

Generativity Exploitation: A Baseline-Relative Capability Framework

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Abstract

Knowledge, language, practical judgment, and creative organization can be used without being depleted, while the conditions for developing and exercising them remain scarce, controlled, or revocable. A participant can therefore retain a method, a language, or a latent organization in full while losing effective opportunity to initiate, continue, redirect, or expand it. This asymmetry between retention and foreclosure is invisible to appropriation models built on depletion, and it is the phenomenon this paper addresses. The paper proceeds in four registers. It first analyzes why non-rivalry in generative forms coexists with rival, congestible, excludable, and positional scarcity in their realization conditions. It then locates the proposal among production-centered, transactional, degradation-centered, domination-centered, and structural accounts of exploitation, treating them as rival constraints rather than as a consensus. It develops the capability object philosophically through real opportunity, relationally constituted autonomy, epistemic standing, and the externalization of knowledge into technical systems. It describes the political-economic mechanisms through which control of realization conditions operates, including rentiership, platform bottlenecks, and contributed input without corresponding return, and it separates the distinct actor positions that an artificial-intelligence configuration collapses. On this basis the paper proposes a limited diagnostic for relations in which one party's advantage is produced or sustained through a material reconfiguration of another party's effective generative capability. The primary capability object is a reachable viable repertoire over a declared domain, history, horizon, resolution, action set, and arrangement. An enriched profile adds autonomy, direction, attribution, continuity, or exit only when those dimensions are independently defined. The diagnostic then requires an independently admissible comparison arrangement, participant standing, an actor-linked capability-changing relation, a material capability disadvantage, and a typed benefit-through witness. Causal and constitutive witnesses are separated, and the complete result is a three-valued profile that retains admitted, excluded, and unresolved baselines rather than an unqualified binary verdict. One conditional proposition proves repertoire inclusion under policy expansion, preserved transition probabilities, and expanded viability. Countermodels show that latent generativity can remain fixed while capability contracts, that equal output can coexist with reduced autonomy, that coincident loss and gain can lack a benefit-through path, and that classification can vary across admissible baselines. The framework establishes no prevalence, wrongfulness, liability, remedy, or universal metric, and it makes no empirical claim about any named firm, platform, or industry. It leaves propagation, cycles, recovery, accumulation, legal translation, and identification from finite traces to companion work. Its contribution is a revisable dependency structure that exposes where a proposed diagnosis is supported, relatively rejected, baseline-sensitive, or unresolved.

Keywords: generativity exploitation; capability; feasible comparison; causal mediation; realization conditions; rentiership; structural advantage; non-rival knowledge.

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Status and correspondence. This paper is a revisable discussion document. Its definitions are proposals, its mathematical results are conditional on declared assumptions, and its empirical and normative bridges remain open. Objections, counterexamples, corrections, alternative formulations, and relevant literature are welcome at huangwanhong@serendip.ngo.

Generative AI use. Generative AI systems were used in the preparation of this work. Anthropic’s Claude and OpenAI systems including ChatGPT and Codex supported exploratory discussion, formal reconstruction, source discovery followed by verification, and drafting in L^AT_EX. The author determined the research questions, theoretical commitments, and epistemic status of the claims and bears sole responsibility for the manuscript, including its errors. None of these systems is an author or holds authorship credit.

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1 Introduction

Knowledge, language, practical judgment, and creative organization can be used without being consumed. One person’s use of a method leaves it available to another, and one person’s learning of a language removes nothing from anyone else. The conditions under which such forms are developed and exercised behave differently. Time, funding, collaborators, recognition, institutional permission, tools, infrastructure, priority, and channels of distribution are scarce in several distinct ways, and they are frequently controlled by parties other than those whose capability depends on them.

This asymmetry produces a situation that ordinary models of appropriation do not describe. A participant can retain a method, a language, or a latent organization in full while losing effective opportunity to initiate, continue, redirect, or expand it. Nothing was taken in the sense that anything is missing. What contracted is the set of futures reachable from that participant’s actual position. A better-resourced party may occupy a recognized trajectory first; a controller may open infrastructure, induce reliance, and then close it; a capability assembled from broadly distributed contribution may be realized at scale under narrow control. In each case the affected participant possesses everything it possessed before, and can do less with it.

This paper asks when such a situation warrants a distinctive diagnosis. The question has a boundary problem at its center. Competition lowers a rival’s prospects; harm damages capacity; domination subjects a party to another’s arbitrary power; displacement moves activity elsewhere; ordinary reciprocal dependence constrains everyone. If generativity exploitation names something, it must be separable from all of these, and the separation must be drawn in a way that can return a negative verdict rather than absorbing every unfavorable relation.

The paper’s response is a diagnostic with five conditions and a three-valued report. A relation becomes a candidate instance when a participant with relevant standing suffers a material disadvantage in effective generative capability through an actor-linked relation, and a beneficiary’s specified advantage is produced or sustained through that same affected position. Each condition is evaluated against an independently admissible comparison arrangement, and the complete result retains every admitted, excluded, and unresolved comparison rather than collapsing into a verdict.

Four insights organize the argument and are stated here so that a reader can locate them. The first concerns register: the loss in these situations is representable only at the level of real opportunity, since possession is unchanged and output may be unchanged or temporarily raised. The second concerns what makes generative capability distinctive among capabilities. Its exercise alters capability sets, so trajectories branch and a contraction forecloses not only the excluded trajectories but every continuation they would have made reachable; this is why the formal object is a set of paths over a horizon rather than a quantity, and why later restoration does not restore the position. The third concerns standing, and resolves a paradox that would otherwise defeat the proposal. If a capability was assembled from the contribution of nearly everyone, a contribution-based standing rule makes nearly everyone a participant, and the category loses its contrast class. The paradox equivocates: causal contribution is a historical fact admitting no threshold, while standing is a normative status tracking who stands to lose. Standing is therefore constituted by sustained participation together with reliance, which is compatible with universal contribution and differentiates among contributors. The fourth concerns what follows from a positive finding. When a beneficiary’s advantage runs through an affected participant’s diminished position, the beneficiary holds a standing interest in that diminution regardless of intent, and that structural interest calls for justification. The finding therefore shifts a burden without settling wrongfulness all things considered.

The paper’s contribution is a dependency structure rather than a verdict procedure. It supplies a vocabulary in which a proposed diagnosis can be shown to be supported, relatively rejected,

baseline-sensitive, or unresolved, and it makes explicit which evidential and normative obligation each status rests on. Its most useful output in practice may often be an explicit unresolved profile, which records where standing, comparison, measurement, or causal evidence is missing and thereby converts a broad accusation into a specific research demand. The paper establishes no prevalence, no wrongfulness verdict, no liability, no remedy, and no universal metric, and it classifies no observed relation.

The argument proceeds in nine further sections. Section 3 analyzes why depletion-based models fail and derives the requirements a replacement must satisfy. Section 4 reviews exploitation traditions as rival constraints. Section 5 argues the theses just summarized. Section 6 describes the political-economic mechanisms through which control of realization conditions operates. Sections 7 and 8 construct the capability object and the diagnostic. Section 9 tests both against countermodels. Section 10 states the empirical protocol, Section 11 collects open questions by register, and Section 12 states limitations and defeat conditions.

The philosophical and formal parts stand in two distinct relations, and conflating them causes avoidable confusion. They are *formally independent*: every proposition in Sections 7 through 9 follows from declared model assumptions, and no derivation cites a thesis. A reader may verify each proof while rejecting every philosophical argument. They are *justificatorily dependent*: the formal construction is a schema, and its claim to be worth constructing rests on the theses. Section 5.9 records what fails if each is rejected.

2 Research Scope and Diagnostic Position

This section defines the paper’s target, limited thesis, and order of inquiry. It begins from three motivating configurations, identifies the relational object under study, and separates the proposed diagnostic from empirical, moral, and legal conclusions.

2.1 Three Motivating Configurations

This subsection presents the situations that generate the research question. Each is stated schematically. None is classified by this paper, and none is offered as an empirical description of a particular person, firm, or industry.

Priority and funding asymmetry. One participant originates a line of work and continues to possess it in full. A better-resourced participant learns it, obtains the time, funding, collaborators, and institutional permission required to realize it, publishes or deploys it first, and occupies the recognized trajectory. The originator loses nothing that can be inventoried. What contracts is the set of futures in which the originator can still develop that work: the priority is taken, the funding is allocated, the collaborators are committed, and the recognized position is filled.

Open access followed by enclosure. A controller develops a method and the infrastructure required to run it, then opens both. Others learn the method, specialize their practices around it, invest in complementary skills, and build trajectories that depend on continued access. The controller subsequently closes access, restricts it, or reprices it. The method remains known to everyone who learned it. The capability to continue along the trajectories built around it contracts sharply, and it contracts most for those who specialized most.

Distributed contribution with concentrated control. A capability is produced historically through broadly distributed linguistic, practical, and relational contribution. The infrastructure that realizes that capability at scale is controlled narrowly. If nearly everyone contributed to the field from which the capability was assembled, then either nearly everyone stands in an exploited relation to its controllers, or the category of exploitation dissolves for lack of a contrast class. Both conclusions are unsatisfactory, and the tension is a reason to examine the concept rather than to apply it.

2.2 Working Premise and Conceptual Target

This subsection states the premise the paper adopts and identifies the relation it proposes to diagnose.

This paper adopts the working premise that language, knowledge, concepts, research practices, and many creative forms can be non-rival in use: one person’s use need not remove another person’s possession. The premise is domain-sensitive and receives no general proof here. Their realization nevertheless depends on time, education, collaborators, recognition, institutional permission, tools, finance, infrastructure, channels, and practical control. A person can therefore retain a language, method, or latent organization while losing effective opportunities to initiate, continue, redirect, or expand it. Resource depletion supplies an inadequate model for this relation.

The present proposal uses *generativity exploitation* to name a possible political-economic relation centered on this difference. Its conceptual development revised several early formulations. Origination, copying, common genesis, control of conditions, interruption, and intention were each rejected as a complete essence. Capability loss alone was judged insufficient, as was the coincidence of one party’s loss with another party’s gain. The surviving idea places a benefit path through the affected party’s capability position at the center of the diagnosis.

Definition 2.1 (Generativity). Generativity in a declared domain is a historically and relationally conditioned organization capable, under suitable realization conditions, of supporting a repertoire of transformations or trajectories. It is a model object rather than an observed output, an automatically valuable property, or a claim of authorship.

Claim 2.2 (Limited diagnostic position). A relation is a candidate instance of generativity exploitation, relative to a declared arrangement and comparison, only when an actor with relevant standing suffers a material disadvantage in effective generative capability through an actor-linked relation and a beneficiary’s specified advantage is produced or sustained through that same affected position.

Claim 2.2 is a proposed conjunction, not a theorem about the ordinary or established meaning of exploitation. Its ingredients carry conceptual, empirical, and normative burdens. In particular, standing, comparison admissibility, materiality, and benefit selection prevent the diagnostic from being value-free. Satisfaction also supplies no complete theory of wrongfulness, domination, responsibility, liability, or remedy.

2.3 Source Use and Attribution

This subsection states the constraint governing every citation below.

Where a source is used, the text states the specific constraint it supplies and the inference it withholds. The verified corpus establishes antecedents, constraints, and disagreements; it establishes neither the novelty nor the adequacy of the construction proposed here, and no source is cited in support of a proposition or a countermodel.

3 Non-Depletion Conditions and the Structure of the Problem

This section performs the problem analysis that the diagnostic presupposes. Its objective is to establish why depletion-based models of appropriation fail for generative forms, to characterize the scarcity that remains, and to derive the requirements a replacement diagnostic must satisfy.

3.1 Non-Rivalry in the Economic Tradition

This subsection identifies the verified economic antecedent for the working premise and states the limits of that inheritance.

Romer’s account of technological change treats ideas as inputs that are neither conventional private goods nor pure public goods: they are nonrival and only partially excludable, and this combination is what permits increasing returns and sustained growth [17]. Nonrivalry in this sense is a technical property of the input, and it entails that use by one agent leaves the input available for use by another. The premise adopted in Section 2 is the same property applied to a wider class of generative forms.

The knowledge-commons literature extends the analysis from an input in a growth model to a governed social resource. Hess and Ostrom assemble analyses of knowledge as a commons and of the institutional arrangements through which communities define, protect, and build it [7]. This work supplies the vocabulary of provision, appropriation, and governance for resources whose units are not subtracted by use.

Two limits apply. First, Ostrom’s original framework was developed for common-pool resources whose units are subtractable and whose governance problem is congestion or depletion [13]. Its transfer to knowledge is a contested extension rather than a settled result, and the present paper relies on the extension only for vocabulary. Second, nonrivalry is domain-sensitive. A method may be nonrival while the trained judgment required to apply it is embodied, slow to acquire, and unavailable to duplication. The premise is therefore stated per domain and never used to license a general claim about all generative forms.

3.2 Mixed Scarcity in Realization Conditions

This subsection identifies the scarcity that persists once depletion of the generative form is excluded. Its objective is to require that every foreclosure claim name the specific scarcity carrying the causal effect.

A non-rival generative form is realized only through conditions that are themselves scarce in several distinct ways:

1. **Rival conditions.** Compute, capital, energy, laboratory access, and the researcher’s own time are consumed by use. Allocation to one trajectory withdraws them from another.
2. **Congestible conditions.** Review capacity, mentorship, shared infrastructure, and channels of distribution degrade in quality as load increases without being exhausted outright.
3. **Excludable conditions.** Institutional permission, credentials, data access, legal license, and organizational membership can be granted or withheld by an identifiable controller.
4. **Positional conditions.** Priority, attention, recognition, reputation, and market position are constituted by relative standing. They cannot be expanded for everyone simultaneously, because the good consists in the ranking.

These four kinds carry different causal signatures and different remedies. Congestion can be relieved by capacity expansion; positional scarcity cannot, because expanding the supply of first place is incoherent. Exclusion identifies a controller with a decision; rivalry may identify no one. A claim that a participant’s capability was foreclosed is therefore incomplete until it names which condition class carried the effect, and the diagnostic in Section 8 requires that specification through the arrangement components.

3.3 Retention with Foreclosure

This subsection states the central asymmetry the paper addresses and distinguishes the objects it separates.

The configurations in Section 2 share a structure. In each, the affected participant retains the generative form and loses effective opportunity to realize it. Nothing was subtracted from what the participant knows or can do in the abstract. What changed is the set of futures reachable from the participant’s actual position under the actual arrangement.

Four objects must therefore remain distinct:

1. fixed traces and artifacts, which can be copied without loss;
2. latent generative organization, which is retained through copying;
3. the participant’s socially situated position and trajectory, which copying can nonetheless alter;
4. realization infrastructure and access conditions, which are controlled separately from all three.

Conflating these produces characteristic errors. Treating the artifact as the object of appropriation yields the conclusion that non-rival copying is harmless. Treating the latent organization as the object yields the conclusion that retention settles the question. Only the third and fourth objects register the configurations of Section 2, and only a capability construction indexed to position and arrangement can represent them.

3.4 Requirements on a Replacement Diagnostic

This subsection converts the preceding analysis into the obligations discharged by the formal construction.

The analysis yields four requirements. First, the diagnostic needs a capability object distinct from possession and from observed output, indexed to a participant’s position under a specified arrangement. Second, it needs a comparison, because a capability level carries no diagnostic content in isolation; and the comparison cannot be selected by the conclusion it is meant to support. Third, it needs an actor link, because impersonal scarcity and natural events can contract capability without implicating any party. Fourth, it needs a path condition connecting the affected capability position to a beneficiary’s advantage, because loss and gain coincide constantly under ordinary competition.

Sections 8 and 8 discharge these requirements in order. Sections 5 through 6 first establish what existing traditions supply toward them.

4 Exploitation Traditions and Rival Diagnostics

This section locates the proposal among established accounts of exploitation. Its objective is bounded positioning: each tradition supplies a constraint or a contrast, the traditions disagree with one another, and the complete diagnostic remains a repository-specific formulation. The section establishes antecedents and disagreement; it establishes no novelty claim for the present proposal.

4.1 Production, Surplus, and Property Relations

This subsection presents the production-centered tradition and states what the present proposal takes from it.

Marx’s analysis of labor-power, necessary labor, surplus labor, and surplus value is the central production-oriented ancestor of political-economic exploitation [11]. Its structure is an extraction relation: the worker sells labor-power, receives its value, produces more than that value, and the difference is appropriated by the owner of the means of production. The relation is located in production and is measured in a common substance.

Roemer reconstructs exploitation without the labor theory of value. On his game-theoretic account, a coalition is exploited when it would be better off withdrawing with its per-capita share of productive assets, so that exploitation tracks the distribution of property in productive assets rather than an unequal exchange of labor [16]. Cohen argues separately that Marx’s charge of exploitation does not require the labor theory of value at all, and that the value-theoretic apparatus is detachable from the normative claim [4].

The present proposal takes three things from this tradition and declines a fourth. It takes the idea that an exploitative relation is structural rather than attitudinal; the idea that control over the conditions of production matters independently of any transaction’s surface terms; and Roemer’s demonstration that a withdrawal-based comparison can define exploitation without a value substance. It declines the identification of generativity with labor-power and the reduction of capability contraction to surplus-value extraction. Generative capability has no established common substance in which a surplus could be measured, and the paper introduces none.

4.2 Transaction, Fairness, and Mutual Benefit

This subsection presents the transactional tradition and the constraint it imposes on comparison construction.

Wertheimer analyzes exploitation as taking unfair advantage in transactions and relationships, and demonstrates that mutually beneficial transactions can still be exploitative [24]. The demonstration matters here for a specific reason: it blocks the inference from joint gain to non-exploitation. A participant who is better off than before may still stand in an exploitative relation, because the relevant comparison is not the participant’s prior state.

This tradition therefore forces the comparison question into the open without answering it. Wertheimer’s analysis supplies no uncontested benchmark, and the choice among a prior state, a market outcome, an idealized arrangement, and a feasible alternative is normatively loaded. The present proposal responds by refusing to select a single benchmark: Section 8 constructs a family of technically feasible arrangements, applies an independently justified admissibility filter, and reports the resulting classification across every admitted comparison. The two-stage construction is a repository-specific response to Wertheimer’s problem and is not entailed by his account.

4.3 Degradation, Vulnerability, and Domination

This subsection presents the accounts that locate exploitation in a substantive wrong and states why the present proposal separates that question.

Sample develops an ethically substantive account centered on degrading interaction, vulnerability, and failures with respect to well-being [18]. On this view, exploitation is constitutively wrongful, and market-price or gain comparisons do not exhaust the conceptual field.

Vrousalis develops a relational account in which exploitation is the self-enriching instrumentalization of another’s vulnerability, and in which exploitation is a species of domination [23]. This is

the closest verified antecedent to the present proposal's structure, because it makes the beneficiary's enrichment run through the affected party's constrained position. The resemblance is genuine and must be stated as such.

Pettit's republican conception of freedom as non-domination supplies the neighboring structure against which this can be contrasted [14]. Domination on that account consists in subjection to another's capacity for arbitrary interference, and it obtains whether or not interference occurs and whether or not the dominating party gains. The present proposal separates these: an actor may hold arbitrary power over another's realization conditions without any advantage running through the affected position, and an advantage may run through an affected position without arbitrary power. Domination and generativity exploitation are therefore distinct predicates that frequently co-occur.

The present proposal declines to make its diagnostic constitutively wrongful. It records a structural relation and treats wrongfulness, consent, procedural legitimacy, responsibility, and remedy as separate variables. This decision requires an argument, since a classification with no normative consequence would be idle. Section 5.8 supplies that argument and defends the intermediate position that a positive diagnosis shifts a burden of justification onto the beneficiary without settling whether the relation is wrongful all things considered.

4.4 Structural Scope and Its Limits

This subsection presents the adversarial constraint on structural readings of the proposal.

Zwolinski examines whether background injustice should determine the exploitation status of a discrete transaction and argues for a more limited role than strong structural accounts assign it [25]. The objection applies directly here. A framework organized around control of realization conditions invites the inference that any transaction occurring within an unjust distribution of those conditions is thereby exploitative. That inference would make the diagnostic vacuous, since every transaction occurs within some background distribution.

The present proposal accepts the constraint. Structural position is neither necessary nor sufficient for a positive row status. The diagnostic requires an identified actor link and an identified benefit path in the specific relation under assessment. Background injustice may enter through the admissibility filter, where it belongs and where it must be defended explicitly, and it may not enter as a substitute for the mechanism and witness clauses.

4.5 Comparative Summary of Traditions

This subsection consolidates the review. Table 1 records what each tradition treats as the core relation, how it handles mutual benefit, what normative status it assigns, and the specific constraint it imposes on the present proposal.

These accounts disagree about fairness, degradation, domination, vulnerability, background structure, and the moralization of exploitation. The present paper uses them as rival constraints rather than as a consensus, and it does not claim that its diagnostic captures every accepted use of the term.

Table 1: Exploitation Traditions and the Constraints They Impose

Tradition	Core relation	Normative status	Constraint imposed on the present proposal
Surplus extraction [11]	Appropriation of surplus labor through ownership of productive means	Constitutively wrongful	Supply a structural relation without importing a value substance in which surplus is measured
Property relations [16]	Disadvantage relative to withdrawal with a per-capita asset share	Wrongful under stated distributive premises	Define comparison through a specified feasible alternative rather than an unequal exchange
Value-theory independence [4]	Appropriation stated without the labor theory of value	Wrongful	Keep the normative claim separable from the measurement apparatus
Unfair advantage [24]	Taking unfair advantage in a transaction or relationship	Wrongful, with mutually beneficial cases	Block inference from joint gain to non-exploitation and declare the comparison benchmark
Degradation [18]	Degrading interaction with a vulnerable party	Constitutively wrongful	State whether the proposed diagnostic is descriptive or itself carries wrongfulness
Domination and enrichment [23]	Self-enriching instrumentalization of vulnerability	Constitutively wrongful	Acknowledge the closest antecedent and state the difference in benefit-path requirements
Non-domination [14]	Subjection to a capacity for arbitrary interference	Freedom-based	Separate arbitrary power over conditions from advantage running through the affected position
Structural limitation [25]	Background injustice, with limited transfer to transactions	Contested	Prevent structural position from substituting for the mechanism and witness clauses

5 Philosophical Foundations of the Capability Object

This section argues for the four theses on which the framework depends. Its objective is substantive rather than expository: the formal construction of Sections 8 and 8 is a schema, and a schema acquires point only from an argument that its distinctions track something worth distinguishing. Each subsection states a thesis, argues for it, states the strongest objection known to the author, and replies. Section 5.9 records exactly what fails if each thesis is rejected.

The four theses answer four questions the formalism cannot answer for itself. Why is capability the right object, given that possession and output are easier to measure? Why does *generative* capability warrant separate treatment among capabilities? Who has standing to be a subject of the diagnosis, given that contribution to a shared practice is nearly universal? And what follows normatively from a positive diagnosis?

5.1 Real Opportunity Against Achieved Output

This subsection identifies the source of the paper’s opportunity-set orientation and the limits of that inheritance.

Sen distinguishes achieved functionings from the capability set: the alternative combinations of functionings a person can feasibly achieve and choose among [19]. The distinction matters here

because the configurations in Section 2 are invisible at the level of achieved output. The originator in the priority configuration may continue to produce work of the same volume and quality. What contracted is the set of alternatives available for choice.

Robeyns systematizes the distinction among means, conversion factors, capabilities, and achieved functionings, and emphasizes the choices required to operationalize any capability analysis: which dimensions to include, how to weight them, and whether to permit incompleteness in the resulting ordering [15]. These choices are substantive and cannot be delegated to a formalism. Section 7 accordingly leaves the dimension specification, the partial order, and the materiality threshold as declared case-level inputs.

Nussbaum develops the approach into a substantive account on which a threshold level of central capabilities is what a decent political order owes each person, and on which capability rather than achieved functioning is the appropriate political goal precisely because it leaves the exercise to the person [12]. The structural point matters here independently of her particular list: an arrangement that forecloses an option wrongs a person even when the person would have declined the option, because what is removed is the standing to decide.

This yields the section’s first thesis.

Thesis 5.1 (Capability as the appropriate object). The configurations of Section 2 involve a genuine loss, and that loss is representable only at the level of real opportunity. Neither possession of a generative organization nor achieved output registers it.

The argument is a process of elimination over the four objects distinguished in Section 3.3. Possession is unchanged in all three configurations, so an account locating the loss in possession must deny that any loss occurred. Achieved output may be unchanged, and in the enclosure configuration it may rise for a period as participants work harder to compensate; so an output-based account either denies the loss or misdates it. The artifact is copied without subtraction. What changed in every case is the set of continuations available from the participant’s position. Opportunity is therefore the only one of the four registers in which the phenomenon appears at all.

The strongest objection is that opportunity sets are cheap: any arrangement can be described as removing some opportunity, so an opportunity-based account proves too much and classifies ordinary competition as loss. The reply is that Thesis 5.1 establishes only where the loss is *representable*, and carries no implication that every representable contraction matters. Materiality thresholds, an actor link, and a benefit path do the discriminating work, and Section 9.1 proves that coincident contraction and gain can fail the benefit condition. The thesis secures the choice of register and nothing more.

5.2 The Second-Order Character of Generative Capability

This subsection argues that generative capability warrants separate treatment among capabilities, and thereby answers the question the capability literature leaves open for this domain.

Capability theory supplies no reason to single out generative capability. Sen’s framework is indexed to functionings a person has reason to value, and Nussbaum’s to a list of central capabilities; neither contains a category matching the object of this paper. A framework built on generative capability therefore owes an argument that the object is distinctive.

Thesis 5.2 (Second-order structure). Generative capability is the capability whose exercise alters capability sets. Its contraction is therefore compounding in a way that contraction of a first-order capability is not: what is foreclosed includes the conditions under which further capability would have been acquired.

The argument runs as follows. A first-order capability is a set of functionings a person can achieve. Exercising it produces the functioning and leaves the set otherwise unchanged. Generative capability, as Definition 2.1 specifies it, is an organization that supports a repertoire of transformations. Exercising it produces new transformations, and those transformations become part of the position from which the next exercise occurs. Trajectories therefore branch: what is reachable at time $t + 1$ depends on what was realized at t . Contracting the repertoire at t removes not only the trajectories excluded at t but every continuation that those trajectories would have made reachable later. This is why Section 7 represents capability as a set of paths over a horizon rather than as a set of end states.

Three consequences follow, and each does work later. First, the harm of foreclosure is not fully assessable at the time of foreclosure, which is why Section 10 treats horizon declaration as a substantive rather than technical choice. Second, the compounding structure explains the enclosure configuration’s distinctive severity: those who specialized most had committed the most prior branching to the foreclosed path. Third, it explains why restoring access later does not restore the position, since the intervening branches were not taken.

The strongest objection is that the distinction is one of degree. Nearly any capability alters some later capability set: literacy, health, and income all condition what a person can later do, so the second-order property fails to isolate a class. The reply concedes the premise and denies the conclusion. The thesis claims a difference in degree that is large enough to matter, assessed per case rather than assumed. This is precisely why the framework requires a *declared domain* d and a *declared horizon* H : the analyst must show, for the case at hand, that the affected organization has a branching structure over the stated horizon. A case in which the affected capability is effectively first-order over the relevant horizon should return a negative or indeterminate materiality judgment, and the framework provides the vocabulary to say so.

A second objection holds that the argument proves the importance of generative capability without showing that its contraction by another party is *wrongful*. That is correct, and Section 5.8 addresses it separately.

5.3 Relational Constitution of Agency Coordinates

This subsection argues that autonomy, direction, exit, and attribution belong inside the capability object rather than alongside it.

Anderson and Honneth treat autonomy as an acquired set of capacities whose development and maintenance depend on relations of recognition, so that autonomy is vulnerable to the disruption of those relations [2]. Mackenzie links relational autonomy, vulnerability, and capabilities, and argues for obligations to foster autonomy rather than merely to refrain from interference [10].

This work supports the enriched capability profile of Section 7. If autonomy is relationally constituted, then an arrangement can leave a participant’s reachable trajectories unchanged while altering who directs them, who is credited for them, and whether the participant can exit. Those are candidate capability coordinates rather than private psychological properties, and they can be impaired by an identifiable relation.

The argument for including these coordinates inside the capability object, in place of treating them as a separate normative overlay, is that the alternative misdescribes the enclosure and priority configurations. Suppose a participant’s reachable trajectories are unchanged while direction over them transfers to another party. On a separated account, capability is intact and something else has gone wrong. But the participant can no longer choose among the trajectories, and Section 5.1 established that capability is a set of alternatives available *for choice*. A set from which one cannot choose is not the participant’s opportunity set at all; it is a description of what will happen.

Direction, exit, and attribution are therefore conditions on the capability's being the participant's, and they belong inside the object.

The support has strict limits. This literature does not establish that every generative capacity is wholly socially produced, that every contributor to a practice has standing with respect to it, or that relational genesis entails common ownership. Path connectivity, causal contribution, authorship, standing, and ownership remain separate predicates throughout this paper. Section 5.4 argues for the standing condition directly.

5.4 Contribution, Dependence, and Participant Standing

This subsection resolves the universal-contribution paradox of Section 2 and supplies the argument that the standing input of Section 8 requires.

The paradox is genuine and is the strongest structural objection to the whole proposal. If a capability is assembled from the linguistic, practical, and relational contribution of nearly everyone, then a contribution-based standing rule makes nearly everyone a participant, so that either the diagnosis applies universally or the category loses the contrast class that gives it content. The literature of Section 6.4 sharpens this without resolving it.

Thesis 5.3 (Standing through dependence and participation). Participant standing with respect to a generative domain is constituted by sustained participation that maintains or transforms the practice, together with reliance such that the participant's own trajectory is conditioned on continued access. Causal contribution to the ambient field supplies evidence for standing without constituting it.

The argument begins by identifying an equivocation. The paradox moves from “contributed to the field from which the capability was assembled” to “has standing with respect to that capability.” Those are different relations. Causal contribution is a historical fact admitting no natural threshold, and Section 6.4's sources establish that it is broadly distributed. Standing is a normative status determining who can be wronged by a given foreclosure. Nothing requires these to have the same extension.

The thesis then supplies the differential condition the paradox needs. Consider two people, each of whom contributed some quantum of language and practice to the field from which a capability was assembled. One has built a working practice that depends on continued access to that capability and participates in maintaining it; the other has not. Foreclosure of access removes reachable trajectories from the first and none from the second. There is a loss in the first case and no loss in the second, and this difference is prior to any question of desert. Standing tracks who stands to lose, and the dependence condition captures exactly that.

This has three consequences that the framework relies on. Universal contribution becomes compatible with differentiated standing, dissolving the paradox without denying either conjunct. Standing becomes assessable from the participant's position and trajectory, which are the objects the formalism already represents, rather than from an intractable historical attribution problem. And standing becomes independent of origination: a participant who originated nothing but whose practice is now constituted by the commons has standing, while an originator who has moved on may lack it.

The strongest objection is that the thesis rewards specialization and thereby protects those who committed most deeply to a controlled dependency, which seems to reward imprudence and to grant the most protection to those who took the largest voluntary risk. The reply is that this consequence is correct and is a mark in the thesis's favor. The enclosure configuration is paradigmatic precisely because reliance was induced by the controller's own decision to open access. A framework that

withheld standing from the most deeply reliant participants would exempt the clearest case it was built to describe. Where reliance was genuinely unreasonable, the appropriate treatment runs through the admissibility filter and through separate questions of consent and assumption of risk, which Section 8 keeps distinct from standing.

A second objection is that the thesis makes standing turn on a fact the controller can manipulate, since a controller who never opens access creates no reliance and so faces no participants with standing. The reply is that this is a correct description of a real asymmetry rather than a defect: a controller who never opens access forecloses nothing, and the diagnosis should return a negative result. Section 4's tradition review supplies the separate vocabularies in which never opening access may still be criticized.

5.5 Recognition, Erasure, and Epistemic Standing

This subsection introduces a verified structure for the loss of standing that accompanies the priority configuration and keeps it distinct from capability contraction.

Fricker analyzes epistemic injustice as a wrong done to someone specifically in their capacity as a knower, distinguishing testimonial injustice, in which prejudice deflates the credibility accorded to a speaker, from hermeneutical injustice, in which a gap in collective interpretive resources prevents a person from rendering an experience intelligible [6].

The priority configuration in Section 2 has an epistemic dimension that capability language alone does not capture. When a better-positioned participant occupies a recognized trajectory, the originator may lose not only reachable futures but also the standing to be heard as the source. Attribution and recognition therefore appear in this paper twice: as candidate capability coordinates in Section 7, where they are measured, and as inputs to participant standing in Section 8, where they bear on whether the participant is eligible to be a subject of the diagnosis at all.

The two must remain distinct. Testimonial injustice can occur without any change in reachable repertoire, and capability can contract without any credibility deficit. The present paper records the connection as a frequent co-occurrence with separate mechanisms, and it does not merge epistemic injustice into the diagnostic.

5.6 Externalization and the Loss of Knowledge

This subsection identifies the closest verified philosophical antecedent for a non-wage form of dispossession and states the difference.

Stiegler analyzes proletarianization as a loss of knowledge rather than as impoverishment or as a class position [21]. On this account, grammatization is the process by which gesture, speech, and eventually affect and reasoning are discretized, externalized into technical supports, and thereby made reproducible and transmissible. The externalization is constitutive of human technicity and is not in itself a loss. It becomes a loss when the knowledge deposited in the technical support ceases to be recoverable by those from whom it was drawn, so that they retain access to the system's outputs while losing the capacity that produced them.

This is the closest available antecedent to the present concern, and the affinity should be stated plainly. Both analyses locate a form of dispossession that operates without depletion, without a wage relation, and without transferring any inventoriable object. Both treat the capacity to produce, rather than the product, as what is lost.

Three differences are equally important. Stiegler's target is a civilizational process operating at the scale of technical epochs; the present proposal requires an identified actor, an identified comparison, and an identified benefit path in a specific relation. Stiegler's analysis is diagnostic of a

condition; the present proposal is a test that can return a negative result. And Stiegler’s framework treats the process as pharmacological, capable of both poison and remedy, whereas the present diagnostic takes no position on whether externalization is generally beneficial. The present paper therefore uses Stiegler for the shape of the phenomenon and derives none of its conditions from him.

5.7 The Relational and Temporal Object of Appropriation

This subsection argues for the paper’s account of what the relation acts upon, and thereby justifies the form of the formal object in Section 7.

Thesis 5.4 (Conditions of continued individuation). Generativity exploitation acts on the conditions under which a participant continues to become capable. Its object is the reproduction of a capacity across time from a particular position, and that object is relational and temporal rather than a stock the participant holds.

The argument proceeds from a constraint on appropriation frameworks. Any account of appropriation presupposes an object that can pass from one party to another, because appropriation is a transfer notion. Apply the requirement to each of the four objects of Section 3.3. Artifacts are copied, and copying is duplication in place of transfer. Latent organization is retained in full, so nothing passes. The participant’s situated position and the realization infrastructure do change hands in the relevant sense; and neither is a thing. A position is constituted by relations to other participants, institutions, and conditions, and infrastructure is appropriable only as a set of control relations over access.

The conclusion is that if the configurations of Section 2 involve appropriation at all, its object is relational. Adding the branching structure of Thesis 5.2 makes it temporal as well: what is at stake is the participant’s continued becoming-capable across a horizon. This is the direct justification for representing capability as a set of reachable trajectories under an arrangement, in place of a quantity, a stock, or a set of end states. The formalism has the shape it has because the object has this structure.

The strongest objection is that the thesis makes appropriation metaphorical, since nothing is taken and the vocabulary of exploitation becomes strained without a transferred substance. The reply accepts the observation and denies that it defeats the thesis. Sections 5.1 and 4.2 record that the exploitation literature already contains accounts without a common transferred substance: Cohen argues that the charge survives the removal of the labor theory of value [4], and Roemer reconstructs the relation through property positions and a withdrawal comparison [16]. The present account continues that movement. What passes between the parties is the benefit constituted through the affected position, and Section 8 requires a documented rule or an identified causal contrast to establish it.

5.8 Justificatory Burden and Normative Significance

This subsection argues for what follows from a positive diagnosis. It answers the question deferred in Sections 5.3 and 5.2, and it supplies the reason the diagnostic is worth constructing.

Section 4.3 recorded that the paper declines to make its diagnostic constitutively wrongful. That decision requires an argument, because a purely descriptive relation with no normative consequence would be an idle classification.

Thesis 5.5 (Pro tanto justificatory burden). A positive diagnosis generates a defeasible reason for concern and places a burden of justification on the beneficiary. It establishes neither all-things-

considered wrongfulness nor liability, both of which require consent, procedure, alternatives, and distributive assessment as further inputs.

The argument for the burden’s existence turns on what the benefit-through condition establishes. When the condition is satisfied, the beneficiary’s advantage is conditioned on the affected participant’s diminished position: restoring that position would reduce the advantage. The beneficiary therefore holds a standing interest in the continuation of the diminution, whether or not the beneficiary intends it, knows of it, or acts to maintain it. A structural interest in another’s diminished capability is the kind of relation that calls for justification, and this holds independently of the beneficiary’s mental states. This is why Section 8 excludes intention from Equation (7) while Section 10 returns it as a separate variable.

The argument for the burden’s limits turns on what the condition leaves open. Anderson argues that egalitarian justice concerns the character of social relations and the elimination of hierarchies of domination and status, in place of a purely distributive criterion [1]. On such a view a relation’s normative assessment depends on the terms on which parties stand to one another, and the benefit-through condition constrains those terms without fixing them. Two arrangements can satisfy the diagnostic identically while differing in consent, in the availability of alternatives, in procedural recourse, and in the distribution of the resulting gains. Those differences bear directly on whether the relation is acceptable. A framework that returned a verdict of wrongfulness from the diagnostic alone would suppress them.

Thesis 5.5 therefore locates the diagnostic precisely. It is stronger than a description, because it shifts a burden. It is weaker than a verdict, because the burden can be discharged. This is also what distinguishes the proposal from the accounts of Section 4.3: Sample and Vrousalis build wrongfulness into the relation, and the present diagnostic separates the structural finding from its normative resolution so that the two can be contested independently.

The strongest objection is that a shifted burden of justification is either trivial, since anyone can demand justification for anything, or covertly equivalent to a wrongfulness verdict, since a burden that is rarely discharged functions as a presumption of guilt. The reply distinguishes the two horns. The burden is non-trivial because it is triggered by a specific and demanding conjunction that Section 9 shows can fail in several ways, including cases of coincident loss and gain. And it stops short of a verdict because Section 8 supplies the categories through which it is discharged: a defensible admissibility argument, an alternative available to the affected participant, a procedure through which the terms were set, or a distribution of gains that addresses the diminution.

5.9 Dependence of the Framework on the Four Theses

This subsection records what the framework depends on, so that a reader can locate a disagreement precisely.

The relation between Sections 6 and 7 through 8 has two components that should be kept apart. *Formal independence*: every proposition in Sections 8 through 9 is derived from declared model assumptions, and no derivation cites a thesis of this section. A reader who rejects all four theses can still verify each proof. *Justificatory dependence*: the framework’s claim to be worth constructing rests on these theses, and rejecting one narrows or defeats a corresponding part of the proposal.

The dependencies are as follows. Rejecting Thesis 5.1 defeats the choice of register: if the configurations of Section 2 involve no loss representable as opportunity, then possession or output suffices and the capability object is unmotivated. Rejecting Thesis 5.2 narrows the paper to a general capability-and-benefit framework with no distinctive subject matter, and the domain-and-horizon indexing loses its rationale. Rejecting Thesis 5.3 reopens the universal-contribution paradox,

which either universalizes the diagnosis or empties it; the formal apparatus would survive with an undischarged standing input. Rejecting Thesis 5.4 removes the justification for the trajectory-set form of the capability object, leaving the formalism intact but arbitrary. Rejecting Thesis 5.5 makes the diagnostic an idle classification with no consequence for how a relation should be assessed.

Section 10 states the corresponding revision commitments.

6 Realization Conditions and the Political-Economic Register

This section develops the political-economic content that motivated the research question. Its objective is to describe the mechanisms through which control of realization conditions can operate, to supply verified vocabulary for advantage obtained through position, and to state precisely why control alone is insufficient for the diagnosis.

6.1 From Means of Production to Means of Generative Expansion

This subsection states the paper’s guiding political-economic conjecture and the correction that limits it.

The production-centered tradition of Section 4.1 locates exploitation in ownership of the means of production. The configurations of Section 2 suggest a displaced structure: the party who benefits need control neither the participant nor the participant’s generative organization, provided it controls the conditions under which that organization can expand. Priority, funding, collaborators, compute, institutional permission, and channels of distribution are the operative holdings.

This suggests the conjecture that control has shifted toward the conditions permitting generativity to expand. The conjecture requires an immediate correction, and the correction is more important than the conjecture. Condition control is one mechanism among several, and it is not the phenomenon’s essence. The central relation is the contraction of another participant’s ability to expand a generative organization, and condition control is one route by which such contraction is produced. Interruption, redirection, dependency formation, capture of direction, and foreclosure of initiation are others. A framework built on condition control alone would misclassify every case in which capability contracts through a mechanism other than control.

The conjecture is recorded here as a working conjecture with unresolved empirical status. It is not used as a premise anywhere in the formal construction.

6.2 Rent, Assetization, and Control Rights

This subsection supplies verified political-economic vocabulary for advantage obtained through position rather than through production.

Birch analyzes contemporary technoscientific capitalism as organized around rentiership: the appropriation of value through ownership and control rights, monopoly conditions, and regulatory or market devices, rather than through entrepreneurial commodity production [3]. On this account things are configured as assets, and accumulation strategies follow from that configuration. Rent is analyzed as a social process involving actions, knowledges, and transformations that make value realization possible over extended periods.

This vocabulary matters to the present proposal for a specific reason. The constitutive benefit-through witness of Section 8 requires a documented rule through which a beneficiary’s advantage is constituted by the affected party’s position: a transfer, an entitlement, a priority rule, an exclusivity relation, or a control allocation. Rentiership is the political-economic category to which such rules belong. Birch’s analysis supplies the account of how control rights generate returns; the present

paper supplies the additional requirement that the return be traceable to a specific affected capability position.

6.3 Platform Bottlenecks and Infrastructural Position

This subsection supplies verified accounts of control exercised through architectural position.

Srnicek analyzes platforms as an economic form defined by their position as intermediaries between groups of users, their reliance on network effects, and their capacity to extract and control data generated by the interactions they mediate [20]. The relevant feature here is architectural: a platform’s advantage derives from occupying the position through which interaction must pass.

Khan analyzes the gap between such architectural power and the antitrust framework used to assess it, arguing that a consumer-welfare standard focused on short-run price effects fails to capture power that operates through structural position, vertical integration, and control of infrastructure on which competitors depend [9].

Both accounts bear on the open-then-enclose configuration of Section 2. A controller who supplies infrastructure on which others build acquires the capacity to alter their reachable trajectories by altering access terms, and the resulting power is not registered by price-centered tests. The present paper uses these accounts to establish that such positions exist and are analytically recognized. It does not infer from the existence of such a position that any particular relation satisfies the diagnostic, and it makes no claim about any firm discussed in those works.

6.4 Contributed Input Without Corresponding Return

This subsection addresses the distributed-contribution configuration and supplies its verified antecedents.

Terranova analyzes free labor in the digital economy: the unpaid, often voluntary, and frequently pleasurable activity through which users produce value that is captured by firms, and which is simultaneously given freely and appropriated [22]. Couldry and Mejias analyze data appropriation as a form of colonization, in which human life is configured so that data can be continuously extracted from it, and they connect this to the historical structure of colonial appropriation [5].

These accounts supply the closest verified treatments of the third configuration, in which a capability is assembled from broadly distributed contribution while its realization infrastructure is narrowly controlled. They establish that the pattern is real, analytically described, and normatively contested.

They also sharpen the paradox rather than resolving it. If contribution is genuinely universal, then either the exploitation category applies universally or it loses its contrast class. The present framework’s response is to separate contribution from standing: contribution may be broadly distributed while standing with respect to a specific generative domain requires a defended argument concerning participation, reliance, transformation, maintenance, or entitlement. Section 8 accordingly treats standing as an external three-valued input rather than as an inference from causal contribution. This response is a proposal and is not established by the cited works.

6.5 Actor Separation in the Artificial-Intelligence Configuration

This subsection decomposes the configuration that motivated the research question and states why treating it as a single actor makes the question malformed.

The question that generated this research program asked whether artificial intelligence makes exploitation more aggressive or changes its mechanism. The question cannot be assessed while the relevant parties are treated as one actor. Table 2 separates the positions that must remain distinct.

Table 2: Distinct Actor Positions in a Mediated Generative Configuration

Position	Characteristic holding or role	Diagnostic relevance
Finance or capital	Supplies and directs investment; holds claims on returns	Candidate beneficiary; rarely the acting node
Provider or infrastructure controller	Controls the system, its access terms, and its deployment conditions	Candidate controller and beneficiary; site of constitutive rules
Adopting organization	Deploys the system within its own practices and reorganizes work around it	Candidate acting node with respect to affected practitioners
Labor or professional practice	Holds the domain generativity and depends on realization conditions	Candidate affected participant
Users, communities, and historical contributors	Supply interaction traces and the historical corpus from which capability was assembled	Candidate affected participants with contested standing
The system itself	Executes the mediating function	Standing, interests, and agency remain open
The living generative commons	The practice reproduced and transformed across participants	Candidate affected object with no single carrier
Mediating institutions	States, regulators, unions, and civil-society bodies	Alter admissibility and available comparisons

Three consequences follow. The acting node, the technical mediator, the controller of conditions, the affected participant, and the ultimate beneficiary are distinct roles that a single description may collapse. Attribution of exploitation to the system itself would require an account of its agency, interests, standing, and control that this paper does not supply and treats as open. And the comparative question of intensification is not a single question: it decomposes into indexed hypotheses about scale, speed, opacity, reach, reversibility, dependency formation, bargaining asymmetry, concentration, and propagation rate, each requiring its own baseline and evidence.

6.6 Concentration Without Automatic Diagnosis

This subsection states and argues for the political-economic position the paper defends.

Thesis 6.1 (Concentration without automatic diagnosis). Concentrated control of realization conditions confers a capacity to amplify one participant’s trajectory while constraining another’s, and that capacity is a structural feature of the arrangements described in Sections 7.2 through 6.4. A relation becomes a candidate instance of generativity exploitation only through participant standing, an independently admissible comparison, an actor-linked mechanism, a material capability disadvantage, and a typed benefit-through witness.

The argument for the first half is the reviewed literature of Sections 7.2 through 6.4 together with Thesis 5.2. Rentiership, intermediary position, and appropriation of distributed contribution are described mechanisms by which returns accrue to control over conditions. The compounding structure of generative capability makes control over those conditions consequential beyond the period in which it is exercised, because it shapes which branches are taken. The paper therefore treats concentration as a serious matter and declines the view that non-rivality renders it harmless.

The argument for the second half is that the capacity to constrain and the relation being diagnosed have different truth conditions. A controller may hold the capacity and never exercise it;

may exercise it against a party with no standing; may exercise it while every admissible comparison leaves the affected party no better off; or may exercise it while its own advantage arises through an independent path. Section 9.1 proves the last case formally. Inferring the diagnosis from the capacity would collapse these distinctions and reproduce exactly the error that Section 4.4 attributes to strong structural accounts.

The strongest objection is that the second half renders the framework politically inert, since the evidentiary demands of standing, comparison, mechanism, and witness will rarely be met, so that concentration continues undiagnosed. The reply is that indeterminate results are informative under the reporting rule of Definition 8.6: an indeterminate profile records which specific input is missing, and that record is a research and disclosure demand directed at the party positioned to supply it. Section 10.1 makes this the protocol’s standard output. A framework that returned positive findings on weaker evidence would purchase its political usefulness by becoming unable to be wrong.

The paper classifies no observed labor, academic, platform, commons, or industrial relation.

7 Reachable Repertoires and Effective Capability

This section constructs the paper’s primary capability object in continuous dependency order. It separates the analytical registers the preceding sections motivated, declares the trajectory space and arrangement, defines a reachable viable repertoire and an enriched profile, and derives the limited conditions under which one arrangement expands another’s repertoire.

7.1 Analytical Registers

This subsection fixes the objects that the remaining definitions connect. The separation is substantive: an arrangement can change feasible actions or control while leaving latent organization and observed output unchanged.

Table 3 records each register, its formal object, the use it licenses, and the warrant that remains outstanding. The registers implement the four-object separation of Section 3.3 and the mixed-scarcity requirement of Section 3.2, which enters through the arrangement’s realization conditions.

7.2 Arrangements and Trajectory Space

This subsection declares the comparison units and the measurable structure the repertoire definition requires.

Fix an affected actor Y , domain d , history h , horizon $H > 0$, and latent organization $G \in \mathfrak{G}_d$. A case-relative complete arrangement is a tuple

$$r = \langle C^r, \mathcal{A}^r, \mathbb{P}^r, \mathcal{V}^r, \mathcal{I}^r, \mathcal{R}^r, \beta^r \rangle \in \mathfrak{R},$$

containing the realization conditions, policy family, trajectory law, viability event, actor and institutional positions, constitutive rules, and benefit map required by the declared question. Completeness is relative to the case and horizon rather than metaphysical exhaustiveness. The realization conditions C^r carry the mixed-scarcity distinctions of Section 3.2, so that a comparison records which condition class differs.

Let $(\mathcal{T}_{d,H}, \rho)$ be a metric trajectory space and let $\mathcal{F}$ be a σ -algebra containing its Borel sets, so every closed metric neighborhood used below is measurable. For each complete arrangement $r \in \mathfrak{R}$, let $\mathcal{A}_Y(r, h)$ be a nonempty feasible policy set, $\mathcal{V}_Y(r, h) \in \mathcal{F}$ a viability event, and $\mathbb{P}_{Y,G}^{r,a}(\cdot \mid h)$ a

Table 3: Analytical Registers in the Proposed Diagnostic

Register	Formal object	Licensed use	Outstanding warrant
Latent organization	$G \in \mathfrak{G}_d$	Index a candidate generative organization	Carrier, domain, and empirical interpretation
Complete arrangement	$r \in \mathfrak{R}$	Supply actions, institutions, relations, kernels, and viability	Scope, consistency, and transition feasibility
Reachable repertoire	$\mathcal{P}_Y(G; r, h)$	Represent viable trajectories reachable at declared resolution	Horizon, metric, action family, probability threshold
Enriched capability	$\mathcal{K}_Y^\Theta(r)$	Add predeclared autonomy, direction, attribution, continuity, or exit dimensions	Measurement, partial order, and materiality
Comparison family	$(\mathcal{B}^F, \Lambda)$	Retain technically feasible, admitted, excluded, and unresolved alternatives	Technical feasibility and non-circular admissibility
Relational mechanism	$M_{X \rightarrow Y}^\Theta(m; b)$	Connect an actor-linked relation to the capability difference	Causal, institutional, and coordinate evidence
Benefit-through witness	$w = (\Psi, Z_Y, \text{model})$	Connect the affected capability state to a beneficiary advantage	Causal identification or institutional verification
Diagnostic profile	$\Pi(m)$	Preserve baseline-specific support, rejection, and uncertainty	Decision use, normative interpretation, and external validity

probability kernel on $\mathcal{T}_{d,H}$ for each $a \in \mathcal{A}_Y(r, h)$. Fix a resolution $\delta > 0$ and probability threshold $\epsilon \in (0, 1]$, and write

$$\mathcal{N}_\delta(\tau) = \{\tau' \in \mathcal{T}_{d,H} : \rho(\tau, \tau') \leq \delta\}.$$

7.3 Reachable Viable Repertoire and Enriched Profile

This subsection defines the capability object and the enrichment that Section 5.2 motivates.

Definition 7.1 (Reachable viable repertoire). The effective reachable repertoire of Y under arrangement r is

$$\mathcal{P}_Y^{H,\epsilon,\delta}(G; r, h) = \left\{ \tau \in \mathcal{V}_Y(r, h) : \exists a \in \mathcal{A}_Y(r, h) : \mathbb{P}_{Y,G}^{r,a}(\mathcal{N}_\delta(\tau) \cap \mathcal{V}_Y(r, h) \mid h) \geq \epsilon \right\}. \quad (1)$$

The indices (H, ϵ, δ) are part of the object. A deterministic model is the special case in which each kernel is concentrated on one trajectory. Equation (1) expresses effective possibility under a model; it neither reconstructs every future nor assigns value to every reachable trajectory. It is the formal counterpart of the set of alternatives available for choice discussed in Section 5.1.

A trajectory set may omit capability-relevant relations when two arrangements permit the same paths but allocate direction, exit, attribution, or control differently. Let $q_Y^\Theta(r)$ contain only such independently declared dimensions, with specification Θ stating their measurement rules. The admissible coordinates are those Section 5.2 supports and Section 5.3 requires to be distinguished from standing.

Definition 7.2 (Enriched generative capability). The enriched capability profile is

$$\mathcal{K}_Y^\Theta(r) = \left(\mathcal{P}_Y^{H,\epsilon,\delta}(G; r, h), q_Y^\Theta(r) \right) \in \mathfrak{K}_\Theta. \quad (2)$$

The specification Θ equips $\mathfrak{K}_\Theta$ with a partial preorder $\succeq_\Theta$. Write $k_1 \succ_\Theta k_0$ when $k_1 \succeq_\Theta k_0$ and $k_0 \not\succeq_\Theta k_1$. A materiality rule $\mu_\eta^\Theta(k_1, k_0) \in \{1, 0, ?\}$ supplies declared resolution thresholds, and

$$k_1 \succ_{\Theta, \eta} k_0 \iff k_1 \succ_\Theta k_0 \text{ and } \mu_\eta^\Theta(k_1, k_0) = 1.$$

Incomparability and unresolved materiality are admissible results. No scalar aggregation is presumed.

The materiality rule may contain domain-specific resolution thresholds, a Pareto requirement over protected dimensions, or another justified decision rule. It must be specified before classification and tested for sensitivity. Robeyns’s warning about dimension selection and weighting applies directly here [15].

7.4 Conditional Monotonicity and Separation

This subsection derives the section’s two results. The first states the conditions under which one arrangement’s repertoire includes another’s; the second separates possession from capability.

Assumption 7.3 (Capability-expanding arrangement). Arrangement r' expands r for the declared model when

1. $\mathcal{A}_Y(r, h) \subseteq \mathcal{A}_Y(r', h)$;
2. $\mathcal{V}_Y(r, h) \subseteq \mathcal{V}_Y(r', h)$; and
3. for every $a \in \mathcal{A}_Y(r, h)$ and $\tau \in \mathcal{V}_Y(r, h)$,

$$\mathbb{P}_{Y,G}^{r',a}(\mathcal{N}_\delta(\tau) \cap \mathcal{V}_Y(r', h) \mid h) \geq \mathbb{P}_{Y,G}^{r,a}(\mathcal{N}_\delta(\tau) \cap \mathcal{V}_Y(r, h) \mid h).$$

Proposition 7.4 (Conditional repertoire monotonicity). *Under Assumption 7.3,*

$$\mathcal{P}_Y^{H,\epsilon,\delta}(G; r, h) \subseteq \mathcal{P}_Y^{H,\epsilon,\delta}(G; r', h).$$

Proof. Take $\tau \in \mathcal{P}_Y^{H,\epsilon,\delta}(G; r, h)$. Definition 7.1 gives $\tau \in \mathcal{V}_Y(r, h)$ and a witnessing policy $a \in \mathcal{A}_Y(r, h)$ with qualifying probability at least ϵ . Assumption 7.3(2) places τ in $\mathcal{V}_Y(r', h)$. Conditions (1) and (3) keep a available and preserve its qualifying probability. The same policy therefore witnesses membership under r' . $\square$

The proposition is deliberately conditional. An additional resource or formal permission can alter transition kernels, impose control, reduce autonomy, or change viability; ordinary language about “more conditions” supplies none of Assumption 7.3. Its converse also fails. This is the formal reason why the political-economic observation of Section 6.1 cannot be converted directly into a diagnosis: supplying conditions and expanding capability are distinct relations.

Proposition 7.5 (Latent-organization and capability separation). *There exist two arrangements with the same latent organization G and different reachable repertoires; equality of G therefore does not entail equality of effective capability.*

Proof. Let $\mathcal{T} = \{\alpha, \beta\}$ have the discrete metric, let both trajectories be viable, take $0 < \delta < 1$ and $\epsilon = 1$, use deterministic kernels, and keep G fixed. Arrangement m permits only a policy reaching α ; arrangement b permits policies reaching α and β . Then $\mathcal{P}_Y(G; m, h) = \{\alpha\}$ and $\mathcal{P}_Y(G; b, h) = \{\alpha, \beta\}$. Thus fixed latent organization permits different capability. Even with equal repertoires, unequal q_Y^Θ can distinguish actor-controlled from externally directed continuation. $\square$

Proposition 7.5 is the formal statement of the retention-with-foreclosure asymmetry described in Section 3.3. It is elementary, and its elementary character is the point: once capability is represented as a set of reachable futures under an arrangement, the independence of possession from capability follows immediately.

8 Comparison Arrangements and Benefit-Through Witnesses

This section assembles the diagnostic after the capability object has been defined. It separates technical feasibility from normative admissibility, introduces standing, an actor-linked relational mechanism, and material disadvantage, distinguishes two benefit-through witness types, and returns a baseline-indexed three-valued profile.

8.1 Technically Feasible and Admitted Comparison Families

This subsection constructs the comparison family in two stages. The construction responds to the benchmark problem stated in Section 4.2 and to the structural-scope constraint stated in Section 4.4.

Let $m \in \mathfrak{A}$ denote the arrangement under assessment. A baseline cannot be selected by calling it “non-exploitative,” because that would presuppose the desired result.

Definition 8.1 (Comparison families). The technically feasible, independently admitted, and unresolved comparison families are

$$\mathcal{B}^F(m) = \{b \in \mathfrak{A} : \text{TechFeas}(b \mid m) = 1\}, \quad (3)$$

$$\mathcal{B}_\Lambda(m) = \{b \in \mathcal{B}^F(m) : \text{Adm}_\Lambda(b \mid m) = 1\}, \quad (4)$$

$$\mathcal{B}_\Lambda^?(m) = \{b \in \mathcal{B}^F(m) : \text{Adm}_\Lambda(b \mid m) = ?\}. \quad (5)$$

The specification Λ discloses resource, institutional, rights, standing, and transition constraints. Its admissibility rule may not invoke GEX or the conclusion of the present diagnostic. The complete report keeps every $b \in \mathcal{B}^F(m)$, including rows with admissibility 0 or ?. An empty admitted family yields comparator underdetermination.

The two-stage construction places background injustice where Section 4.4 requires it. A judgment that the prevailing distribution of realization conditions is unjust may enter Λ , where it must be stated and defended as a comparison principle. It may not enter as a substitute for the mechanism and witness clauses below.

8.2 Standing, Mechanism, and Material Disadvantage

This subsection defines the three row-level statuses that precede the benefit path. Standing is the external input discussed in Sections 6.3 and 6.4.

Definition 8.2 (Standing, relational mechanism, and material disadvantage). For each $b \in \mathcal{B}^F(m)$, the external input $S_Y^\Lambda(G, d, h; m, b) \in \{1, 0, ?\}$ records whether Y has relevant participant standing

under Λ . The status $M_{X \rightarrow Y}^\Theta(m; b) \in \{1, 0, ?\}$ records whether an actor-linked intervention, rule, or institutional relation connects the focal arrangement to the capability difference evaluated under Θ : 1 records a supported actor link, 0 records an adequate result of independence, and ? records an unresolved relation or affected coordinate. The material-disadvantage status is

$$D_Y^{\Theta, \eta}(m; b) = \begin{cases} 1, & \mathcal{K}_Y^\Theta(b) \succ_\Theta \mathcal{K}_Y^\Theta(m) \text{ and } \mu_\eta^\Theta(\mathcal{K}_Y^\Theta(b), \mathcal{K}_Y^\Theta(m)) = 1, \\ 0, & \mathcal{K}_Y^\Theta(m) \succeq_\Theta \mathcal{K}_Y^\Theta(b), \\ 0, & \mathcal{K}_Y^\Theta(b) \succ_\Theta \mathcal{K}_Y^\Theta(m) \text{ and } \mu_\eta^\Theta(\mathcal{K}_Y^\Theta(b), \mathcal{K}_Y^\Theta(m)) = 0, \\ ?, & \text{when profiles are incomparable, or materiality} \\ & \text{or evidence remains unresolved.} \end{cases}$$

Contested standing, an unresolved actor link, and unidentified capability are recorded as ?, not as 0. A natural disaster or impersonal scarcity can produce $D = 1$ while $M = 0$ or ?, and therefore supplies no candidate result through disadvantage alone.

The standing input S_Y^Λ is where Thesis 5.3 enters the construction. The thesis supplies its content: standing is constituted by sustained participation that maintains or transforms the practice, together with reliance such that the participant's trajectory is conditioned on continued access. Genealogy, creation, and causal contribution supply evidence for that status without constituting it, and common origin entails neither equal contribution nor a specific ownership result. This is the framework's response to the universal-contribution paradox of Sections 3 and 6.4: broad causal contribution is compatible with differentiated standing because the two track different relations.

The value remains a declared external input for a reason. Thesis 5.3 fixes the kind of condition standing is; it does not settle, for a given case, whether a participant's reliance and participation reach the threshold. That judgment requires domain evidence and admits of reasonable disagreement, and ? is the correct value when it is unresolved.

8.3 Typed Benefit and the Two Witness Forms

This subsection defines beneficiary advantage and separates the two ways a benefit can run through an affected capability position.

Fix a benefit specification

$$\Psi = \langle J_\Psi, \mathcal{Y}_X^\Psi, \succeq_\Psi, \eta_B \rangle, \quad \mathcal{Y}_X^\Psi = \prod_{j \in J_\Psi} \mathcal{Y}_{X,j},$$

where the index set lists admitted benefit types, $\succeq_\Psi$ is a partial preorder, and η_B is a typed materiality schedule. Money, control, priority, recognition, and bargaining power remain distinct coordinates unless an aggregation rule is independently justified. Let $\beta_X^\Psi(r) \in \mathcal{Y}_X^\Psi$, and write $u \succ_{\Psi, \eta_B} v$ when u strictly exceeds v under the declared partial order by a typed material amount. The displayed causal form uses one predeclared scalar coordinate $B_{X,j}^\Psi$ and its declared threshold $\eta_{B,j} \geq 0$.

For every baseline row b , declare a row-specific state map $Z_Y^b(r)$ for $r \in \{m, b\}$. It names the concrete capability coordinate, subordination, capture, or redirection used in the D comparison. When $D = 1$, its contrast must underwrite that same disadvantage judgment. The binary value D is not itself a mediator.

Definition 8.3 (Causal benefit-through witness). A causal witness w specifies an SCM or potential-outcome model in which

$$\Delta_{\text{BT}}^w(m, b) = \mathbb{E} \left[B_{X,j}^\Psi(m, Z_Y^b(m)) - B_{X,j}^\Psi(m, Z_Y^b(b)) \right] > \eta_{B,j}. \quad (6)$$

The witness records the meaning of interventions, consistency and composition assumptions, interference scope, identification conditions, and sensitivity analysis. Equation (6) is a mediation-style estimand; observed loss and gain do not identify it. Let $W_{X,Y}^c(m; b)$ be 1 when the material contrast is supported, 0 when an adequate design supports its material absence, and ? when the intervention, model, or identification remains inadequate.

Definition 8.4 (Constitutive benefit-through witness). A constitutive witness w is a verified institutional rule, transfer map, exclusivity relation, priority rule, or control allocation ρ_Z^m through which X 's specified advantage is constituted by the affected position $Z_Y^b(m)$. The witness specifies a complete matched rule-replacement arrangement $m^{-\rho_Z; b}$ that deactivates or replaces that link, records every induced change needed for coherence, and satisfies

$$\beta_X^\Psi(m) \succ_{\Psi, \eta_B} \beta_X^\Psi(m^{-\rho_Z; b}).$$

The witness is a rule-relative constitutive comparison rather than an estimated mediated effect or an automatic ceteris-paribus substitution. Let $W_{X,Y}^k(m; b)$ be 1 when the exact rule, matched arrangement, and material benefit change are supported, 0 when governing rules establish independence, and ? when the rule or comparison remains unresolved.

The constitutive witness is the point at which the rentiership vocabulary of Section 6.2 becomes operative. Priority rules, exclusivity relations, transfer maps, and control allocations are precisely the devices through which returns are appropriated by position, and a constitutive witness requires that such a device be documented and its removal specified as a complete alternative arrangement.

Causal mediation supplies the discipline for the other branch. Imai, Keele, and Tingley distinguish a causal mediation estimand from its identification, estimation, and sensitivity analysis [8]. That distinction is adopted here: a constitutive institutional rule is treated separately from a mediated causal effect, and neither correlation nor temporal order is promoted to a benefit-through result.

The two witnesses answer different questions and cannot substitute for one another. Let $W_{X,Y}^\Psi(m; b) \in \{1, 0, ?\}$ be 1 when at least one admissible witness is supported, 0 when a predeclared complete witness family has been tested and refuted, and ? when the path remains unidentified or the witness family is incomplete.

8.4 Row Status and Diagnostic Profile

This subsection assembles the row predicate and defines the reporting rule.

Definition 8.5 (Baseline-indexed candidate status). For every $b \in \mathcal{B}^F(m)$, define

$$g_b(m) = \text{Adm}_\Lambda(b \mid m) \wedge S_Y^\Lambda(G, d, h; m, b) \wedge M_{X \rightarrow Y}^\Theta(m; b) \wedge D_Y^{\Theta, \eta}(m; b) \wedge W_{X,Y}^\Psi(m; b), \quad (7)$$

using the strong three-valued conjunction: the result is 1 when every clause is 1, 0 when a clause is demonstrably 0, and ? otherwise. A value of 1 is a candidate generativity-exploitation diagnosis relative to $(b, \Lambda, \Theta, \eta, \Psi, w)$. A row excluded by Λ receives 0 under this reporting rule and retains its exclusion reason; the value does not assert that the excluded arrangement is itself non-exploitative.

Definition 8.6 (Diagnostic profile). The complete result retains every technically feasible row:

$$\Pi(m) = \{(b, \text{Adm}_\Lambda, S_Y, M_{X \rightarrow Y}, D_Y, W_{X,Y}^c, W_{X,Y}^k, W_{X,Y}, g_b) : b \in \mathcal{B}^F(m)\}.$$

Let $\mathcal{A} = \mathcal{B}_\Lambda(m)$ and $\mathcal{U} = \mathcal{B}_\Lambda^?(m)$. Apply the following order. The profile is *indeterminate* when $\mathcal{A}$ is empty, $\mathcal{U}$ is nonempty, or any admitted row has $g_b = ?$; it is *baseline-robust* when every admitted row has $g_b = 1$; it is *relatively rejected* when every admitted row has $g_b = 0$; and it is *baseline-sensitive* when resolved admitted rows include both values. No voting rule collapses the profile, and excluded rows remain visible.

Intention, awareness, genealogy, consent, domination, wrongfulness, responsibility, and remedy remain external variables. Their exclusion from Equation (7) means that none is automatically decisive. They can still change standing, admissibility, capability ordering, witness credibility, and downstream judgment. The separation of domination from the diagnostic is the formal counterpart of the contrast drawn in Section 4.3.

9 Diagnostic Consequences and Boundary Cases

This section stress-tests the construction with finite countermodels and thought experiments. Its role is discriminative: the cases reveal which clause does work and where the framework returns uncertainty. They supply no evidence that a current institution or industry instantiates the diagnosis.

Table 4 summarizes the main cases. Its statuses concern the proposed diagnostic; neighboring descriptions such as harm, domination, or competition require their own criteria.

9.1 Coincidence Without a Benefit Path

This subsection establishes that capability loss and beneficiary gain can co-occur with no benefit running through the affected position.

Proposition 9.1 (Coincidence separation). *A strict capability disadvantage for Y and an observed gain for X can coexist while every causal benefit-through contrast in a declared model equals zero.*

Proof. Let $R \in \{0, 1\}$ index arrangements, with focal arrangement $m = 1$ and admitted baseline $b = 0$. In the scalar capability space with its usual order, set $\mathcal{K}_Y^\Theta(R) = 1 - R$ and choose a materiality threshold below 1. Thus $D_Y(1; 0) = 1$. Let the actor-linked relation setting R also set the capability state $Z_Y^0(R) = R$, so its mechanism status is 1. Define $B_{X,j}^\Psi(R, z) = R$, independent of z . The observed benefit increases from 0 to 1, while

$$B_{X,j}^\Psi(1, Z_Y^0(1)) - B_{X,j}^\Psi(1, Z_Y^0(0)) = 1 - 1 = 0.$$

Declare the witness family complete and stipulate that the arrangement contains no transfer, entitlement, priority, or control rule constituting X 's benefit through Z_Y^0 . The causal and constitutive branch statuses are therefore both 0, hence $W_{X,Y}^\Psi(1; 0) = 0$. With admissibility and standing fixed at 1, Equation (7) returns $g_0(1) = 0$. Loss and gain co-occur while the affected state carries none of the gain. $\square$

This countermodel formalizes the distinction between independent innovation and predatory exclusion. If a new practice lowers another practice's market prospects while its benefit arises independently, displacement may occur but the proposed exploitation predicate is not satisfied. If an exclusivity rule transfers the excluded party's access, priority, collaborators, or controlled branches to the beneficiary, a constitutive witness may be available. The action's subject matter need not match the affected generativity; the path does the classificatory work.

The result also answers the concern raised in Section 4.4 from the opposite direction. Just as structural position cannot substitute for a benefit path, temporal coincidence within a concentrated arrangement cannot either.

9.2 Baseline Sensitivity

This subsection establishes that admissible comparisons can disagree, and that the profile must therefore be preserved.

Table 4: Boundary Cases Under Capability, Mechanism, and Benefit-Path Evidence

Case structure	Capability relation	Mechanism and benefit-path relation	Diagnostic status
Independent innovation	Y may be worse relative to a comparator	X 's gain is independent of Y 's disadvantage	Candidate rejected at that baseline; competition or displacement remains open
Impersonal scarcity	Material disadvantage can be supported	Actor-linked capability mechanism is absent or unresolved	Candidate rejected or indeterminate; deprivation remains open
Malicious suppression	Material disadvantage can be supported	Beneficiary advantage is absent	Candidate rejected; harm, violence, or domination remains open
Predatory exclusion	Standing, relational mechanism, and material disadvantage are supported	Verified transfer, priority, or causal path benefits X through the affected state	Candidate supported relative to the declared baseline
Captured continuation	Output or repertoire can remain stable while autonomy, exit, direction, or attribution declines	Control allocation sustains X 's declared advantage	Enriched-profile candidate when all clauses are supported
Mutually enabling cooperation	Actual capability matches or exceeds admissible comparators	Reciprocal gains may occur	Disadvantage clause fails; local constraint is insufficient
Comparator plurality	Actual capability lies between two admissible alternatives	Witness status is held fixed	Baseline-sensitive profile
Evidence limitation	Profile order, standing, or path is unresolved	Causal or constitutive witness remains unidentified	Indeterminate profile

Proposition 9.2 (Baseline-profile non-collapse). *Two independently admissible baselines can yield different candidate statuses for the same assessed arrangement.*

Proof. Let $\mathcal{B}_\Lambda(m) = \{b_1, b_2\}$ and $\mathcal{B}_\Lambda^?(m) = \emptyset$, with all row inputs resolved. Choose the capability ordering $\mathcal{K}_Y^\Theta(b_1) \succ_{\Theta, \eta} \mathcal{K}_Y^\Theta(m) \succeq_\Theta \mathcal{K}_Y^\Theta(b_2)$. Hold admissibility, standing, relational mechanism, and an admissible benefit-through witness fixed at 1. Then $D(m; b_1) = 1$ and $D(m; b_2) = 0$, so $g_{b_1}(m) = 1$ and $g_{b_2}(m) = 0$. Definition 8.6 reports a baseline-sensitive profile. $\square$

The result is elementary and consequential. A raw before–after comparison, an ideal arrangement, a market outcome, and a rights-respecting feasible alternative can rank the same state differently. The framework requires the analyst to preserve this plurality until an independent argument selects or orders comparisons. This is the operational form of the benchmark problem that Section 4.2 attributed to the transactional tradition.

9.3 Captured Continuation and the Limits of Output Measures

This subsection establishes that equal output is compatible with material capability disadvantage.

Let $\mathcal{P}_Y(G; m, h) = \mathcal{P}_Y(G; b, h)$, while $q_Y^\Theta(m)$ records transferred direction and blocked exit. A repertoire-only or productivity-only measure reports equality; the enriched profile can report a material disadvantage. This result depends on the prior legitimacy and validation of the added dimensions. It prevents output growth from deciding the case while also preventing autonomy language from entering without measurement.

The case connects directly to Section 5.2. If autonomy is relationally constituted, an arrangement that reallocates direction and forecloses exit alters a capability coordinate even when it leaves productive output intact. The formal apparatus registers this only because Θ was declared in advance to include those coordinates, and a case that becomes positive only through an opportunistically chosen coordinate remains unsupported.

9.4 Mechanism Families and Their Diagnostic Neutrality

This subsection records that mechanism type does not determine status.

The research program distinguishes actions involving the same generativity, its application, its realization conditions, an apparently unrelated action, and cross-generativity effects. These categories form a useful stress test but no hierarchy. Any can produce harm; any becomes a candidate here only through standing, an admissible comparison, an actor-linked relational mechanism, material disadvantage, and benefit-through. Interruption, slowing, redirection, condition control, dependency, and capture remain mechanism families.

This is the formal counterpart of the correction recorded in Section 6.1. Condition control is one mechanism among several, and the framework treats it with no special weight.

10 Empirical Protocol and Normative Interfaces

This section translates the formal dependencies into a research protocol. It preserves the distinction between a proposed estimand and an identified effect, and it states how a returned profile combines with the evaluations the diagnostic deliberately excludes.

10.1 Case-Study Protocol

This subsection orders the measurement, comparison, pathway, and interpretation tasks required for any applied use.

A case study should first preregister or otherwise disclose the affected actor, domain, history, horizon, trajectory space, resolution, probability threshold, viability rule, capability dimensions, materiality rule, benefit coordinate, and normative specification. These choices determine the object. They cannot be selected retrospectively to force a preferred classification.

Second, the study should construct $\mathcal{B}^F(m)$ and apply Λ separately. Technical feasibility needs evidence about resources, transition costs, institutions, and behavior. Admissibility needs an independent argument about rights, standing, procedure, or another declared standard. At least two plausible comparisons should be retained when available; admitted, excluded, and unresolved rows should all appear in the full profile.

Third, the study should estimate or bound $\mathcal{K}_Y^\Theta(r)$. Finite observed trajectories rarely reveal a reachable repertoire. Interventions, natural experiments, policy variation, longitudinal histories,

simulation, and qualitative process evidence may constrain the model, while exact latent reconstruction remains a separate identification problem. Equal outputs across arrangements do not establish equal capability.

Fourth, the study should establish or refute an actor-linked relation to the same affected capability state and then type its benefit-through evidence. A causal witness requires a concrete treatment or arrangement, the exact affected state as mediator, a benefit outcome, an interference scope, identifying assumptions, and sensitivity analysis. A constitutive witness requires documentary or institutional evidence for the operative rule and its beneficiary. The mediation literature warns that definition and identification are separate [8].

Fifth, the study should return 1, 0, or ? for each baseline and preserve the witness type. The result should then be combined with separate evaluations of consent, domination, distributive effects, procedural legitimacy, intentionality, responsibility, and remedies. A candidate edge diagnosis may be embedded in a system that compensates, propagates, or reverses its effects; those network and regime questions exceed the dyadic scope of this paper.

11 Open Questions Across Registers

This section collects the questions the paper leaves unresolved, organized by the register in which each would be answered. Its objective is to separate questions that further conceptual or formal work could settle from questions requiring empirical evidence or independent normative argument, and to mark which of them the paper’s own theses have made pressing.

11.1 Conceptual and Formal Questions

Open Problem 11.1 (Admissible comparison construction). Develop transparent procedures for constructing technically feasible and independently admissible baseline families without circularity, opportunistic selection, or suppression of contested alternatives. The two-stage construction separates feasibility from admissibility; it supplies no procedure for either.

Open Problem 11.2 (Capability identification). Determine which restricted model classes, interventions, and observation regimes can identify or bound reachable viable repertoires and enriched agency dimensions from finite histories. Observed output underdetermines every component of the capability object.

Open Problem 11.3 (Coordinate independence and double counting). The enriched profile admits autonomy, direction, exit, attribution, continuity, and recognition as coordinates. These can overlap and can conflict. Which independence conditions must hold before a coordinate is admitted, and how are dependencies between the repertoire component and the agency coordinates to be declared?

Open Problem 11.4 (Materiality without aggregation). Materiality is a declared threshold rule over a partial order. Which rules avoid covertly reintroducing a scalar aggregation, and does any defensible rule preserve genuine incomparability rather than resolving it by convention?

11.2 Normative Questions

Open Problem 11.5 (Standing thresholds). Standing is constituted by sustained participation together with reliance. What threshold on each is defensible, and does the account produce acceptable results for a participant with deep reliance and negligible participation, or the reverse?

Open Problem 11.6 (Discharging the justificatory burden). A positive finding shifts a burden onto the beneficiary. What discharges it? The paper names admissibility argument, available alternatives, procedure, and distribution of gains as candidates, and supplies no account of their sufficiency.

Open Problem 11.7 (Relation to wrongfulness). The diagnostic is deliberately weaker than a wrongfulness verdict. Under which further conditions does a positive finding become sufficient for all-things-considered wrongfulness, and is that question answerable in general or only per case?

Open Problem 11.8 (Collective standing and interference). Extend the dyadic diagnostic to collective carriers, distributed beneficiaries, interference, feedback, and changing actor positions while preserving explicit standing and benefit paths.

11.3 Political-Economic Questions

Open Problem 11.9 (Positional scarcity). The mixed-scarcity taxonomy distinguishes rival, congestible, excludable, and positional realization conditions. Positional scarcity cannot be relieved by capacity expansion, since the good consists in a ranking. What follows for remedy when the operative scarcity is positional?

Open Problem 11.10 (Concentration measurement). Concentration of realization conditions confers a capacity to constrain. What measure of that concentration is appropriate, given that the relevant conditions are heterogeneous and that control is exercised through terms rather than through holdings alone?

11.4 Empirical Questions

No empirical case supports any claim in this paper. The priority questions are whether any domain permits construction of an admissible comparison family that survives adversarial scrutiny; whether a constitutive witness can be documented in a setting where the governing rules are contested; whether the enriched coordinates admit measurement that participants would recognize; and whether a determinate negative has ever been produced. A framework that never returns a negative finding in practice would be unfalsifiable regardless of its formal capacity to do so, and Section 12 records this as a defeat condition.

12 Limits and Revisable Research Program

This section consolidates the paper’s contribution, states its defeat conditions, and assigns the questions it does not address.

12.1 Contribution and Its Limits

This subsection consolidates the paper’s strongest defensible contribution across its four registers.

The mathematical content is modest. Definition 7.1 constructs a model-relative opportunity set; Proposition 7.4 proves inclusion under strong preservation assumptions; Proposition 7.5 separates latent organization from effective capability; and Propositions 9.1 and 9.2 establish two countermodel separations. None proves that generativity exploitation occurs in the world or that the diagnostic captures every accepted use of *exploitation*.

The analytical contribution is the problem statement of Section 3: the separation of non-rival generative forms from the mixed scarcity of their realization conditions, and the resulting asymmetry

between retention and foreclosure. The reviewed traditions of Section 4 supply antecedents, constraints, and rivals for this problem without resolving it.

The philosophical contribution is the four-thesis argument of Section 5. It establishes where the loss in the motivating configurations is representable (Thesis 5.1), why generative capability warrants separate treatment through its compounding branch structure (Thesis 5.2), how standing can be differentiated under near-universal contribution (Thesis 5.3), why the object of the relation is relational and temporal (Thesis 5.4), and what normative consequence a positive diagnosis carries (Thesis 5.5). Theses 5.3 and 5.5 are the load-bearing results: the first dissolves the universal-contribution paradox that would otherwise defeat the proposal, and the second supplies the reason the diagnostic is worth having. These are arguments offered for assessment, and none is established by the cited literature.

The political-economic contribution is the mechanism vocabulary of Section 6, the actor separation of Table 2, and the argued refusal in Thesis 6.1 to convert concentration into diagnosis. The reviewed literature establishes that control through position, rent, and distributed uncompensated contribution are real and analytically recognized patterns. It establishes nothing about the prevalence of the relation this paper defines.

The conceptual contribution is a dependency chain:

$$G+r \longrightarrow (\mathcal{A}, \mathbb{P}, \mathcal{V}) \longrightarrow \mathcal{P} \longrightarrow \mathcal{K}^\Theta \longrightarrow \mathcal{B}^F \longrightarrow \Lambda \longrightarrow S_Y \longrightarrow M_{X \rightarrow Y} \longrightarrow D \longrightarrow w_{\text{BT}} \longrightarrow g_b \longrightarrow \Pi.$$

Each arrow names an obligation rather than a discovered law. The chain preserves the proposal's central conceptual corrections: non-rivality removes a depletion requirement; retained generativity does not secure effective capability; interruption and condition control are mechanisms; capability loss and coincident gain are insufficient; and intention can vary independently of the proposed structural diagnosis.

12.2 Defeat Conditions and Deferred Questions

This subsection states the findings that would narrow or defeat the proposal and assigns the questions this paper does not address.

The formal framework should be revised or abandoned if its capability dimensions cannot be defined independently of the desired conclusion, if admissible comparisons remain incurably circular, if benefit-through cannot be separated from ordinary competitive interdependence, or if its classifications add no discriminating content beyond established accounts of exploitation, harm, domination, and capability deprivation. Section 4 establishes that several such accounts exist and disagree; it does not establish that the present conjunction is absent from them. A systematic originality review remains outstanding, and the verified corpus establishes antecedents and disagreement rather than novelty.

The philosophical theses carry separate and more consequential defeat conditions, stated in Section 5.9 and repeated here as commitments. Defeating Thesis 5.1 removes the motivation for a capability object and returns the analysis to possession or output. Defeating Thesis 5.2 reduces the paper to a general capability-and-benefit framework with no distinctive subject matter, and the appropriate response is to retitle and rescope it accordingly. Defeating Thesis 5.3 reopens the universal-contribution paradox; if no differential standing condition survives, the proposal should be withdrawn, since a diagnosis that applies to everyone or to no one has no use. Defeating Thesis 5.4 leaves the formalism intact and unmotivated, requiring a different justification for the trajectory-set construction. Defeating Thesis 5.5 makes the diagnostic idle, and the honest response is to present it as a descriptive taxonomy with no normative consequence. The author regards Theses 5.3 and 5.5 as the most vulnerable and would welcome direct challenge to either.

The political-economic register should be narrowed if the mechanisms of Section 6 prove to be adequately handled by existing accounts of market power, foreclosure, and rent without any capability construction.

Several subjects are deliberately deferred. Observation and partial identification require a separate formal paper. Propagation, cascades, cycles, buffers, and recovery require network and dynamic models. Commons standing, ownership of realization conditions, the distribution and accumulation of expansion infrastructure, AI-specific applications, legal interests, and remedies require their own evidence and normative arguments. A field-theoretic register would become relevant only if it supplies explanatory or inferential gain beyond the set-valued, causal, and institutional models used here.

The resulting position is conservative. Generativity exploitation is retained as a promising research concept when a participant’s material capability disadvantage is linked to another party’s advantage through a specified path relative to independently admissible comparisons. The framework’s most useful outcome may often be an explicit unresolved profile. Such an outcome records where standing, comparison, measurement, or causal evidence is missing and thereby turns a broad accusation into a revisable research program.

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