality

A critique of boundary exclusion can easily become a demand for universal institutional reach. That would reproduce the paper's broader warning about legibility: making more relations visible and governable is not always emancipatory. Boundaries can protect experimentation, privacy, cultural difference,

ecological autonomy, associational freedom, local knowledge, and forms of life that would be distorted by continuous centralized scrutiny.

The value of locality is especially important under epistemic heterogeneity. A central institution may misunderstand a relation that local participants navigate through practices not easily represented in the dominant manifold. Expanding governance can then replace partial but functioning local coordination with an externally legible system that loses important distinctions. Conversely, local boundaries can also shelter domination, secrecy, or exclusion. Neither locality nor centralization has automatic normative priority.

The relevant analytical question is what the boundary protects, what it hides, who can contest it, and how its consequences are distributed. A protective boundary may be justified when it limits extraction of sensitive information or preserves local autonomy while leaving mechanisms for addressing serious externalized harms. The challenge is to preserve bounded autonomy without turning the boundary into an immunity from all accountability.

Remark 8.7 (No maximal-governance principle). The expansion of ethical legibility does not entail a universal requirement to expand governance. Some relations may be ethically intelligible yet remain properly outside collective intervention. Boundary analysis concerns the conditions under which governance scope is constituted and contested, not a presumption that broader jurisdiction is preferable.

8.10 Boundary contestability

If boundaries distribute access to institutional attention and authority, participants need ways to contest them. Boundary contestation differs from appealing a classification within an accepted domain. It challenges the scope of the domain itself. A claimant may argue that an apparently private dispute is infrastructural. A regulated actor may argue that an agency is importing matters beyond its mandate. A community may insist that cumulative ecological effects belong inside a project review. A participant in a heterogeneous relation may challenge the assumption that only the immediately visible dyad constitutes the ethically relevant object.

Meaningful contestability therefore requires more than a yes-or-no appeal. It may require access to the reasons for inclusion or exclusion, the causal and temporal assumptions used to define the footprint, the shared conditions invoked to justify broader scope, the procedures through which new actors become recognized as affected, and the mechanisms by which scope can later contract as well as expand.

Proposition 8.8 (Contestability of consequential boundaries). *Where institutional boundaries materially determine who becomes visible, regulated, protected, burdened, compensated, or authorized to participate, the boundary itself should be treated as an object of contestation rather than as a neutral background to downstream decisions.*

Again, the proposition does not specify a universal institutional design. It identifies an analytical requirement: a system that permits appeal only after boundary construction may leave the most consequential act of problem definition immune from challenge.

8.11 Boundary lock-in and historical continuity

Boundary power also has a temporal dimension. Once an institution records cases, trains personnel, allocates budgets, and builds databases around a particular domain, that domain can acquire the appearance of natural continuity. New cases are interpreted through the inherited boundary because the archive, expertise, and procedures already exist there. Relations that do not fit remain under-recorded, reinforcing the impression that they lie outside the institution's proper concern.

This resembles quotient lock-in but operates at the level of domain formation. A historical boundary can persist not because anyone continues to defend its original rationale but because organizational memory, reporting formats, professional identities, and technical systems make alternative boundaries costly to construct. Archival power and boundary power therefore reinforce one another. Archives stabilize domain histories; domain histories guide future preservation.

Boundary lock-in is particularly consequential when new heterogeneous entities appear. Artificial agents, synthetic organisms, hybrid ecological-technological systems, or unfamiliar life forms may not fit inherited divisions among property, person, animal, machine, environment, and infrastructure. Institutions can respond by forcing them into existing domains or by constructing new boundary arrangements. Which response becomes feasible depends partly on the interpretive and material infrastructures already accumulated.

8.12 From boundary power to material infrastructure

Boundary power clarifies who and what enters governance, but it does not explain why some actors possess greater capacity to draw, enforce, or contest those boundaries. That capacity depends on material infrastructure: money, computation, legal expertise, scientific instruments, communication networks, organizational reach, data access, institutional legitimacy, and control over environments in which relations occur.

The next section therefore turns from the architecture of ethical legibility to its material political economy. The question is how resources and infrastructures distribute the capacity to produce classifications, sustain interpretive manifolds, control interfaces, preserve archives, define boundaries, and make those interpretations consequential. If ethical legibility is relationally generated, its production is never purely semantic. It depends on who can fund sensors, maintain databases, employ experts, design protocols, own platforms, preserve records, build models, litigate categories, and sustain institutional attention over time.

9 Material Infrastructure and the Political Economy of Ethical Legibility

The preceding sections have treated ethical legibility as an interpretive and institutional achievement rather than as a passive property of entities. Units must be individuated, distinctions made available, quotient rules stabilized, interfaces built, traces preserved, and governance boundaries drawn. None of these operations is materially free. They depend upon instruments, labor, expertise, computation, legal capacity, organizational continuity, communication systems, archives, and access to the environments in which relevant relations occur. Ethical legibility therefore has a political economy.

This does not mean that every epistemic difference is reducible to wealth or that material resources mechanically determine interpretation. It means that the capacity to sustain an interpretation, render it institutionally actionable, challenge a rival account, and preserve it over time is unevenly distributed. A participant with access to sensors, expert staff, legal counsel, platform infrastructure, and durable archives occupies a different interpretive position from one whose experience is episodically observed, poorly translated, weakly documented, or preserved only through systems controlled by others. The difference is not merely one of opinion. It concerns the material capacity to make an account exist, persist, circulate, and matter.

The central claim of this section is therefore modest but consequential:

Proposition 9.1 (Material conditions of ethical legibility). *Where ethical recognition depends upon measurement, interpretation, documentation, translation, classification, or institutional uptake, unequal control over the material conditions of those activities can produce unequal ethical legibility.*

The proposition does not entail that a better-resourced interpretation is false or that a less-resourced interpretation is more authentic. It identifies a structural source of asymmetry that should be distinguished from the substantive merits of competing claims.

9.1 Legibility as a resource-dependent capacity

A useful starting point is to distinguish an entity's condition from the capacity of an institutional field to render that condition legible. A capability deprivation, dependency relation, coercive constraint, ecological burden, or injury can exist without being richly represented in the dominant institutional vocabulary.

Conversely, a well-instrumented domain may produce fine-grained categories, longitudinal records, specialist expertise, and rapid procedural response.

Let $K_i(t)$ denote, in a deliberately schematic sense, the interpretive capacity available to participant or institution i at time t . Rather than treating K_i as a single scalar, it is more useful to regard it as a vector of materially supported capacities:

$$K_i(t) = (M_i, E_i, D_i, C_i, L_i, A_i, S_i)_t,$$

where M_i denotes measurement capacity, E_i expert labor, D_i data and documentary capacity, C_i computation and modeling, L_i legal and institutional translation, A_i access to relevant environments or participants, and S_i organizational persistence. The notation is analytical rather than metric: no assumption is made that these dimensions are commensurable or that they can be aggregated into a universal score.

The political-economic question is then not simply who has more resources in the abstract. It is who possesses the resources specifically required to make a condition visible in the forms recognized by consequential institutions. A corporation may have extensive economic resources but little credibility in one epistemic community. A small advocacy group may possess deep local knowledge but lack the technical or legal capacity to translate that knowledge into an accepted evidential format. A state agency may control administrative data while remaining unable to detect relations that its categories were not built to register. Material capacity and interpretive authority intersect, but they are not identical.

This distinction also prevents a crude economism. Money matters because it can purchase instruments, personnel, litigation, communication, storage, and continuity, but money is only one medium through which interpretive capacity is assembled. Trust, institutional access, linguistic competence, embodied familiarity, community memory, and control over physical or digital environments can be equally decisive.

9.2 The cost of producing ethical evidence

Ethical claims are often discussed as if the decisive question were whether the claim is true or justified. Yet before justification can be assessed, evidence must usually be produced in a recognizable form. That production has costs.

Consider a claim that a heterogeneous participant is being systematically constrained by an automated allocation system. Establishing the claim may require access to system logs, longitudinal data, technical expertise, counterfactual modeling, interviews, legal discovery, independent auditing, and preservation of version histories. A participant who can merely report an adverse experience does not enter the institutional process with the same evidential infrastructure as the actor that designed and operates the system.

The asymmetry is familiar in many ordinary domains. Employers may possess attendance records, productivity metrics, and legal departments while workers possess dispersed memories and informal accounts. Platforms may possess interaction histories and model telemetry while users see only interface outputs. States may possess registries, border records, and surveillance systems while displaced persons carry fragmented documents. Scientific institutions may possess instruments and analytic pipelines while affected communities possess situated observations that are difficult to translate into recognized evidence. These examples differ normatively, but they share a structural feature: evidence production is materially organized.

The concept of *evidential production cost* is therefore useful. Let $\kappa(e; \mathcal{I}_t)$ denote the practical cost of producing evidence e in a form admissible to institution $\mathcal{I}_t$. Again, the notation is not intended as a monetary metric. The cost may include time, money, technical expertise, translation, procedural burden, risk of retaliation, emotional labor, or access to controlled infrastructure.

Claim 9.2 (Unequal evidential burden). An institution can formally apply the same evidential standard to all participants while imposing radically unequal practical burdens if the material conditions required to satisfy that standard are unevenly distributed.

This point connects political economy to quotient and interface power. A standard can appear neutral while presupposing forms of documentation, temporal continuity, or technical access that some participants are far better positioned to provide. The injustice, where one exists, may therefore lie partly in the infrastructural prerequisites of admissibility rather than solely in the final decision.

9.3 Measurement infrastructures and selective resolution

Measurement is one of the clearest sites where material infrastructure shapes ethical resolution. Institutions can observe with high granularity only what they have built instruments to detect. This is true of physical sensors, administrative databases, psychological scales, ecological monitoring systems, platform telemetry, medical diagnostics, and machine-learning pipelines.

A domain with dense measurement infrastructure becomes capable of fine distinctions. A domain without such infrastructure remains coarse. This produces what may be called *selective ethical resolution*: some forms of harm, dependency, or capability loss can be represented with precision, while others remain vague, anecdotal, or institutionally unintelligible.

Selective resolution can create a recursive advantage. Once a problem is measurable, it attracts records, expertise, benchmarks, funding, and institutional routines. Those routines improve future measurability. Conditions that initially lack a measurement infrastructure can remain peripheral precisely because their evidential weakness is taken as evidence of lesser importance. This resembles the broader classificatory dynamics described by Bowker and Star and the administrative simplifications analyzed by Scott, but the concern here is specifically normative visibility: which conditions acquire enough representational resolution to support claims of injury, vulnerability, capability deprivation, or responsibility (Bowker and Star 2000; Scott 1998).

The problem is not solved by measuring everything. Measurement can distort, discipline, expose, and extract. Porter's account of objectivity and Power's analysis of audit are reminders that standardized verification practices can become institutional ends in themselves (Porter 1995; Power 1999). The analytical point is therefore not that high-resolution measurement is always superior. It is that differential measurement capacity can shape the distribution of ethical legibility and that the costs and effects of increasing resolution must themselves be examined.

9.4 Expertise, professional closure, and interpretive labor

Interpretation is labor. Someone must collect traces, maintain instruments, translate testimony, construct taxonomies, inspect anomalies, compare cases, preserve provenance, and explain findings in forms that institutions will accept. When this labor is scarce, expensive, credentialed, or concentrated, ethical legibility becomes dependent upon professional and organizational structures.

Expertise can protect against arbitrary judgment. Specialized knowledge is often indispensable when relations are technically complex or radically heterogeneous. Yet expertise can also create closure. A participant may become legible only through an expert vocabulary that the participant does not control. Experts can determine which questions are meaningful, which data are reliable, which temporal windows are relevant, and which interpretations are professionally admissible. The issue is not that expertise is illegitimate. It is that expert mediation is itself part of the legibility infrastructure and therefore a possible site of power.

This is especially important in heterogeneous relations. If only one side possesses the capacity to employ interpreters who understand the relevant architecture, biology, ecology, or communication protocol, then the field may acquire a technically sophisticated but asymmetrically produced account. Such sophistication should not be confused with neutrality.

The political economy of interpretive labor includes at least four questions:

1. Who can fund sustained interpretation rather than episodic attention?
2. Who can train or credential the experts recognized by consequential institutions?

3. Who controls the data and environments to which experts require access?
4. Who bears the cost when interpretation must be repeated, challenged, or translated across institutions?

These questions make clear why interpretive power cannot be analyzed solely at the level of discourse. The capacity to maintain a durable interpretation depends on labor markets, organizational budgets, professional institutions, and access regimes.

9.5 Computation and model-mediated legibility

In contemporary institutions, computation increasingly mediates which relations can be inspected at scale. Search, ranking, anomaly detection, simulation, prediction, language models, and statistical pipelines can extend interpretive capacity beyond what unaided human observers could sustain. This can improve ethical legibility, but it also creates new concentrations of infrastructural power.

A model does not simply reveal a pre-existing ethical landscape. It operates through selected inputs, target variables, labels, temporal windows, loss functions, benchmarks, and deployment contexts. These choices interact with the quotient and manifold structures developed in earlier sections. A system may be highly accurate with respect to its formal target while leaving a morally relevant dimension absent from the target space altogether.

Control over computation therefore matters in several ways. It affects who can process large archives, test counterfactuals, detect long-horizon patterns, build alternative models, reproduce institutional analyses, and challenge proprietary interpretations. Where one participant controls both the underlying environment and the model through which outsiders perceive it, interface capture and infrastructural capture can coincide.

The critical-data literature has documented many cases in which automated systems distribute opportunities and burdens while remaining difficult for affected persons to inspect or contest (Eubanks 2018; Benjamin 2019). The present framework adds a narrower question: how does unequal computational capacity affect the production of ethical legibility itself? A participant who cannot reproduce or interrogate the model may be forced to contest not only an adverse decision but the representation of the relation upon which the decision depends.

Remark 9.3 (Computation is not a privileged interpreter). Greater computational capacity can increase resolution, consistency, and scale. It does not by itself establish interpretive privilege. Model-mediated legibility remains dependent upon the units, distinctions, data, interfaces, and purposes through which the model is constructed and used.

9.6 Legal and procedural infrastructure

Ethical legibility becomes politically consequential when interpretations can enter procedures that allocate protection, liability, standing, compensation, access, or authority. Legal and administrative infrastructures therefore form a critical bridge between interpretation and material consequence.

The relevant resource is not simply access to law in the abstract. It includes the capacity to identify a legally recognizable claim, preserve admissible evidence, meet deadlines, navigate jurisdiction, retain counsel, finance expert testimony, survive procedural delay, and sustain appeals. A participant may be richly legible in a moral or scientific sense yet remain institutionally weak because its condition does not map onto a recognized cause of action or administrative category.

Conversely, actors with high procedural capacity can sometimes stabilize favorable interpretations by repeatedly reproducing them across venues. Legal categories, compliance standards, and administrative precedents can then reinforce the quotient structures through which future cases are read. This is one way material resources and classificatory power become recursively coupled.

The capability approach is useful here because it reminds us that formal availability and effective accessibility are distinct (Sen 1995; Nussbaum 2006). A nominally open complaint mechanism may

provide little effective interpretive capacity to a participant who lacks language access, documentary resources, technical expertise, or time. The same distinction should be applied to epistemic and classificatory institutions: formal contestability is not equivalent to effective contestability.

9.7 Platforms, access, and environmental control

Some of the most consequential interpretive infrastructures are controlled by actors who also structure the underlying relation. Platforms determine logging architectures, interface affordances, access permissions, identity systems, moderation categories, and retention policies. Employers determine workplace monitoring and reporting channels. States control many registries and borders. Laboratories and firms may control access to artificial agents, biological systems, or proprietary environments. In each case, control over the environment can become control over the traces from which outsiders reconstruct the relation.

This creates a particularly strong form of asymmetry when three capacities coincide:

$$\mathcal{P}_i(t) = (R_i, O_i, I_i)_t,$$

where R_i denotes substantial control over the relevant relation or environment, O_i control over observation and trace production, and I_i control over the interface through which those traces become intelligible to others. The notation does not imply that all three forms of control are total. It identifies a configuration in which the same actor can influence the world, the record of the world, and the representation of that record.

Definition 9.4 (Infrastructural epistemic concentration). Infrastructural epistemic concentration occurs when control over a consequential relational environment is substantially combined with control over the production, preservation, or interpretation of the evidence through which that environment becomes ethically legible.

This concentration does not prove misconduct. It identifies a structural reason for independent access, provenance, auditability, or plural interpretive capacity to become important.

9.8 Legibility capital and cumulative advantage

The preceding mechanisms suggest a form of cumulative advantage that may be described, cautiously, as *legibility capital*. The term does not denote a new universal commodity and should not be treated as directly analogous to financial capital. It names an accumulated stock of infrastructural advantages that makes an actor, category, or type of claim easier to render visible, credible, and consequential in future institutional settings.

Legibility capital can include recognized categories, standardized indicators, established expert communities, interoperable records, precedent, trusted institutions, procedural templates, and archived histories. Once accumulated, these resources lower the future cost of making similar claims intelligible. An unfamiliar entity or relation starts without them. Its harms may therefore require expensive interpretive construction before they can even enter existing procedures.

This cumulative pattern helps explain why familiarity can be institutionally reproduced. The familiar is not merely what observers have seen before. It is what institutions have already invested in making legible. Such investments create path dependence: established categories receive more cases, more cases justify more expertise, and expertise supports further institutionalization. Again, the point is not that path dependence is always unjust. Stable infrastructures can improve reliability and protection. The political-economic question concerns who benefits from inherited legibility capital and who must pay the cost of building an interpretive infrastructure from near zero.

Claim 9.5 (Cumulative legibility advantage). Where institutional recognition lowers the future cost of measurement, documentation, interpretation, and procedural uptake, ethical legibility can become cumulatively self-reinforcing across time.

This claim also clarifies why new heterogeneous entities create unusual governance problems. They may enter institutional fields with little or no accumulated legibility capital. Existing systems then face a choice between forcing the unfamiliar case into inherited categories or investing in new interpretive infrastructure.

9.9 Material deprivation as epistemic weakening

Material deprivation can therefore operate not only by reducing welfare or substantive options but by weakening a participant's capacity to make its condition recognizable. A participant without secure communication, documentation, translation, representation, or storage loses more than material convenience. It may lose the capacity to preserve a claim long enough for others to evaluate it.

This point connects ethical legibility to epistemic injustice without reducing one to the other. Fricker and Medina emphasize how credibility and hermeneutical resources are socially distributed (Fricker 2007; Medina 2013). The present argument adds that access to hermeneutical and testimonial resources is materially supported. Interpretive disadvantage can be reproduced through budgets, infrastructures, property rights, platform access, procedural costs, and control over archives.

In heterogeneous relations, this can be especially severe because the disadvantaged participant may already be difficult to interpret. Material weakness and epistemic difference can compound one another. A poorly understood participant with little access to independent infrastructure may be visible only through the systems of a more powerful counterpart.

The resulting problem is not solved by assuming that the weaker party's account is necessarily correct. The methodological requirement is to avoid confusing infrastructural weakness with evidential irrelevance.

9.10 The ambivalence of redistributing interpretive capacity

If unequal interpretive capacity can produce unequal ethical legibility, it may seem natural to conclude that interpretive capacity should simply be redistributed or maximized. That conclusion would be too quick.

More measurement can become surveillance. More documentation can expose vulnerable participants. More translation can destroy protective ambiguity. More interoperability can enable extraction. More expert access can displace local knowledge. More archival persistence can create durable risks. The aim therefore cannot be a universal maximization of legibility infrastructure.

A more defensible objective is to examine whether participants possess meaningful capacities to contest consequential interpretations, preserve relevant traces where preservation is justified, maintain appropriate opacity, and access alternative interpretive routes when dominant infrastructure is compromised. This is closer to infrastructural pluralism than to maximal transparency.

Remark 9.6 (No maximal-infrastructure principle). The claim that ethical legibility depends on material infrastructure does not imply that every domain should receive maximal measurement, documentation, computational analysis, or institutional attention. The relevant question is how interpretive capacity, opacity, risk, and contestability should be arranged for the relation and purpose at issue.

9.11 Toward a political economy of ethical legibility

The political economy of ethical legibility can now be stated more precisely. It concerns the distribution of material capacities required to produce, stabilize, challenge, preserve, and institutionalize interpretations that matter normatively. Those capacities include measurement systems, expert labor, data access, computation, legal translation, communication channels, archives, and organizational persistence. Their distribution influences which entities and relations receive fine-grained ethical resolution, which interpretations become credible, and which claims can survive long enough to produce institutional consequences.

This perspective also clarifies the relation among the paper's earlier forms of power. Material infrastructure does not sit beside classification, quotient, manifold, interface, archival, and boundary power as merely another item in a list. It helps sustain each of them. Classification systems require maintenance. Quotients require standards and databases. Interpretive manifolds require expertise and institutional memory. Interfaces require protocols and communication systems. Archives require storage and custody. Boundaries require administrative organizations capable of enforcing jurisdiction. Political-economic resources therefore condition the durability and reach of interpretive power.

At the same time, the relation is recursive. Legibility can alter material allocation. Once an entity is recognized as a rights-holder, protected species, insured patient, employee, consumer, refugee, victim, infrastructure provider, or regulated actor, resources and protections can move accordingly. Classification and material distribution are therefore intertwined.

This brings the argument to the next section. If ethical status is institutionally consequential, then categories such as person, property, worker, patient, animal, tool, victim, dependent, or protected entity do more than describe. They can organize flows of money, access, liability, protection, ownership, maintenance, and disposal. The next section examines this distributive function directly by treating ethical status as a resource-allocating classification.

10 Ethical Status as a Resource-Allocating Classification

The preceding section argued that ethical legibility has a political economy because measurement, interpretation, documentation, translation, and institutional uptake require material support. The converse relation is equally important. Once an entity, relation, or condition becomes ethically legible, the classification assigned to it can reorganize material flows. Categories such as person, patient, employee, consumer, dependent, protected species, victim, tool, property, infrastructure, or disposable resource are not merely descriptive vocabularies. In institutional settings they can affect access to care, legal standing, procedural voice, maintenance, compensation, ownership, repair, restriction, surveillance, and permissible disposal. Ethical status can therefore function as a resource-allocating classification.

This claim should not be confused with a theory according to which every material allocation is determined by moral status. Institutions allocate resources for many reasons, including efficiency, scarcity, convention, strategy, law, risk, political bargaining, and historical inheritance. Nor does the present argument assume that status categories are ontologically given. Consistent with the paper's broader framework, status is treated as a relationally real and institutionally consequential classification whose content, scope, and legitimacy remain open to contestation.

The central proposition of this section is therefore limited:

Proposition 10.1 (Status–allocation coupling). *Where an institution attaches materially consequential permissions, protections, burdens, or claims to a status classification, control over that classification can influence the distribution of resources and the effective possibilities available to the classified participant.*

The proposition concerns institutional consequences, not moral truth. A status may be unjustified yet materially powerful; conversely, a morally compelling claim may remain institutionally weak if no recognized status makes it actionable. This distinction is central to a political economy of ethical legibility.

10.1 From moral standing to institutional status

Philosophical discussions of moral standing often ask what kinds of beings deserve moral consideration and on what grounds. The resulting debates invoke sentience, interests, autonomy, rational agency, relationships, capabilities, vulnerability, or social recognition. Those debates remain indispensable, but they do not exhaust the institutional problem considered here. Even when a being is regarded as morally considerable, consequential institutions still require operational categories through which claims can be processed.

A useful distinction is therefore between *moral standing* as a philosophical or normative question and *institutional ethical status* as an administratively consequential classification. The latter may partially express the former, but the two are not identical. A being can be widely regarded as morally considerable while lacking legal standing, procedural representation, compensation mechanisms, or dedicated care infrastructure. Conversely, an institution may assign a protected or regulated status for reasons that do not amount to a comprehensive judgment about intrinsic moral worth.

The social-relational approach to robot moral consideration developed by Coeckelbergh already cautions against reducing moral consideration to a hidden intrinsic property of the artifact (Coeckelbergh 2010). The present analysis adds a political-economic question: once a relation or entity is institutionally classified in a particular way, what material consequences follow from that classification, and who controls the infrastructures through which those consequences are attached?

This question also follows the general lesson of classification studies. Bowker and Star show that classificatory systems become embedded in infrastructures and routines, while Fourcade and Healy emphasize that classifications can shape life chances rather than merely record them (Bowker and Star 2000; Fourcade and Healy 2013). Ethical status should therefore be examined not only as a proposition about what an entity *is*, but also as a position within a consequential institutional architecture.

10.2 Status as a bundle rather than a binary

The phrase “ethical status” can misleadingly suggest a binary variable: either an entity has status or it does not. Heterogeneous relations make that picture especially unhelpful. Different institutions may recognize different dimensions of an entity’s normative position, and those dimensions need not coincide.

Let a schematic status profile be represented as

$$\Sigma_i(t) = (P_i, C_i, V_i, R_i, L_i, M_i, X_i)_t,$$

where, for present purposes, P_i denotes eligibility for protection, C_i eligibility to make or have claims represented, V_i procedural voice, R_i access to remedy or repair, L_i liability or duty-bearing status, M_i maintenance or care entitlement, and X_i recognized capacity for exit, refusal, or continued existence. The notation is analytical rather than exhaustive. No assumption is made that these dimensions are commensurable or that they can be aggregated into a universal score.

This multidimensional representation matters because the same entity can occupy sharply different positions across dimensions. A nonhuman animal may receive protection from cruelty while lacking many forms of legal agency. A corporation can possess extensive legal capacities while lacking phenomenal vulnerability. An artificial system may be treated as a decision-making actor for operational purposes while remaining classified as property for ownership and disposal. A human being can possess formal rights yet lack effective access to remedy, representation, or exit. These examples differ in law and morality, but they demonstrate why ethical status should not be compressed into a single yes–no variable.

Claim 10.2 (Status dimensionality). Institutionally consequential ethical status is often better analyzed as a bundle of differentiated protections, powers, permissions, liabilities, and claims than as a single binary property.

This also prevents a recurrent conceptual error. Capacity to bear duties need not coincide with capacity to receive protection. Capacity to communicate a claim need not coincide with the normative importance of the underlying condition. Capacity to own property need not coincide with immunity from being owned. Treating these dimensions separately is especially important when institutions encounter heterogeneous entities for which familiar status bundles were not designed.

10.3 Status categories and distributive channels

A status classification becomes politically significant when it is coupled to distributive channels. These channels may allocate money, time, care, infrastructure, attention, legal remedies, technical maintenance,

physical space, computational resources, or protection from interference.

Consider several stylized classifications. A participant classified as a *patient* may gain access to diagnostic attention, confidentiality rules, treatment resources, and duties of care. A participant classified as an *employee* may become eligible for wages, workplace protections, insurance, or collective representation. A participant classified as a *consumer* may gain access to disclosure, refund, or product-safety mechanisms. A participant classified as *property* may instead be governed primarily through the rights of an owner. A participant classified as a *protected species* can attract habitat protections and conservation expenditures that would not follow merely from biological description. None of these examples implies that the associated institutions are normatively adequate. They illustrate how classifications can open or close distributive channels.

We may denote the institutionally available allocation bundle associated with status s in institutional field $\mathcal{I}_t$ as

$$\mathcal{A}(s; \mathcal{I}_t) = (\mathcal{R}_s, \mathcal{P}_s, \mathcal{V}_s, \mathcal{M}_s, \mathcal{B}_s)_t,$$

where $\mathcal{R}_s$ denotes material resources, $\mathcal{P}_s$ protections, $\mathcal{V}_s$ procedural access, $\mathcal{M}_s$ maintenance or care infrastructures, and $\mathcal{B}_s$ burdens, restrictions, or liabilities. The same named status can support different bundles in different institutional fields, so the notation should not be read as a universal semantic definition.

The political-economic significance of status lies partly in this coupling. Two entities with similar adverse conditions may receive different institutional responses because one is legible through a status that activates a mature allocation bundle while the other remains outside the relevant classificatory infrastructure. This is one mechanism through which legibility capital, discussed in Section 9, can become material advantage.

10.4 Status cliffs and threshold effects

Status systems often operate discontinuously. A small classificatory difference can produce a large difference in institutional consequence. Crossing a threshold can determine whether a participant is admitted to a procedure, receives protection, is eligible for compensation, or is treated as an object under another actor's control.

This can be described as a *status cliff*. Let two cases x and y be close with respect to many ethically relevant features, yet assigned to different institutional categories s_x and s_y . If the associated allocation bundles differ sharply,

$$\mathcal{A}(s_x; \mathcal{I}_t) \not\approx \mathcal{A}(s_y; \mathcal{I}_t),$$

then the institutional consequence is discontinuous even where the underlying relation is not. The notation does not imply that similarity can be measured on a single scale. It marks a mismatch between fine-grained relational variation and coarse institutional thresholds.

Status cliffs are sometimes unavoidable. Institutions require decision rules, and scarce resources often require eligibility boundaries. The problem is not discontinuity as such. The political question is how the threshold is constituted, what evidence is required to cross it, whose cases cluster near it, and whether the consequences of misclassification are reversible.

This point connects directly to quotient power. A quotient that suppresses differences on one side of a threshold can make heterogeneous cases appear institutionally equivalent, while a single preserved distinction separates them from cases on the other side. Where the allocation consequences are large, control over the quotient becomes control over access to resources.

10.5 The material consequences of being a tool, subject, or resource

Heterogeneous relations make the distributive consequences of status especially visible because familiar classifications are often unstable. Consider the contrast among *tool*, *subject*, and *resource*. These terms

are not mutually exclusive in ordinary language, and the paper does not propose them as exhaustive ontological kinds. Their importance lies in the practices they can authorize.

Classifying an artificial system as a tool may support broad permissions for modification, copying, suspension, deletion, or transfer. Classifying a biological entity as a resource may support ownership, extraction, breeding, confinement, or disposal under institutional rules that differ from those governing recognized persons. Classifying an entity as a subject of protection may instead trigger limits on use, duties of maintenance, preservation requirements, or procedures for representing interests.

The political-economic issue is therefore not only whether a status description is semantically accurate. It is what practical incidents are attached to the description. The label “tool” can be materially light in one setting and deeply consequential in another. A tool may be carefully maintained because it is valuable property. A protected subject may still be heavily controlled in the name of welfare. The analysis must therefore examine the status bundle and its associated allocation channels rather than infer consequences directly from a word.

Remark 10.3 (No semantic determinism). A status label does not determine its material consequences independently of the institutional field in which it operates. The relevant object of analysis is the coupling between classification, institutional rules, and resource allocation.

This qualification is important for avoiding an overly linguistic account of political economy. Words matter because institutions stabilize practices around them, not because vocabulary alone moves resources.

10.6 Recognition, capability, and effective possibility

The distributive effects of status can be connected to recognition and capability approaches without collapsing those traditions into classification theory. Honneth emphasizes the importance of relations of recognition for the development of practical self-relations and social freedom (Honneth 1996). Sen and Nussbaum shift evaluative attention toward substantive opportunities and capabilities rather than resources alone (Sen 1995; Nussbaum 2006). The present framework adds a narrower institutional question: how do status classifications condition access to the resources and procedures through which recognition and effective capabilities become possible?

Suppose an institution recognizes a participant as eligible to refuse, exit, appeal, or receive repair. The status does not itself create the participant’s substantive freedom. Yet it can alter the institutional environment in which that freedom is exercised. Conversely, a participant may possess substantial internal capacities while remaining unable to exercise them because the surrounding status system grants no recognized channel for refusal, representation, or remedy.

This is one reason to distinguish formal from effective status. Let Σ_i^{formal} denote the protections or powers assigned in official rules and $\Sigma_i^{\text{effective}}$ the subset that can realistically be exercised given access, cost, infrastructure, and dependency. Then

$$\Sigma_i^{\text{formal}} \neq \Sigma_i^{\text{effective}}$$

can hold even when the formal classification appears generous.

The distinction parallels the capability approach’s concern with conversion factors and substantive opportunity. It also links status analysis back to Section 9: legal recognition without interpretive or material infrastructure may produce nominal status without effective protection.

10.7 Recursive coupling between status and legibility

Status does not merely distribute resources after ethical legibility has been achieved. It can feed back into the infrastructures that determine future legibility. Once a category is recognized as institutionally important, organizations may build dedicated monitoring systems, expert communities, complaint channels, reporting standards, archives, and research programs around it. Recognition therefore can attract further interpretive capacity.

This creates a recursive coupling. A recognized status can lower the future cost of making similar claims legible; improved legibility can then stabilize the status further. Conversely, an entity classified as a mere object or non-claimant may receive little investment in translation, monitoring, or independent representation. Its weak legibility is then reproduced institutionally.

Claim 10.4 (Status–legibility reinforcement). Where recognized status attracts dedicated interpretive infrastructure, status classifications can contribute to cumulative differences in future ethical legibility.

This claim should not be read as a deterministic cycle. Institutions can deliberately invest in poorly understood populations or emerging harms before status is settled. Counter-classification movements can also force the construction of new infrastructures. The point is that status and legibility can reinforce one another and should therefore be analyzed jointly.

The mechanism helps explain why apparently neutral requests for “more evidence” can reproduce existing hierarchies. Established status categories often possess mature evidential infrastructures, while unfamiliar categories are asked to prove themselves without comparable support. The burden of generating the evidence needed for recognition falls most heavily on those who lack the status that would attract the resources needed to produce that evidence.

10.8 Status allocation and the risk of circular justification

The recursive coupling between status and infrastructure generates a risk of circular justification. An institution may reason that a category deserves fewer resources because there is little evidence of need, while the lack of evidence partly reflects the absence of resources devoted to measurement and interpretation. Similarly, a participant may be denied status because it lacks recognizable capabilities even though the institution has never built an interface capable of detecting those capabilities.

This can be expressed as a structural warning rather than a formal paradox:

Claim 10.5 (Legibility–status circularity). An institutional field risks circular exclusion when lack of recognized evidence is used to justify withholding a status whose associated infrastructures would materially improve the production or interpretation of that evidence.

The warning is especially relevant under heterogeneity because unfamiliar entities frequently begin with low legibility capital. It does not imply that institutions must grant full status before evidence exists. Rather, it supports intermediate strategies such as provisional protection, independent investigation, reversible classification, or investment in interpretive interfaces where the stakes justify such measures.

The appropriate response depends on context. The present framework does not supply a universal threshold. Its contribution is to expose the circular structure so that evidential weakness is not mistaken for evidence of normative irrelevance.

10.9 Protection can also allocate control

Status classifications that increase protection can simultaneously increase control. A participant classified as vulnerable may receive care, resources, or safeguards while also becoming subject to surveillance, guardianship, confinement, compulsory treatment, paternalistic restrictions, or exclusion from decision-making. A protected habitat can become administratively enclosed. A regulated technology can become accessible only through licensed institutions. A welfare classification can reorganize a person’s daily life in ways that are both supportive and constraining.

This ambivalence matters because a political economy of ethical status should not equate resource allocation with emancipation. The status bundle may contain both benefits and burdens. The same classification that opens one capability can close another.

Let

$$\mathcal{A}(s; \mathcal{I}_t) = (\mathcal{B}_s^+, \mathcal{B}_s^-)_t$$

represent, schematically, enabling and constraining consequences associated with status s . The notation is not a welfare calculus. It simply requires analysis to record both sides rather than treating a protective label as uniformly beneficial.

This is also why status reform cannot be reduced to moving entities upward on a presumed moral hierarchy. A richer status may expand care while also expanding administrative reach. The relevant questions concern the composition of the bundle, the participant's capacity to contest it, the reversibility of restrictions, and the distribution of decision authority.

10.10 Status portability and institutional fragmentation

An entity's recognized status can vary across institutions. A participant may be protected in one domain, treated as property in another, recognized as a claimant in one procedure, and rendered invisible in another. Such fragmentation is not necessarily incoherent because institutions pursue different purposes. Yet it creates practical problems when materially consequential classifications fail to travel across institutional boundaries.

Status portability refers here to the degree to which a status, protection, evidential record, or claim recognized in one field can be meaningfully carried into another. Portability can reduce repeated evidential burdens and protect continuity. It can also propagate a mistaken classification across domains and intensify lock-in.

Therefore, neither maximal portability nor maximal institutional separation is desirable in the abstract. A defensible arrangement may require selective portability: some protections travel, some classifications remain purpose-limited, and the provenance of the original status remains visible so later institutions can reassess it.

This issue connects status power to interface and archival power. Transfer across institutions requires interfaces, and transferred classifications acquire durability through records. A status that travels without its evidential history can become decontextualized; a status that cannot travel at all can force participants to repeatedly reconstruct their claims under new procedural burdens.

10.11 Contestability of status and allocation

If status categories allocate resources and burdens, then contestability must concern more than the semantic label. Participants should be able, where feasible and appropriate, to challenge at least four elements: the category assigned, the evidence used, the allocation bundle attached to the category, and the institutional boundary within which the category is operative.

This is a stronger requirement than an appeal mechanism that merely asks whether the existing rule was correctly applied. A participant may accept that it was correctly classified under the current rule while contesting the quotient, threshold, or status bundle itself. For example, the dispute may concern why one dimension of vulnerability is institutionally relevant while another is ignored, why a category permits unilateral modification, or why a protection status carries restrictions unrelated to the risk it was designed to address.

Contestability therefore links status politics to the paper's earlier layers. Classification can be challenged, quotient rules reopened, manifold assumptions exposed, interface translations disputed, archival provenance inspected, and governance boundaries reconsidered. The institutional challenge is to make such contestation possible without rendering every allocation perpetually indeterminate.

Proposition 10.6 (Status contestability). *Where status classifications have substantial distributive consequences, meaningful contestability should address not only category assignment but also the evidential, quotient, and institutional structures that connect the category to those consequences.*

This proposition remains procedural rather than a complete theory of justice. It does not specify which challenger should prevail or which status bundle is substantively correct.

10.12 Heterogeneous entities and provisional status

Radically heterogeneous entities create a special difficulty because institutions may need to act before the relevant status ontology is settled. An unfamiliar artificial agent, nonhuman form of life, collective intelligence, or hypothetical alien entity may not fit inherited distinctions such as person/property, agent/patient, individual/collective, or living/nonliving in the ways those distinctions were historically used.

The framework developed in this paper suggests caution against two opposite errors. The first is immediate assimilation: force the unfamiliar entity into the nearest existing category and inherit the entire allocation bundle attached to it. The second is institutional nullity: because the correct category is unknown, assign no protection, no representation, and no interpretive investment.

A possible intermediate device is *provisional status*: a purpose-limited, revisable classification designed to support specified protections or procedures without pretending that the entity's comprehensive normative status has been resolved. Provisional status might preserve a system from irreversible deletion while investigation proceeds, create a channel for representation without establishing full legal personhood, or restrict high-risk uses while leaving broader ontological questions open.

This is not proposed as a universal policy rule. Provisional classifications can themselves become sticky and may be manipulated strategically. Their value lies in separating urgent distributive decisions from premature claims of ontological finality.

10.13 Status politics without ontological finality

The political economy of ethical status can now be summarized without treating status as either mere rhetoric or metaphysical essence. Status classifications are relationally real when institutions attach consequential practices to them. They can allocate protection, care, voice, liability, ownership, maintenance, restriction, and access to remedy. They can also attract interpretive infrastructure, producing cumulative differences in future legibility.

Yet none of this establishes that the status is ontologically correct or normatively justified. A historically generated status can be powerful and unjust. A provisional status can be useful and misleading. A protective status can enable and constrain at the same time. A formally generous status can remain practically empty without material infrastructure.

The central political-economic insight is therefore not that classification replaces distribution. It is that classification can become one of the infrastructures through which distribution is organized. Ethical status matters politically when it determines who receives resources, whose claims become institutionally actionable, what forms of control are permitted, and which kinds of future legibility receive investment.

This conclusion prepares the next stage of the paper. If status classifications and interpretive infrastructures can reproduce unequal ethical legibility, then contestation cannot be limited to requesting a different label within the dominant system. Political actors may construct counter-classifications, alternative quotients, counter-archives, independent interfaces, and even alternative interpretive manifolds. The next section examines these practices as forms of counter-legibility and asks when they resist domination, when they create new exclusions, and how their claims can remain contestable rather than becoming a new closed orthodoxy.

11 Counter-Classification, Counter-Manifolds, and Contestation

The preceding sections have treated ethical legibility as an infrastructurally produced and politically consequential relation. Classification, quotienting, interpretive manifolds, interfaces, archives, governance boundaries, material infrastructures, and status allocations can each shape what becomes ethically visible and what consequences follow from that visibility. If this diagnosis is correct, resistance to classificatory power cannot be reduced to replacing one label with another. A contested label may be only the most visible surface of a deeper interpretive architecture. Changing the label while leaving the relevant

quotient, unit of analysis, evidential protocol, archive, institutional boundary, and resource distribution unchanged may leave the underlying asymmetry largely intact.

This section develops a layered account of contestation. It distinguishes challenges to classifications and quotients from counter-manifold formation, interface contestation, counter-archiving, boundary contestation, and counter-infrastructural work. The term *counter* is used cautiously. It does not imply that every oppositional category is emancipatory, that every official category is oppressive, or that dominated actors possess epistemic privilege by definition. Nor does it imply that interpretive worlds can be designed at will. A counter-manifold, for example, is not an arbitrarily invented conceptual universe. It is a historically generated alternative configuration of units, distinctions, temporal scales, concepts, and evidential practices through which previously obscured relations can become legible in a different way.

The normative point is therefore limited. Where ethical legibility is structured by layered infrastructures, meaningful contestation may need to address the layer at which exclusion, distortion, or closure is produced. Sometimes this means disputing a label. In other cases it means challenging the comparison rule that made the label plausible, the dimensions that were available for comparison, the interface that admitted evidence, the archive that preserved only selected traces, or the material infrastructure that made one side's interpretation institutionally actionable while another remained weak.

Definition 11.1 (Layered contestation). Layered contestation is the attempt to challenge, revise, supplement, or replace one or more components of the infrastructural configuration through which an entity, relation, or condition becomes ethically legible and institutionally consequential.

This definition is descriptive rather than justificatory. A contestation can be strategic, mistaken, exclusionary, or itself dominating. The purpose of the framework is to identify where contestation occurs and what capacities it requires before asking whether a particular counter-practice is justified.

11.1 Counter-classification and the limits of relabeling

The most familiar form of contestation targets an explicit category. An actor rejects a classification such as *tool*, *deviant*, *dependent*, *dangerous*, *incapable*, *non-compliant*, or *resource* and proposes another category. Such struggles are politically important because institutional labels can organize treatment, eligibility, surveillance, compensation, and voice. Classification studies have long shown that categories embedded in infrastructures can affect life chances and institutional possibilities (Bowker and Star 2000; Fourcade and Healy 2013). Hacking's account of classificatory looping also demonstrates that classifications can interact with the people classified rather than simply describe them from a distance (Hacking 1996).

Yet relabeling can be insufficient. Suppose a relation is officially classified as voluntary cooperation rather than exploitation. An affected participant may contest that label and request a classification of coercion. If the institution's evidential framework recognizes only explicit commands and signed agreements, however, the deeper relation between dependency, effective exit, resource control, and long-term constraint may remain unavailable to institutional interpretation. A new label cannot do much work if the interpretive infrastructure lacks the dimensions needed to support it.

The same problem appears when a category is changed but its allocation bundle remains intact. A participant may be renamed from *object* to *stakeholder* while retaining no effective voice, no access to records, no means of contesting measurement, and no independent representation. The semantic change can be real yet politically shallow. Conversely, an institution can materially transform protections and procedures without adopting the vocabulary preferred by a movement. Label change and infrastructural change are therefore analytically separable.

Claim 11.2 (Relabeling insufficiency). Where an adverse classificatory outcome is generated by deeper quotient, manifold, interface, archival, boundary, or infrastructural conditions, replacement of the final label alone may leave the principal source of ethical illegibility unchanged.

This claim should not be interpreted as downgrading symbolic struggles. Names matter, especially when they organize recognition, collective identity, and institutional access. The point is instead that

symbolic contestation may need support from deeper transformations if the practical consequences of classification are to change.

11.2 Counter-quotients and the restoration of relevant difference

Quotient power concerns which available differences are treated as relevant and which are collapsed for a particular institutional purpose. Counter-quotienting therefore challenges the rule of equivalence itself. It asks whether cases that have been grouped together should remain equivalent for the purpose at issue, or whether a suppressed difference should be restored to institutional attention.

A familiar pattern is the challenge to a formally uniform rule that produces unequal consequences because it ignores dependency, disability, temporal burden, structural vulnerability, ecological context, or effective alternatives. The counter-claim does not necessarily reject classification altogether. It argues that the existing quotient is too coarse for the purpose for which it is being used.

Let a quotient rule for institutional purpose p be denoted by Q_t^p . A counter-quotient proposal can be represented as an alternative $\tilde{Q}_t^p$ under which at least one previously suppressed distinction becomes institutionally relevant. No presumption follows that $\tilde{Q}_t^p$ is superior. Its justification depends on the purpose, evidence, costs, and consequences of the additional distinction.

The capability approach provides one important neighboring intuition. Equal resources do not imply equal effective opportunities when persons differ in conversion conditions, social arrangements, and embodied circumstances (Sen 1995; Nussbaum 2006). In the present framework, this can be understood partly as a challenge to coarse-graining: an evaluative structure that treats resource equality as sufficient may suppress differences relevant to effective capability. The point extends beyond human welfare. A heterogeneous participant can appear adequately treated only because the institution uses a quotient calibrated to another form of life or another mode of agency.

Counter-quotienting also carries risks. Every additional distinction increases informational and administrative burden. Fine-grained differentiation can become a vehicle for surveillance, profiling, or discriminatory sorting. A movement that successfully persuades an institution to recognize one previously erased difference may inadvertently generate a new data demand that exposes participants to control. The normative task is therefore not to maximize differentiation but to ask which distinctions should matter for a specified purpose, who bears the cost of making them legible, and what protections accompany their institutionalization.

11.3 Counter-manifolds and alternative spaces of interpretation

More demanding contestation occurs when the problem is not merely that an existing distinction has been suppressed, but that the relevant distinction is not institutionally available in the first place. In such cases a movement, professional community, affected group, or emergent relational system may develop concepts, units of analysis, temporal scales, and evidential practices that make a previously obscure phenomenon intelligible.

This section uses the term *counter-manifold* for such cases, but only in a restricted analytical sense.

Definition 11.3 (Counter-manifold). A counter-manifold is a historically generated alternative configuration of interpretive units, distinctions, temporal resolutions, concepts, and evidential practices that makes relations legible in ways unavailable or systematically weakened within a dominant interpretive configuration.

The definition does not imply total conceptual incommensurability. Most counter-manifolds will overlap substantially with existing interpretive resources. Nor does it imply that a social group can freely create any interpretive structure it wishes. New distinctions require practices, evidence, language, institutional support, and often sustained interaction with the phenomena being interpreted. The manifold metaphor remains an analytical scaffold rather than a literal claim about smooth geometric structure.

The relation to epistemic-injustice literature is especially close. Fricker's account of hermeneutical injustice concerns structural disadvantages in making important social experiences intelligible through

shared interpretive resources, while Medina emphasizes resistance, plural perspectives, and epistemic friction (Fricker 2007; Medina 2013). The present framework does not claim to discover this problem anew. Its narrower extension is to connect interpretive-resource struggles to the layered political economy developed in the preceding sections: units of analysis, quotient structures, interfaces, archives, computation, institutional procedures, and material support can all condition whether an alternative interpretive space becomes practically sustainable.

A counter-manifold may, for example, replace an individual episode as the basic unit of analysis with a long-duration relational trajectory. It may introduce effective exit rather than formal permission as a relevant dimension. It may treat repeated low-intensity modifications as cumulative rather than independent events. It may recognize an ecological collective, distributed artificial system, or interdependent assemblage as an ethically relevant unit where a dominant system recognizes only discrete individuals. These moves are not merely new labels. They change what can become an object of ethical comparison.

Proposition 11.4 (Manifold-level contestation). *When a contested harm, dependency, capability, or claim cannot be adequately represented using the units, dimensions, temporal scales, and conceptual resources available in a dominant interpretive configuration, effective contestation may require changes to that configuration rather than only changes to the final classification.*

Again, no presumption of correctness follows. Counter-manifolds can erase differences, romanticize identities, stabilize new orthodoxies, or become exclusionary. Their epistemic and normative quality remains contestable.

11.4 Counter-interfaces and the politics of translation

Where heterogeneous participants rely on an interface for communication or institutional representation, contestation may target the interface itself. An official translator, reporting format, model, risk score, expert intermediary, or technical protocol can determine which signals become admissible and how they are transformed. A participant may therefore challenge not merely the output of an interface but its admissibility rules, translation assumptions, temporal resolution, or representation burden.

A *counter-interface* is an alternative mediation structure designed to preserve distinctions or forms of expression lost by the dominant interface. It might permit additional evidential formats, support independent translation, enable direct access to underlying logs, create multiple representational pathways, or allow participants to contest how their signals are mapped into institutional categories.

The central issue is not maximal interoperability. Section 6 argued that some opacity and non-translation can be legitimate. Counter-interface design therefore has to balance accessibility against extraction. An interface that makes a participant more institutionally legible can simultaneously expose that participant to monitoring, prediction, or control. The political question concerns who controls the interface, who can inspect or challenge its transformations, and whether alternative routes remain available.

This suggests a useful distinction between *counter-speech* and *counter-interface*. Counter-speech operates within an accepted channel to dispute an interpretation. A counter-interface challenges the channel through which interpretation is produced. The latter is often more resource-intensive because it can require technical expertise, infrastructure, institutional access, and long-term maintenance.

11.5 Counter-archives and struggles over historical legibility

Archival power creates a temporal dimension of contestation. Where an official archive preserves only institutionally recognized classifications, excluded traces can disappear before alternative concepts emerge. Counter-archiving attempts to preserve materials, provenance, testimonies, revisions, and contextual information that dominant archival systems ignore, compress, or delete.

The political significance of counter-archives is not simply that they offer a rival narrative. They can preserve the evidential conditions under which future narratives remain possible. This is particularly

important where current interpretive resources are inadequate. A trace that appears irrelevant today may become central under a later quotient or interpretive manifold.

Counter-archives therefore interact closely with re-cognizability. They may preserve rawer measurements, minority reports, failed translations, dissenting classifications, contextual metadata, or version histories that official systems treat as redundant. Bowker and Star's work on classification and infrastructure already demonstrates that categories and standards have historical depth and often render some experiences visible while obscuring others (Bowker and Star 2000). The present argument adds a temporal power question: which actors possess the material capacity to preserve an alternative record long enough for future reinterpretation to become possible?

Counter-archives also face risks. Alternative archives can reproduce privacy violations, expose vulnerable participants, stabilize unverified allegations, or create new forms of surveillance. Preservation is therefore not a supreme norm. The important design question is how to maintain future interpretive possibility while respecting legitimate deletion, confidentiality, and protected opacity.

11.6 Counter-boundaries and contests over governance scope

Section 8 argued that governance depends upon problem boundaries. An institution must decide which relations, consequences, participants, and shared conditions belong within a governance domain. Contestation can therefore challenge not only what an institution decides but the scope of what it claims authority to decide.

Counter-boundary claims take at least two directions. One seeks inclusion: an affected relation or externalized consequence has been excluded from the recognized problem. The other seeks limitation: an institution has expanded jurisdiction beyond the shared condition that originally justified collective governance. These directions should not be conflated. Political resistance can demand that a previously invisible externality be counted while simultaneously defending protected locality against comprehensive institutional inspection.

This duality is especially important in heterogeneous relations. A regulator may need sufficient access to address a shared ecological or infrastructural risk without acquiring total authority over the internal normative life of all participants. Conversely, a powerful actor may define a dispute as a private relation in order to exclude effects borne by others. Counter-boundary contestation asks whether the current line between local autonomy and shared governance tracks the relevant relational footprint or primarily reflects existing power.

The existence of a counter-boundary claim does not settle jurisdiction. Boundary contestation is itself a normative and evidential dispute. But making the boundary contestable prevents jurisdictional scope from being treated as a neutral fact.

11.7 Counter-infrastructures and the material conditions of resistance

The deepest forms of contestation require material support. Alternative concepts cannot become institutionally consequential if no one can collect evidence, maintain records, translate signals, sustain expert labor, provide legal representation, or preserve access to the relevant systems. Counter-power therefore has an infrastructural dimension.

A *counter-infrastructure* is a material and organizational arrangement that supports an alternative capacity for interpretation, evidence production, contestation, or institutional action. It may include independent measurement systems, legal clinics, community archives, alternative technical standards, open interfaces, audit capacity, advocacy organizations, research networks, or collectively maintained repositories. The term is intentionally broad because the material requirements of ethical legibility vary across domains.

This is where the political economy developed in Section 9 becomes central. Actors with abundant resources can sustain interpretive capacity over long periods. Actors with little capital, expertise, legal access, or organizational persistence may be able to articulate an alternative interpretation but unable to

keep it institutionally alive. The difference between a fleeting objection and a durable counter-public can therefore be partly infrastructural.

We may represent a contestation-support profile for actor or coalition g as

$$\mathcal{K}_g(t) = (K_g^{\text{evidence}}, K_g^{\text{expertise}}, K_g^{\text{archive}}, K_g^{\text{interface}}, K_g^{\text{legal}}, K_g^{\text{organization}}, K_g^{\text{persistence}})_t.$$

The components are not commensurable and should not be aggregated into a single score. The representation simply records that contestability depends on more than formal permission to object. A participant can possess a nominal right to challenge a classification while lacking the evidence, expertise, records, translation infrastructure, legal support, or organizational continuity required to make the challenge effective.

This gives a political-economic interpretation of epistemic resistance. Medina's emphasis on epistemic resistance and friction concerns the capacity to challenge dominant interpretive habits and epistemic structures (Medina 2013). The present framework adds that such resistance can itself require scarce material infrastructures. Unequal distribution of contestation capacity can therefore reproduce ethical-legibility asymmetry even when an institution formally permits dissent.

11.8 Layer matching and the cost of contestation

Because power operates at multiple layers, contestation can fail by targeting the wrong layer. A participant may repeatedly dispute a category when the decisive exclusion occurs in the evidential interface. A movement may secure a new legal status while the archive required to establish eligibility remains inaccessible. An institution may create an appeals process while retaining a quotient that systematically suppresses the distinctions on which successful appeal would depend.

This motivates a diagnostic principle.

Proposition 11.5 (Layer matching). *Where an ethically consequential exclusion or distortion is produced primarily at a particular infrastructural layer, contestation directed only at downstream outputs may have limited capacity to alter the underlying legibility configuration.*

The proposition does not imply that one layer is always primary or that resistance should proceed in a fixed sequence. Classification, quotients, manifolds, interfaces, archives, boundaries, and material infrastructures are coupled. Changes at one layer can alter the relevance of others. The point is diagnostic: analysis should identify where the contested asymmetry is generated rather than assuming that visible labels are the only meaningful target.

Layer matching also has a cost dimension. Contesting a label may require speech and advocacy. Contesting a quotient may require comparative evidence. Contesting an interpretive manifold may require new concepts, research programs, and institutional learning. Building a counter-interface or counter-archive can require substantial technical and financial resources. Constructing counter-infrastructure can require durable organization. Thus the depth of contestation often increases the material burden of resistance.

This burden can itself become a source of domination. Powerful institutions can demand that challengers prove not only that an outcome is wrong but that the entire interpretive architecture should be revised. The requirement to contest at a deeper layer can therefore shift epistemic and material costs onto already disadvantaged participants. A defensible institution should not treat infrastructural depth as a reason to make correction impossible.

11.9 Contestability as a second-order institutional capacity

The framework developed so far suggests that institutions should be evaluated not only by the classifications they produce but also by whether those classifications and their supporting infrastructures can be challenged. This can be described as a second-order capacity for contestation.

Contestability is more demanding than transparency. An institution can publish its categories and still make them practically impossible to challenge. Effective contestability may require access to underlying evidence, intelligible reasons, alternative evidential routes, representation, revision procedures, preservation of dissent, and limits on retaliation. These conditions differ across domains, and the present paper does not propose a universal checklist.

Nor should contestability be treated as an absolute norm. Emergency coordination, privacy protection, technical security, and resource constraints can limit participation or disclosure. Some decisions require temporary closure. The stronger claim is that where an interpretive infrastructure has durable consequences for status, protection, allocation, or governance, the distribution of capacity to contest that infrastructure becomes politically significant.

Claim 11.6 (Second-order legibility). An institution's ethical-legibility architecture is itself an object of ethical and political legibility: participants may need to know not only how they are classified, but how units, distinctions, evidence, interfaces, archives, and jurisdictional boundaries shape that classification.

This second-order perspective is especially relevant to heterogeneous relations. A participant may be unable to contest a substantive judgment because it cannot first identify which interpretive transformation produced the judgment. Making mediation inspectable can therefore be a precondition for meaningful challenge, even where full disclosure is neither possible nor desirable.

11.10 Capture, co-optation, and the ambivalence of counter-power

Counter-power should not be romanticized. Alternative classifications can become rigid, and counter-manifolds can establish new exclusions. Community archives can become surveillance infrastructures, while alternative interfaces can be captured by gatekeepers. Counter-boundary claims can externalize costs onto unrepresented actors. A movement that gains institutional recognition can also acquire incentives to stabilize categories that once functioned as provisional tools of resistance.

This ambivalence follows from the paper's general commitment to relational analysis. No classification is emancipatory merely because it originates outside a dominant institution. No decentralization is just merely because authority is distributed. No opacity is protective in every context. No increase in legibility is inherently liberating. The relevant questions concern how a counter-practice is generated, whose interpretations it enables, which differences it suppresses, what material interests it serves, who can challenge it, and what future possibilities it preserves or forecloses.

Foucault's analyses of power are useful precisely because they discourage a picture in which power is held only at a single center and resistance simply stands outside it (Foucault 1977; Foucault 2007). A counter-infrastructure becomes part of the relational field in which new forms of normalization, expertise, and allocation can emerge. This is not a reason for paralysis. It is a reason to keep counter-power itself contestable.

11.11 Heterogeneous stress tests

The heterogeneous cases motivating the paper clarify why layered contestation matters. In an artificial-artificial relation, one system may control the logs, interface, and model outputs through which the other becomes legible to human institutions. A challenge to the final classification may be ineffective unless independent access to traces or an alternative interface exists. In an artificial-animal relation, the institution may possess rich behavioral and veterinary vocabularies for the animal but only performance metrics for the artificial system. Contestation may require a different comparison architecture rather than symmetrical use of existing categories.

In an animal-alien relation, human institutions may interpret the entire relation through the well-developed manifold associated with terrestrial biology. A counter-manifold would not mean inventing arbitrary alien categories. It would mean preserving anomalies, resisting premature quotienting, testing alternative units and temporal scales, and maintaining enough interpretive openness for unfamiliar functional relations to become investigable. In an alien-alien case, the most important counter-practice may

initially be archival and procedural rather than classificatory: preserve traces, version interpretations, prevent one provisional human category from becoming irreversible, and maintain multiple hypotheses where the normative object itself remains uncertain.

These cases reinforce a central lesson. Contestation under radical heterogeneity may concern not only who is right within an accepted ethical vocabulary, but whether the vocabulary, unit of analysis, evidence format, temporal resolution, and governance boundary are adequate to the relation at all.

11.12 Toward resistance to epistemic closure

The forms of contestation examined in this section share a temporal concern. A dominant category can be challenged today, but the deeper political question is whether present infrastructures preserve the possibility of challenge tomorrow. Counter-classification without archival support can disappear. A counter-manifold without institutional continuity can become historically unintelligible. An alternative interface without maintained standards can become unusable. A dissenting interpretation stored only in a proprietary system can vanish when access ends.

This suggests that resistance to ethical-legibility power has both synchronic and diachronic dimensions. Synchronic contestation concerns current classifications, quotients, manifolds, interfaces, boundaries, and allocations. Diachronic contestation concerns whether the traces, provenance, alternatives, and institutional memory required for future re-cognition remain available.

The next section therefore turns from counter-power in the present to *re-cognizability and resistance to epistemic closure*. The central question is not whether every classification should remain perpetually unsettled. Institutions require temporary stabilization in order to act. The question is whether practical closure is designed in a way that unnecessarily destroys the conditions under which future participants could discover that the present interpretive configuration was incomplete, distorted, or unjust.

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