

Rethinking Generative Capability Impairment

A Conditional Account of Harm

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Abstract

This position paper develops a conditional account of harm arising through impairment of a person's generative capability. The account begins from a specific evaluative object: the feasible and viable trajectories through which a person can initiate, sustain, direct, transform, transmit, recover, or branch a valued practice over a declared horizon. Amartya Sen's capability approach supplies the central evaluative ancestry. It directs attention from resources and achieved outputs toward real opportunities, conversion conditions, human diversity, well-being freedom, agency freedom, plural valuation, and public reasoning. The paper adds a horizon-indexed generative specialization and makes its attribution boundary explicit. Sen's framework supplies the evaluative space; the trajectory model and harm predicate are proposals developed here.

The central account moves through four stages: capability contraction, material capability disadvantage, event-linked impairment, and domain-specific pro tanto harm. Each stage has an independent three-valued warrant. A complete profile retains every admitted counterfactual comparison and classifies the result as robust supported, robust rejected, baseline sensitive, or indeterminate. Duration, security, recovery probability, route-back cost, and foreclosed later branches enter the materiality assessment. A transferred conditional inclusion result establishes when a restriction contracts the reachable repertoire. Finite countermodels then establish four separations: equal achieved output can coexist with unequal capability; pro tanto harm can coexist with benefit; identical harm facts can accompany different wrongfulness statuses; and plausible comparisons can yield baseline sensitivity. The resulting account is person-centered, domain-specific, and revisable. Overall harm, injustice, exploitation, responsibility, remedy, and law remain successor inquiries with their own premises.

Keywords: generative capability; capability approach; harm; impairment; agency freedom; counterfactual comparison; recovery; generative justice

Discussion Paper Note

This paper is a preliminary discussion paper intended to share an evolving idea and invite further dialogue, criticism, revision, and independent development.

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Notices

Status. This is a working draft circulated for discussion. Its definitions, propositions, examples, and section numbering remain open to revision.

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Statement on the use of language models. Drafting, literature search, structural review, formal reconstruction, and argumentative criticism were conducted in dialogue with ChatGPT (OpenAI). The author bears responsibility for the claims, definitions, formal constructions, selection of material, argument, and position taken. References included in the bibliography were checked against publisher, journal, university, or DOI records during preparation.

Companion papers. This paper follows earlier working papers on generativity exploitation, latent-capability identification, recovery, generative interests, value-circulation pathology, and recognition networks. Those projects supply revisable formal predecessors. The present paper owns the narrow bridge from person-centered generative-capability impairment to pro tanto harm. Later projects retain injustice, responsibility, remedy, and legal classification.

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1 Introduction

This section introduces the paper’s object, motivation, central position, scope, contribution, method, and sequence. It begins with a divergence between achievement and opportunity, locates the inquiry within generative-justice research, and identifies the exact work performed by Sen’s capability approach.

A person’s present output can remain unchanged while the routes through which the person continues a practice become narrower, more precarious, more costly, or externally directed. A researcher can still publish while losing access to the infrastructure needed for independent continuation. A craft practitioner can still complete familiar work while apprenticeship routes and material knowledge disappear. A speaker can still produce fluent sentences while the institutional conditions for intergenerational transmission contract. A temporary interruption can restore visible activity while eliminating a deadline-sensitive branch or imposing a prohibitive route-back cost. In each configuration, achievement is an incomplete description of opportunity.

The vocabulary of *generative capability* was developed in earlier work to represent this opportunity through a reachable repertoire, with stocks, resource totals, and output scores treated as distinct objects. That move created a further normative question. A material reduction in opportunity remains a capability result. Its classification as harm requires an account of the bearer, the value of the affected domain, the comparison arrangement, the event link, the time horizon, and the relation between a domain-specific loss and a person’s life or agency. Functional pathology, capability effect, harm, wrongfulness, injustice, exploitation, responsibility, and legal liability consequently occupy separate inferential positions.

The paper asks:

Under which declared evaluative, comparison, causal, materiality, temporal, and evidential conditions does an event- or arrangement-linked impairment of a person’s effective generative capability support a domain-specific pro tanto harm judgment?

The preliminary answer is conditional. A positive harm row requires a person bearer, a materially adverse capability comparison, a coherent and admitted counterfactual, a supported event link, and a defended relation between the affected capability and the person’s well-being freedom or agency freedom. The complete diagnostic retains all admitted comparisons and all unresolved admission decisions. A positive row records pro tanto harm in the declared generative domain. Cross-domain balance and downstream normative categories receive separate evaluation.

Sen’s capability approach is indispensable to this proposal. It shifts the informational basis of evaluation from resources, utility, and achieved functionings toward real opportunities to achieve valuable beings and doings [10, 9]. It also distinguishes well-being from agency and freedom from achievement [8, 10]. The approach directs attention to conversion conditions, human diversity, selection and weighting, incomplete ordering, and public reasoning [9, 11, 7]. These commitments support the paper’s choice of evaluative object and its resistance to an output-only or scalar diagnosis.

The paper’s use of Sen has a defined boundary. A generative capability is proposed here as a domain-specific, horizon-indexed capability whose exercise can sustain, transform, transmit, or alter later opportunity sets. The trajectory repertoire, enriched coordinates, materiality rule, event-link status, and harm predicate are constructions of this paper and its predecessor projects. They

should receive independent assessment. The capability approach supplies an evaluative space and a discipline of specification; it leaves the complete theory of harm open.

The harm analysis combines three ideas. Feinberg’s account distinguishes adverse effects on interests from harm understood as a wrong [5]. Counterfactual-comparative theories represent harm through a comparison with the person’s position in a coherent event-absence arrangement, while also exposing difficult questions about the comparator and the scope of pro tanto evaluation [6]. Shiffrin’s critique of symmetrical worsening and improvement models cautions against treating a net score as a complete account of harm’s moral significance [12]. The present proposal uses a capability currency, a plural comparison profile, and an interest- or agency-sensitive bridge. It offers a bounded diagnostic and leaves a general metaphysics or priority theory of harm for later work.

The project also sits within the generative-justice programme associated with Eglash and collaborators. That programme develops bottom-up value circulation, generator control, unalienated value, circular flow, and nonlinear modeling [3, 1, 2, 4]. The present paper addresses one narrower question: the conditions under which a person’s impaired generative opportunity supports a harm classification. Its exact term and formal account receive separate attribution and remain open to originality review.

The paper contributes four elements. First, it reconstructs the capability approach as evaluative ancestry and states the inheritance and extension boundaries in explicit terms. Second, it defines *generative capability impairment* as a material, comparison-relative, event-linked relation, with output decline treated as an insufficient proxy. Third, it proposes a three-valued harm predicate and a full baseline-profile classification. Fourth, it derives a conditional repertoire result and supplies finite countermodels separating achievement from capability, harm from benefit balance, harm from wrongfulness, and robust status from baseline sensitivity.

The method is philosophical, constructive, and adversarial. Literature reconstruction fixes the inherited concepts. Formalization exposes the premises required by each inferential transition. Countermodels test claimed implications. Boundary configurations test the model against commitment, beneficial intervention, ecological restraint, recovery, and dependency. Empirical and deliberative design specifies what an application would need to observe and justify.

The paper’s central normative claim concerns persons. Group, ecological, intergenerational, and artificial-system extensions require separate standing and aggregation accounts. The target is a domain-specific pro tanto harm. Overall harm, wrongfulness, injustice, exploitation, responsibility, remedy, and law remain outside the current conclusion.

The remaining sections proceed in dependency order. Section 2 reconstructs the capability approach and the generative specialization. Section 3 locates the proposed account in harm theory. Section 4 fixes the analytical vocabulary. Section 5 states the formal account. Section 6 derives its limited consequences and countermodels. Section 7 applies the distinctions to boundary configurations. Section 8 states an empirical and deliberative research design. Sections 9 and 10 address objections and future work. Section 11 concludes.

Table 1: Capability-approach inheritance and generative specialization

Element	Inherited role	P028 use	Attribution boundary
Functionings	Achieved beings and doings	Achieved states and activities along a practice trajectory	The trajectory representation is developed here
Capability set	Real opportunity to achieve valuable functioning combinations	Viable repertoire plus justified relational and temporal coordinates	The enriched repertoire is a repository construction
Conversion conditions	Personal, social, and environmental mediation between means and opportunity	Skills, infrastructure, norms, recognition, access, relations, and environment	Each mapping requires domain evidence
Well-being and agency	Distinct evaluative achievements and freedoms	The affected practice can bear on personal well-being, valued agency, or both	The relation requires a case-specific warrant
Plurality and ordering	Context-sensitive selection, weighting, and possible incompleteness	Partial preorder and three-valued materiality status	Substantive weights require explicit defense
Public reasoning	Purpose-relative capability selection through discussion and revision	Documented evaluative process with participant reasoning, dissent, and review	Deliberation remains fallible and power-sensitive
Temporal security	Secure opportunity and risk within later capability scholarship	Recovery time, route-back cost, security, and lost later branches	Generative branching is an additional specialization

2 Capability Approach as Evaluative Ancestry

This section establishes the paper’s main philosophical inheritance. It moves from functionings and capabilities through conversion conditions, agency, plurality, and public reasoning, then states the limited generative extension. Table 1 summarizes the mapping and its attribution boundary.

2.1 Functionings, Capabilities, and Conversion Conditions

This subsection identifies the evaluative space inherited by the proposal. It separates achieved functionings, real opportunities, and the conditions through which means become usable possibilities.

Sen describes functionings as the beings and doings that compose a person’s life and capability as the person’s actual ability to achieve alternative valuable functioning combinations [10]. The distinction changes what counts as evidence. Two people can display the same achievement while one has chosen it from several feasible alternatives and the other has encountered a single available route. Fasting and enforced hunger supply the familiar structural contrast. The observed state can coincide while freedom differs.

The same structure appears in generative practice. Two researchers can produce the same paper while one retains independent access, alternative methods, collaborative routes, and future continuation, and the other depends on a revocable interface. Two speakers can produce equivalent sentences while one can teach, improvise, translate, contest correction, and transmit the practice, and the other can reproduce a narrow standardized register. Present output therefore supplies evidence

about achieved functioning and limited evidence about the surrounding capability set.

Resources remain important as means. Their evaluative significance depends on conversion. Sen’s account emphasizes that personal characteristics and social and environmental circumstances change what a resource enables [9]. Robeyns systematizes these distinctions and the operational choices required to use them [7]. Generative practice has corresponding conversion conditions: access terms, skills, time, care obligations, recognition, institutional rules, language, infrastructure, ecological conditions, network position, and practical routes for correction or exit. Formal permission can coexist with prohibitive cost, and possession of a latent organization can coexist with loss of viable realization routes.

The proposal consequently treats effective generative capability as an opportunity object. Resources, permissions, latent structures, and current outputs are inputs or observations. Each remains distinct from the full set of viable trajectories open to the person under a declared arrangement.

2.2 Well-Being, Agency, and Evaluative Plurality

This subsection states the internal plurality of capability evaluation. Its role is to prevent a generative practice from being reduced to personal welfare or elevated into a universal good.

Sen distinguishes well-being achievement, well-being freedom, agency achievement, and agency freedom [8, 10]. Agency concerns goals and values a person has reason to pursue, including goals whose object extends beyond the person’s own welfare. A person’s generative practice can contribute to livelihood, affiliation, self-respect, health, or security. It can also express commitments to teaching, inquiry, care, culture, ecology, public service, or future participants. These relations can coincide or conflict.

The distinction matters for harm. A temporary restriction can improve health while impairing the person’s freedom to continue a valued project. A person can endorse that trade-off. The generative loss can remain visible as a pro tanto coordinate while the intervention improves overall well-being. Conversely, a practice can generate prestige or income while undermining the person’s independent direction and later options. A single utility or output score conceals these patterns.

Sen also resists evaluation by counting alternatives. The value and character of options matter, and observable achievement can provide partial information about freedom while leaving the full set incompletely known [9]. P028 therefore uses a partial preorder over enriched capability objects. Inclusion can support a comparison under additional value conditions, while incomparability remains an admissible result.

2.3 Selection, Weighting, and Public Reasoning

This subsection specifies how a capability receives evaluative relevance. It uses Sen’s openness concerning lists and weights to motivate an explicit and revisable selection process.

Sen’s refusal to supply one fixed capability list reflects the different purposes of capability assessment and the role of public reasoning in selecting and weighing relevant capabilities [11]. This openness protects the framework from a modeller’s universal list, and it creates an obligation for every application. The analyst must identify whose reasons, which evidence, which affected parties, and which deliberative procedures support the selected domain.

P028 represents that obligation through an evaluative-process record. The record includes the person’s considered reasons, available information, historical commitments, affected relationships, internal conflict, dissent, representation, adaptation risks, and revision routes. A current preference can reflect constraint or strategic accommodation. External judgment can impose a normalizing ideal. Public discussion can reproduce power. The proposed method therefore permits support, supported failure, and unresolved status. It treats reasoning as evidence and justification subject to continuing criticism.

2.4 Generative Specialization and Temporal Security

This subsection states the paper’s extension and limits its conceptual claim. It compares generative capability with secure and fertile functionings and defines the extra work performed by a trajectory horizon.

Wolff and de-Shalit extend capability analysis toward genuine opportunity for secure functioning, emphasizing risk, insecurity, corrosive disadvantage, and fertile functioning [13]. Their work is a close antecedent. A capability’s reliability across time matters, and one functioning can affect opportunities in other domains. These points already resist a static snapshot.

Generative capability is proposed here as a narrower specialization. Its focal trajectories involve the initiation, continuation, direction, transformation, transmission, recovery, or branching of a practice. Exercise can change the conditions from which later exercise proceeds. Teaching can create successors; research can create methods and questions; language use can reproduce or alter transmission routes; institutional participation can build or erode recognition and access. The distinction from ordinary capability varies by degree and horizon. Education, health, mobility, and affiliation often have generative effects. The term earns use where future branching or renewal changes the analysis.

The extension adds temporal indices and route structure. It presents a graded specialization; an ontologically separate human faculty lies beyond its claim. The value of greater generativity remains open. Generative capacities can support domination, deception, ecological destruction, or compulsive expansion. Domain selection and valuation remain independent steps.

Table 2: Harm-theory roles in the conditional account

Source structure	Admissible role	P028 construction	Remaining limit
Interest setback	Adverse effect on welfare or ulterior interests and separation from wrong	Reason-valued well-being or agency capability supplies the affected coordinate	The capability–interest bridge needs independent defense
Counterfactual comparison	Event-relative worsening against a world in which the event is absent	Family of prevention, suppression, continuation, or repair arrangements	Overdetermination, preemption, identity, and comparator choice remain difficult
Pro tanto status	Harm in one respect alongside benefit in another	Generative-capability coordinate retained before cross-domain ordering	Overall evaluation needs an additional procedure
Moral significance	Harm may have a significance inadequately represented by symmetric netting	Benefit receives a separate coordinate and leaves harm visible	A general priority rule remains open
Wrongfulness separation	Harm facts and violated duties can diverge	Downstream wrong, injustice, and responsibility vector	A successor project must provide substantive principles

3 Harm Currency and Comparative Structure

This section positions the proposed account within harm theory. It distinguishes the currency of harm from its comparative measure, separates pro tanto from overall evaluation, and preserves the boundary between harm and wrongfulness. Table 2 records the roles and limits of the principal antecedents.

3.1 Interest Setback and Wrongfulness

This subsection establishes the first harm-theory distinction. It uses Feinberg’s separation of adversely affected interests and wrongs to keep the paper’s harm coordinate prior to justification and liability.

Feinberg distinguishes a nonnormative sense of harm as a setback to interests from a normative sense in which the setback is also a wrong [5]. Welfare interests and ulterior interests supply different objects. A person’s wants and interests can diverge, and adverse effects can arise through innocent conduct, natural events, or consented interventions. P028 adopts the separation and leaves Feinberg’s criminal-law harm principle outside its scope.

The capability approach supplies a candidate currency for a class of interest setbacks. A person’s reason-valued freedom to pursue a functioning or project can be adversely affected even when resources remain in place and current output continues. Agency freedom broadens the connection beyond personal welfare. A project can matter because the person has reason to pursue it for others, a practice, or a public aim.

This connection remains conditional. The label *generative* supplies limited evidence of value. The affected trajectory must connect to a defended well-being or agency domain. That bridge can draw on the person’s reasoning, public deliberation, relational evidence, and critical examination of

adaptation. Each source can support or complicate the assessment.

3.2 Counterfactual Comparison and Baseline Plurality

This subsection introduces the comparative structure used to measure an event’s effect. It replaces a single tacit baseline with a disclosed family and a profile over its members.

The counterfactual-comparative account holds, in a general form, that an event harms a person when an appropriate event-absence arrangement leaves that person better off [6]. Applied to capability, the comparison asks whether the person’s effective opportunity would have been materially greater under a coherent alternative. The comparison can suppress an event, prevent a rule, continue a prior arrangement, or introduce a feasible repair. Each operation changes a different set of co-conditions.

A unique comparison often lacks independent support. A pre-event state can contain conditions that were already deteriorating. An event-absence world can be technologically impossible. A legal-entitlement baseline can answer a wrongfulness question while obscuring a real setback. An ideal world can make ordinary life appear maximally harmful. A degraded status quo can erase preventable loss. P028 therefore uses a family of technically feasible, counterfactually coherent, signature-matched comparisons and a separate harm-relevance admission rule.

Plurality also reveals difficult cases. Overdetermination can make the person equally badly off when one harmful cause is removed because another remains. Preemption can hide a causal contribution. Non-identity cases alter the bearer. Omissions and diffuse institutional processes complicate intervention semantics. The proposed event-link predicate returns an unresolved status when the chosen comparison semantics leave the relevant relation unrepresented. That response marks the boundary of the model.

3.3 Pro Tanto and Overall Evaluation

This subsection fixes the level of the paper’s conclusion. It keeps a domain-specific capability loss visible while reserving cross-domain balance for a separate ordering procedure.

An intervention can impair a generative practice and improve health, safety, income, affiliation, or ecological conditions. The person can endorse the intervention and still lose an opportunity in one respect. P028 calls the supported generative loss a *pro tanto generative-capability harm*. The term identifies an adverse coordinate under declared conditions. The person’s overall position remains open.

Overall evaluation requires a relation across domains and time. A Pareto order can leave the result incomparable. A deliberative procedure can accept a trade-off. A lexical rule can prioritize basic capabilities or urgent safety. A scalar index can support a bounded application after its weights and losses of information are defended. P028 preserves this range; a default aggregator remains open.

Shiffrin argues that standard symmetric models of harm and benefit struggle to represent harm’s moral significance and its relation to autonomy [12]. The present account accepts the caution. It keeps harm and benefit in separate registers. It also withholds the further conclusion that a supported harm always has lexical or presumptive priority. Such a rule requires a richer moral argument.

3.4 Normative Successor Categories

This subsection states the stopping rule. It identifies the additional grounds required for overall harm, wrongfulness, injustice, exploitation, responsibility, remedy, and legal liability.

Wrongfulness can depend on a violated claim, duty, authority relation, legitimate expectation, respect requirement, or justified limit. Injustice can depend on distribution, procedure, historical structure, domination, discrimination, or institutional position. Exploitation requires a benefit-through relation under the earlier programme. Responsibility requires an account of causation, agency, role, knowledge, benefit, capacity, or social connection. Remedy requires a theory of fit, feasibility, affected parties, and competing claims. Legal liability adds jurisdiction, date, cause of action, elements, defenses, evidence, and institutional authority.

A positive harm row can coexist with informed consent and proportionate justification. A wrongful interference can produce little or unresolved harm. A structural injustice can persist without identifiable individual culpability. These possibilities motivate a vector of downstream classifications whose coordinates receive independent warrants.

Table 3: Diagnostic stages from achievement to downstream classification

Stage	Focal object	Required warrant	Subsequent status retained
Achievement	Realized activity or output	Observation and target validity	Capability remains open
Effective capability	Viable reachable repertoire and enriched coordinates	Policies, conversion conditions, viability, transitions, and identification	Material comparison remains open
Capability contraction	Lower capability under one comparator	Coherent comparison and partial order	Value and materiality remain open
Material disadvantage	Evaluatively significant contraction	Dimension selection, weighting, threshold, and reasoned process	Event linkage remains open
Event-linked impairment	Material difference linked to event or rule	Causal intervention, mechanism, or constitutive mapping	Harm relation remains open
Pro tanto harm	Impaired reason-valued well-being or agency capability	Person bearer and valued-domain bridge	Overall harm and wrong remain open
Overall and normative statuses	Cross-domain position, wrong, injustice, responsibility, remedy, and law	Separate evaluative, moral, institutional, and legal grounds	Reported in successor inquiries

4 Analytical Vocabulary

This section defines the paper’s core terms and fixes their inferential order. It begins with practice and trajectory, then moves through effective capability, contraction, impairment, and pro tanto harm. Table 3 provides the compact dependency map used by the later formalization.

Definition 4.1 (Generative practice). *A generative practice is a declared domain of organized activity in which participants can initiate, sustain, direct, transform, transmit, recover, or branch processes and in which present exercise can alter later realization conditions or opportunity sets.*

The definition is functional and domain-indexed. Research, craft, language, care, institution building, ecological stewardship, artistic practice, and technical production can qualify under specific descriptions. Moral valence requires a separate evaluation.

Definition 4.2 (Generative trajectory). *A generative trajectory is a time-indexed sequence of states, actions, relations, and outcomes within a declared practice, together with the later realization conditions and branches produced or preserved along that sequence.*

The trajectory can include interruption, maintenance, repetition, transformation, teaching, succession, or repair. Novel output is one possible event among several.

Definition 4.3 (Effective generative capability). *A person’s effective generative capability is the set of viable generative trajectories feasibly reachable from the person’s current history under a complete arrangement, enriched by independently justified coordinates such as direction, autonomy, security, recognition, exit, recovery burden, and later branching.*

This definition develops the earlier repository object and aligns its primary evaluative function with Sen's real-opportunity perspective. The enrichment keeps relational properties visible where the trajectory set alone provides an incomplete description.

Definition 4.4 (Capability contraction). *A generative capability contraction occurs relative to comparison arrangement b when the focal capability k_m is weakly below k_b in the declared partial order and fails equivalence. Contraction remains a comparison statement whose materiality and value are open.*

Definition 4.5 (Generative capability impairment). *A generative capability impairment is an event- or arrangement-linked, materially adverse difference in a person's effective capability to initiate, sustain, direct, transform, transmit, recover, or branch a declared generative practice over a stated horizon, relative to an independently constructed and admitted comparison arrangement.*

Materiality excludes trivial or resolution-level differences under the declared specification. Event linkage distinguishes the focal source from a coincident difference. The definition remains compatible with consent, benefit, and justification.

Definition 4.6 (Pro tanto generative-capability harm). *A pro tanto generative-capability harm occurs under a comparison row when a person suffers a supported generative capability impairment in a domain whose affected coordinates bear a defended relation to the person's well-being freedom, agency freedom, or both.*

The definition is conditional and coordinate-specific. It carries the comparison, horizon, materiality, evaluative process, and evidential status as part of the claim.

Remark 4.7 (Terminological discipline). *The word impairment names the technical relation in Definition 4.5. Disability, disease, incapacity, deviation from a species norm, and entitlement to intervention are separate concepts. Application to disability requires a dedicated literature and participation process.*

5 Conditional Formal Account

This section states the proposed account in dependency order. It declares the case signature and capability object, constructs a harm-relevant comparison family, evaluates material disadvantage and event linkage, assembles the harm row, and adds temporal recovery. Every formula is a proposed diagnostic object unless a proposition is explicitly identified as a conditional mathematical consequence.

5.1 Status Algebra and Case Signature

This subsection introduces the reporting algebra and the indices required by a capability claim. The algebra preserves supported, rejected, and unresolved inputs.

Let

$$\mathbb{V}_3 = \{1, 0, ?\}. \quad (1)$$

The strong conjunction $\wedge_3$ returns 1 when every input equals 1, returns 0 when at least one input equals 0, and returns ? otherwise. It records epistemic and formal status. A probabilistic interpretation remains unspecified.

Let the case signature be

$$z = (i, d, t, h, H, e, m, \mathcal{T}_{d,H}, \mathcal{F}_d, \Theta, \eta), \quad (2)$$

where i is a person, d a generative domain, t the assessment time, h the history, $H > 0$ the horizon, e the focal event or rule, and m the focal complete arrangement. The trajectory and functioning spaces are $\mathcal{T}_{d,H}$ and $\mathcal{F}_d$. The evaluative and materiality specifications are Θ and η .

For arrangement r , define a functioning projection

$$\varphi_{i,d}^r : \mathcal{T}_{d,H} \longrightarrow \mathcal{F}_d^{[t,t+H]}, \quad \mathcal{C}_{i,d}(r) = \varphi_{i,d}^r[\mathcal{P}_i(G_i; r, h)]. \quad (3)$$

The image $\mathcal{C}_{i,d}(r)$ expresses the capability connection. The preimage repertoire retains trajectories that share present functionings while differing in later branching, recovery, direction, or transmission.

5.2 Reachable Repertoire and Enriched Capability

This subsection constructs effective opportunity. It reuses the predecessor model's measurable repertoire and states the additional evaluative coordinates needed by the harm account.

Let $(\mathcal{T}_{d,H}, \rho)$ be a metric trajectory space. Each arrangement r supplies a measurable viability event $\mathcal{V}_i(r, h)$, a nonempty feasible policy family $\mathcal{A}_i(r, h)$, and probability kernels $\mathbb{P}_{i,G_i}^{r,a}(\cdot \mid h)$. For $\epsilon \in (0, 1]$ and $\delta > 0$, define

$$\mathcal{P}_i^{H,\epsilon,\delta}(G_i; r, h) = \left\{ \tau \in \mathcal{V}_i(r, h) : \exists a \in \mathcal{A}_i(r, h) \mathbb{P}_{i,G_i}^{r,a}(\mathcal{N}_\delta(\tau) \cap \mathcal{V}_i(r, h) \mid h) \geq \epsilon \right\}. \quad (4)$$

The indices, metric, policy semantics, viability conditions, transition model, and history are constitutive parts of the claim. Deterministic dynamics arise as concentrated kernels.

Let $q_i^\Theta(r)$ include only justified relational and temporal dimensions, such as direction-setting authority, continuation, transmission, recognition, exit, security, duration, recovery cost, and capacity for later branching. Define

$$\mathbf{K}_i^\Theta(r) = \left(\mathcal{P}_i^{H,\epsilon,\delta}(G_i; r, h), q_i^\Theta(r) \right) \in \mathfrak{K}_\Theta. \quad (5)$$

The specification Θ supplies a partial preorder $\succeq_\Theta$ on $\mathfrak{K}_\Theta$. Define

$$\begin{aligned} k_1 \succ_\Theta k_0 &\iff k_1 \succeq_\Theta k_0 \wedge k_0 \not\succeq_\Theta k_1, \\ k_1 \succ_{\Theta,\eta} k_0 &\iff k_1 \succ_\Theta k_0 \wedge \mu_\eta^\Theta(k_1, k_0) = 1, \end{aligned} \quad (6)$$

where $\mu_\eta^\Theta : \mathfrak{K}_\Theta^2 \rightarrow \mathbb{V}_3$ is a predeclared materiality rule. A scalar representation can serve a bounded application after its order and information loss are justified.

5.3 Harm-Relevant Comparison Family

This subsection builds the comparison domain independently of the desired verdict. It separates technical feasibility, counterfactual coherence, signature matching, and harm relevance.

For candidate comparison b , let

$$\text{Tech}_z(b \mid m), \quad \text{Ctf}_z(b \mid e, m), \quad \text{Match}_z(b \mid m) \in \mathbb{V}_3.$$

Define

$$\mathcal{B}_i^F(e; m) = \{b : \text{Tech}_z(b \mid m) = 1, \text{Ctf}_z(b \mid e, m) = 1, \text{Match}_z(b \mid m) = 1\}. \quad (7)$$

Technical feasibility concerns material and institutional implementation. Counterfactual coherence supplies event suppression, prevention, continuation, repair, or another declared semantics. Signature matching keeps person, domain, history, horizon, and outcome types aligned except where modeled differences are part of the contrast.

Let

$$\Lambda_i^H : \mathcal{B}_i^F(e; m) \longrightarrow \mathbb{V}_3 \quad (8)$$

be a harm-relevance admission rule based on causal relevance, identity continuity, temporal consistency, and adequacy for evaluating the person's interest or agency. The rule excludes the final harm status, wrongfulness, liability, and desired result from its inputs. Define

$$\begin{aligned} \mathcal{B}_{i,\Lambda}^H(e; m) &= \{b \in \mathcal{B}_i^F(e; m) : \Lambda_i^H(b) = 1\}, \\ \mathcal{B}_{i,\Lambda}^{H,?}(e; m) &= \{b \in \mathcal{B}_i^F(e; m) : \Lambda_i^H(b) = ?\}. \end{aligned} \quad (9)$$

Assumption 5.1 (Comparison independence). *Technical feasibility, counterfactual coherence, signature matching, and harm-relevance admission are constructed without reference to the target harm row or any downstream normative verdict.*

The assumption prevents circular baseline selection. Its satisfaction requires a disclosed construction log and sensitivity analysis.

5.4 Material Capability Disadvantage

This subsection assigns the capability-comparison status. It keeps identified material disadvantage distinct from reverse dominance, submaterial change, and incomparability.

For each $b \in \mathcal{B}_i^F(e; m)$, let $k_b = K_i^\Theta(b)$, $k_m = K_i^\Theta(m)$, and $l_K(m; b) \in \mathbb{V}_3$ record identification of both objects and their order relation. Define

$$D_i^{\Theta, \eta}(m; b) = \begin{cases} 1, & l_K = 1, k_b \succ_\Theta k_m, \mu_\eta^\Theta(k_b, k_m) = 1, \\ 0, & l_K = 1, k_m \succeq_\Theta k_b, \\ 0, & l_K = 1, k_b \succ_\Theta k_m, \mu_\eta^\Theta(k_b, k_m) = 0, \\ ?, & l_K = 1, k_b \succ_\Theta k_m, \mu_\eta^\Theta(k_b, k_m) = ?, \\ ?, & l_K \neq 1 \vee k_b \parallel_\Theta k_m. \end{cases} \quad (10)$$

The cases cover the intended statuses under the declared partial preorder. A positive value establishes a material capability difference in the row. It leaves value, event linkage, and harm open.

5.5 Valued Domain and Event Link

This subsection supplies the two bridge inputs beyond capability comparison. It represents the reasoned value of the affected domain and the focal event's relation to the difference.

Let

$$S_i^d \in \mathbb{V}_3, \quad V_i^{d, \Omega}(m; b) \in \mathbb{V}_3, \quad L_i(e; m, b) \in \mathbb{V}_3. \quad (11)$$

The bearer status S_i^d records attribution of the capability to a person. The valued-domain status $V_i^{d, \Omega}$ records a defended relation between the affected coordinates and the person's well-being freedom, agency freedom, or both. The process specification Ω records reasons, evidence, information, dissent, representation, adaptation risks, and revision routes.

The event-link status L_i is positive when a causal intervention, mechanism, or constitutive rule links e to the capability difference. An adequate independence result yields zero. Missing evidence, incoherent intervention, or unresolved causal structure yields ?.

$$\text{Imp}_i^{G, d, H}(e; m, b) = D_i^{\Theta, \eta}(m; b) \wedge_3 L_i(e; m, b). \quad (12)$$

5.6 Harm Row and Baseline Profile

This subsection states the central conditional harm predicate and the profile classification. It preserves every comparison row before applying a summary label.

For each admitted row, define

$$H_i^{G,d,H}(e; m, b) = S_i^d \wedge_3 V_i^{d,\Omega}(m; b) \wedge_3 \text{Imp}_i^{G,d,H}(e; m, b). \quad (13)$$

Claim 5.2 (Conditional harm bridge). *Within the proposed account, a positive row is licensed exactly when the person-bearer, valued-domain, material-disadvantage, and event-link statuses are all positive under an admitted comparison. The result is a domain-specific pro tanto harm status.*

The claim defines the diagnostic bridge. Its empirical validity and external moral authority remain open.

The full profile is

$$\Pi_i^{G,H}(e; m) = \left\langle (b, \Lambda_i^H(b), l_K(m; b), S_i^d, V_i^{d,\Omega}(m; b), D_i^{\Theta,\eta}(m; b), \right. \\ \left. L_i(e; m, b), \text{Imp}_i^{G,d,H}(e; m, b), H_i^{G,d,H}(e; m, b)) : b \in \mathcal{B}_i^F(e; m) \right\rangle. \quad (14)$$

Let $A = \mathcal{B}_{i,\Lambda}^H(e; m)$, $U = \mathcal{B}_{i,\Lambda}^{H,?}(e; m)$, and $h_b = H_i^{G,d,H}(e; m, b)$. Apply labels in lexical order:

$$\text{Class}(\Pi_i^{G,H}) = \begin{cases} \text{indeterminate,} & A = \emptyset \vee U \neq \emptyset \vee \exists b \in A : h_b = ?, \\ \text{robust supported,} & A \neq \emptyset \wedge \forall b \in A : h_b = 1, \\ \text{robust rejected,} & A \neq \emptyset \wedge \forall b \in A : h_b = 0, \\ \text{baseline sensitive,} & \exists b_1, b_0 \in A : h_{b_1} = 1 \wedge h_{b_0} = 0. \end{cases} \quad (15)$$

Robustness is family-relative. A narrow, biased, or weakly identified family limits the evidential significance of its summary.

Define a downstream vector

$$\mathbf{N}_i = (H_i^{\text{overall}}, \text{Wrong}_i, \text{Injustice}_i, \text{Exploit}_i, \text{Responsibility}, \text{Remedy}, \text{Law}). \quad (16)$$

Each coordinate requires a separate rule and evidence. Equation (13) alone leaves the vector unresolved.

5.7 Duration, Security, and Recovery

This subsection adds temporal structure to the materiality assessment. It distinguishes brief secure restoration from precarious or branch-destroying recovery.

Let $k_m(s)$ and $k_b(s)$ be time-indexed capability states. For recovery window $w > 0$, define

$$T_i^{\text{rec}}(m; b) = \inf \{s \in [0, H - w] : k_m(u) \succeq_{\Theta,\eta} k_b(u) \text{ for every } u \in [s, s + w]\}, \quad (17)$$

with value ∞ when the set is empty. Let $\mathcal{A}_i^{\text{rec}}(m; b)$ be viable recovery policies and define

$$\begin{aligned} C_i^{\text{rec}}(m; b) &= \inf_{a \in \mathcal{A}_i^{\text{rec}}(m; b)} \text{Cost}_i(a), \\ \mathcal{L}_i^{\text{branch}}(m; b) &= \bigcup_{s < t + T_i^{\text{rec}}} (\mathcal{P}_i(b, s) \setminus \mathcal{P}_i(m, s)). \end{aligned} \tag{18}$$

The temporal profile is

$$\mathbf{R}_i(m; b) = \left(T_i^{\text{rec}}, C_i^{\text{rec}}, \mathcal{L}_i^{\text{branch}}, p_i^{\text{rec}}, \sigma_i^{\text{sec}} \right), \tag{19}$$

where p_i^{rec} is a recovery probability and σ_i^{sec} a security coordinate. The components can enter q_i^Θ and μ_η^Θ . A nominal restoration with prohibitive cost or recurring withdrawal can remain materially impaired.

6 Derivations and Countermodels

This section tests the formal account through one conditional inclusion result, a material lost-trajectory corollary, and five finite countermodels. The proofs concern model-internal consequences. The examples establish logical separation and leave empirical prevalence open.

6.1 Conditional Repertoire Contraction

This subsection transfers a predecessor result into the harm architecture. It states the assumptions under which a restriction produces repertoire inclusion and identifies the precise point at which normative premises enter.

Proposition 6.1 (Conditional repertoire inclusion). *Let m be the focal arrangement and b a comparison. Suppose:*

- (i) $\mathcal{A}_i(m, h) \subseteq \mathcal{A}_i(b, h)$;
- (ii) $\mathcal{V}_i(m, h) \subseteq \mathcal{V}_i(b, h)$; and
- (iii) for every $a \in \mathcal{A}_i(m, h)$ and $\tau \in \mathcal{V}_i(m, h)$,

$$\mathbb{P}_{i, G_i}^{b, a}(\mathcal{N}_\delta(\tau) \cap \mathcal{V}_i(b, h) \mid h) \geq \mathbb{P}_{i, G_i}^{m, a}(\mathcal{N}_\delta(\tau) \cap \mathcal{V}_i(m, h) \mid h).$$

Then

$$\mathcal{P}_i^{H, \epsilon, \delta}(G_i; m, h) \subseteq \mathcal{P}_i^{H, \epsilon, \delta}(G_i; b, h).$$

Proof. Choose arbitrary $\tau \in \mathcal{P}_i^{H, \epsilon, \delta}(G_i; m, h)$. Definition (4) supplies viability under m and a witness policy $a \in \mathcal{A}_i(m, h)$ whose viable neighborhood probability reaches ϵ . Assumptions (i) and (ii) preserve the witness policy and trajectory viability under b . Assumption (iii) preserves the probability threshold. Every clause of Definition (4) therefore holds under b . Arbitrary membership gives the inclusion. $\square$

The proof is a transferred conditional result from the earlier capability framework. Its assumptions carry its content. Added options can change incentives, congestion, relationships, transition laws, or viability and thereby defeat condition (iii). A restriction can also induce innovation or coalition formation that creates new routes.

Proposition 6.2 (Material lost-trajectory bridge). *Assume Proposition 6.1 and a trajectory*

$$\tau^* \in \mathcal{P}_i(G_i; b, h) \setminus \mathcal{P}_i(G_i; m, h)$$

whose loss and associated coordinates make $k_b \succ_{\Theta, \eta} k_m$. If $\mathbf{l}_K = \mathbf{L}_i = \mathbf{S}_i^d = \mathbf{V}_i^{d, \Omega} = 1$, then

$$\mathbf{D}_i^{\Theta, \eta} = 1, \quad \mathbf{Imp}_i^{G, d, H} = 1, \quad \mathbf{H}_i^{G, d, H} = 1.$$

Proof. Identified material strict dominance satisfies the first case of Equation (10). The positive event link and strong conjunction give Equation (12) value (1). Positive bearer and valued-domain inputs then give Equation (13) value (1). $\square$

The proposition demonstrates continuity of the formal chain. It also displays the dependence of the harm result on premises beyond the trajectory witness.

6.2 Achievement–Capability Separation

This subsection constructs equal realized achievement with unequal opportunity. Its role is to establish the failure of output equality as a capability test.

Let $\mathcal{T} = \{\tau_a, \tau_b\}$. Under comparison b , set

$$\mathcal{P}_i(b) = \{\tau_a, \tau_b\}, \quad \mathcal{P}_i(m) = \{\tau_a\}.$$

Suppose the person realizes τ_a in both arrangements and $\varphi(\tau_a) = f_a$. Observed output and achieved functioning coincide. Capability sets differ. If τ_b is a reason-valued, feasible, and material branch under Θ and η , then $k_b \succ_{\Theta, \eta} k_m$.

Proposition 6.3 (Achievement underidentification). *Equality of the observed achieved functioning is compatible with a strict material generative-capability comparison.*

Proof. The construction realizes f_a in each arrangement. The comparison repertoire contains τ_b and the focal repertoire excludes it. The declared material order assigns strict dominance. Both statements hold in the same finite model. $\square$

The result supplies logical coexistence. An actual application still needs evidence that the missing trajectory was feasible, viable, reason-valued, material, and linked to the focal event.

6.3 Pro Tanto Harm and Benefit Coexistence

This subsection tests cross-domain aggregation. It gives a case in which the generative harm row is positive while another capability improves.

Use two typed coordinates: generative capability $g \in \{0, 1\}$ and health benefit $r \in \{0, 2\}$. Let

$$(g_m, r_m) = (0, 2), \quad (g_b, r_b) = (1, 0).$$

Under the declared generative order, the comparison materially dominates the focal arrangement. Let the bearer, value, and event-link statuses equal (1). Equation (13) yields a positive pro tanto harm row. The focal arrangement simultaneously supplies a health benefit.

Proposition 6.4 (Harm–benefit coexistence). *A positive pro tanto generative-capability harm row is compatible with a positive benefit in another capability domain and with an overall order that favors the focal arrangement.*

Proof. The generative coordinate satisfies every input of Equation (13). A cross-domain rule giving lexical priority to the health coordinate ranks m above b . A Pareto order leaves the pair incomparable. The positive generative row therefore coexists with both benefit and alternative overall classifications. $\square$

The construction justifies preservation of a pro tanto profile. Cross-domain priority remains open.

6.4 Harm–Wrongfulness Separation

This subsection tests the downstream stopping rule. It holds every harm input fixed and varies authorization and justification.

Consider two cases with the same person, domain, horizon, capability difference, materiality, event link, and recovery profile. Case A involves a proportionate emergency intervention that temporarily impairs the practice while preventing severe danger under informed authorization where feasible. Case B imposes the same impairment for an unrelated hostile purpose.

Proposition 6.5 (Downstream normative independence). *The proposed harm row can remain fixed while a separately defined wrongfulness status changes.*

Proof. The two cases assign identical values to every input of Equation (13); the harm result is identical. A downstream rule using authorization, purpose, necessity, proportionality, and alternatives can assign different values to Wrong_i . Equation (16) treats that coordinate as independently specified. $\square$

The result establishes logical independence within the architecture. A complete theory of justified intervention remains a successor task.

6.5 Baseline Sensitivity

This subsection demonstrates why a single selected comparator can conceal the diagnostic’s dependence. It uses one scalar coordinate solely for the finite illustration.

Let $k_m = 1$, $k_{b_1} = 2$, and $k_{b_0} = 0.5$, with materiality threshold below one. Suppose both comparisons are coherent and admitted and every other input is resolved. The first comparison materially dominates the focal arrangement, while the focal arrangement dominates the second.

Proposition 6.6 (Profile sensitivity). *One focal arrangement can receive a positive harm row under one admitted comparison and a negative row under another.*

Proof. Equation (10) assigns 1 under b_1 and 0 under b_0 . With positive bearer, value, and event-link inputs, the harm rows are 1 and 0. Equation (15) assigns baseline-sensitive status. $\square$

The scalar form is confined to the witness. The primary account retains a partial enriched order.

6.6 Recovery-Profile Separation

This subsection tests the temporal enrichment. It compares two initially equal losses with different security and branch outcomes.

Let m_1 and m_2 share the same initial repertoire contraction and regain the same repertoire at time $s = 2$. Under m_1 , a guaranteed restoration route has negligible cost and preserves each time-insensitive branch. Under m_2 , restoration requires a costly uncertain process, and a deadline-sensitive branch disappears at $s = 1$.

Proposition 6.7 (Recovery-profile discrimination). *Pointwise equality before impairment and after nominal restoration can coexist with unequal temporal capability profiles.*

Proof. The pointwise repertoires agree at the selected endpoints. Equations (17)–(19) assign different recovery cost, probability, security, and lost-branch components. An evaluative specification containing those components distinguishes the profiles. $\square$

The result supports the inclusion of security and route-back conditions. It also shows why formal return of access can fail to restore effective capability.

Table 4: Boundary configurations for generative-capability harm

Configuration	Capability focus	Harm-profile implication	Downstream register
Voluntary specialization	Agency-sensitive value of foreclosed alternatives and coherent comparison	Pro tanto loss can coexist with endorsed commitment or incomparability	Authorization and overall evaluation
Beneficial treatment or training	Duration, security, recovery, and later branching	Temporary impairment can coexist with substantial benefit	Proportionality and justification
Ecological restraint	Personal route loss and effects on others or ecosystems	Personal pro tanto harm can coexist with protective outcomes	Distribution, necessity, and justice
Prevention of harmful practice	Value of agency route and danger of generated outcomes	Bearer harm can remain visible under justified limitation	Rights, authority, and safety
Recognition bottleneck	Access to evaluation and future opportunity routes	Capability loss can remain latent behind stable output	Epistemic injustice and institutional design
Induced dependency and closure	Reliance, viable continuation, exit, and route-back cost	Material harm can arise with beneficiary gain unresolved	Exploitation and responsibility
Formal release	Practical restoration, recurring withdrawal, and lost branches	Continuing impairment can survive ended control	Transition responsibility and repair

7 Boundary Configurations

This section tests the account against configurations that can mislead a simple loss model. It applies the same dependency chain to commitment, beneficial intervention, ecological restraint, harmful practices, recognition, dependency, and restoration. Table 4 summarizes the distinctions.

7.1 Voluntary Specialization and Commitment

This subsection addresses option closure through chosen projects. Its role is to prevent raw set inclusion from pathologizing commitment.

Serious commitments consume time, exclude alternatives, and reorganize future options. Craft discipline, parenthood, research specialization, confidentiality, and collective projects can narrow one repertoire while expressing agency. A coherent comparison must preserve the relevant choice and its consequences. Mutually incompatible alternatives require separate comparison rows.

The enriched order can represent direction-setting authority and commitment as valuable coordinates. The result can be strict loss in one domain, improvement in agency achievement, or incomparability. An informed and revisable choice can leave a pro tanto cost visible while supporting an overall endorsement. The harm label therefore performs limited work; the verdict on the commitment remains open.

7.2 Beneficial Intervention and Temporary Impairment

This subsection addresses treatment, training, emergency action, and other interventions that impose temporary loss for a valued outcome. It tests the *pro tanto* and recovery distinctions.

Medical treatment can interrupt artistic or intellectual practice. Intensive training can restrict current experimentation while building later competence. Emergency evacuation can suspend a community practice while protecting life. The focal event can satisfy the impairment and harm predicates in the declared domain. The same event can yield decisive benefit and receive proportionate justification.

Duration alone offers a weak measure. The analysis should include stable restoration, cost, recurrence, security, and time-sensitive branches. A short interruption that misses a unique season, application window, apprenticeship stage, or intergenerational encounter can carry a long tail. A longer pause with guaranteed support and preserved routes can carry a smaller generative loss.

7.3 Ecological Restraint and Harmful Generativity

This subsection addresses practices whose expansion burdens others or ecosystems. It prevents the account from treating generativity as an overriding value.

Limits on extraction, pollution, surveillance, deceptive persuasion, weapons, or coercive organization can contract a person's or firm's effective generative repertoire. A person can experience a *pro tanto* agency or livelihood loss. Protection of other persons, communities, species, or ecological conditions can justify the restriction and can preserve a wider capability system.

The capability approach requires attention to each affected person and to conversion conditions. The present person-centered model can record the focal person's loss. It requires additional standing and distribution frameworks for ecological and collective effects. A successor injustice analysis should compare burden allocation, participation, alternatives, transition support, historical benefit, and available less restrictive routes.

7.4 Recognition, Dependency, and Restoration

This subsection addresses capability effects that remain hidden behind current performance. It connects the harm account to predecessor work on recognition, infrastructure, and exit.

A recognition bottleneck can block funding, credentials, attribution, translation, or access to future opportunities while output persists through unpaid effort or existing reserves. The relevant evidence concerns routes and gates as well as artifacts. Stable output can therefore coexist with a growing capability impairment.

An open infrastructure can induce specialization and dependency. Later closure can strand a trajectory even when the participant retains skills or artifacts. The harm account asks whether viable continuation materially contracts relative to admitted arrangements. A separate exploitation inquiry asks whether another party benefits through the affected position.

Formal release from control also leaves restoration open. Access can return after collaborators depart, recognition decays, deadlines pass, or switching costs rise. The recovery profile records these effects. Responsibility for transition and repair remains a downstream inquiry.

Table 5: Evidence architecture for a generative-capability harm study

Research stage	Evidence target	Candidate design	Principal limitation
Domain declaration	Practice, person, history, horizon, and affected functionings	Participatory scoping, document review, role mapping	Selection can omit dissent or affected outsiders
Conversion mapping	Personal, social, environmental, and institutional conditions	Process tracing, access logs, interviews, infrastructure audit	Observed conditions can miss latent relations
Repertoire identification	Feasible viable trajectories and enriched coordinates	Controlled access variation, natural experiments, simulation, bounds	Finite traces underidentify counterfactual opportunity
Comparison construction	Coherent prevention, suppression, continuation, and repair arrangements	Design log, feasibility review, rival-model sensitivity	Baselines can encode contested assumptions
Event linkage	Causal or constitutive connection to capability difference	Intervention, longitudinal design, mechanism evidence, institutional rule	Overdetermination and interference can defeat simple contrasts
Evaluative specification	Reason-valued well-being or agency relation and materiality	Informed deliberation, individual reflection, dissent record, iterative weighting	Adaptive preference and paternalism remain dual risks
Temporal profile	Duration, security, recovery, cost, recurrence, and lost branches	Follow-up, withdrawal and restoration tests, survival or hazard analysis	Observation windows can miss later effects
Profile reporting	Full row set and uncertainty	Preregistered three-valued audit and sensitivity report	Family-relative robustness can be overstated

8 Empirical and Deliberative Research Design

This section translates the conceptual account into a staged research design. It separates descriptive measurement, counterfactual identification, evaluative reasoning, longitudinal observation, and normative reporting. Table 5 identifies the evidence target and principal failure mode at each stage.

8.1 Case and Domain Specification

This subsection defines the empirical unit before measurement. It records the person, practice, event, arrangement, history, horizon, and functioning domain.

A study should begin with a case signature and a boundary log. Participants and affected parties should identify the practice’s activities, relations, transmission routes, dependencies, time-sensitive stages, and relevant functionings. Historical documents and process records can reveal prior conditions and institutional changes. The horizon should match the practice: days can matter for emergency work, seasons for agriculture or ceremony, years for apprenticeship, and generations for language transmission.

The person-centered focus requires individual variation. Group averages can hide disability, language, care, geography, income, network position, or role differences in conversion. Participant identity also requires protection where the study reveals precarious access, dissent, or institutional dependence.

8.2 Capability and Event-Link Identification

This subsection specifies evidence for opportunity and causation. It separates observed trajectories from the counterfactual repertoire and distinguishes direct measurement from model-based bounds.

Directly logged changes in permissions, interfaces, access, funding, time, equipment, or gate decisions can identify portions of the action and conversion structure. Controlled variation or natural experiments can estimate responses under selected conditions. Process tracing and institutional rules can support constitutive links. Simulation can explore reachability under an explicit model. Each design sees a subset of the repertoire.

Earlier work on latent generativity establishes that finite observations can leave rival latent organizations equivalent while still permitting bounded capability comparisons under strong conditions. An application should report the model class, observed regime, extrapolation distance, ambiguity band, and conditions supporting a robust comparison. A design lacking a defensible bound should assign ϕ to I_K .

Causal attribution requires an intervention definition and attention to interference, treatment-induced changes, strategic response, common shocks, and alternative mechanisms. A documented rule can establish a constitutive relation while leaving its effects empirically uncertain. Overdetermination and preemption should be named directly.

8.3 Evaluative Deliberation and Materiality

This subsection states the process for selecting valued dimensions and material thresholds. It combines participant reasoning with critical and public scrutiny.

Participants should receive information about feasible alternatives, risks, uncertainty, downstream effects, and data use. Individual reflection can record well-being and agency reasons. Group deliberation can reveal shared conditions and conflict. Independent facilitation, protected dissent, alternative communication routes, and revision opportunities can reduce predictable power effects. Historical comparison can identify adaptation to long-standing constraint.

Materiality should be coordinate-specific. A lost trajectory can be material because it concerns a basic functioning, a central life project, a unique time window, a high route-back cost, a severe security decline, or substantial later branching. Thresholds should be preregistered where feasible and tested across plausible alternatives. Disagreement can remain in the profile.

8.4 Longitudinal Recovery and Reporting

This subsection completes the research sequence through follow-up and profile reporting. It prevents a short-term snapshot from standing for secure restoration.

Follow-up should observe practice resumption, independent direction, successor formation, route-back cost, recurring withdrawal, substitute routes, and time-sensitive losses. Withdrawal and restoration contrasts can reveal whether formal access produces effective opportunity. Survival, hazard, or event-history methods can estimate selected recovery events when their assumptions are met.

The report should publish the full comparison family, exclusion reasons, admission statuses, capability-

identification status, evaluative process, materiality rule, event-link evidence, temporal profile, and row-level result. Sensitivity to horizon, thresholds, baselines, and model class belongs in the main result. Overall harm and downstream normative classifications should appear only when additional methods have been authorized and supplied.

9 Objections and Revisions

This section subjects the account to conceptual, normative, and empirical objections. Each subsection identifies the vulnerable dependency and the revision available within the present scope.

9.1 Capability Redundancy and Second-Order Inflation

This subsection tests whether generative capability adds a useful distinction. It compares the proposal with ordinary capability, fertile functioning, skill, and opportunity.

Many capabilities alter later capabilities. Education, health, mobility, affiliation, and political participation can each be fertile or corrosive. A binary division between generative and ordinary capability would therefore overstate the concept. P028 treats generativity as a domain- and horizon-sensitive feature. The term earns use where continuation, transmission, renewal, or later branching changes the comparison, materiality, or recovery analysis.

If empirical applications obtain the same result from an ordinary capability set without the trajectory structure, the additional term should be dropped in that domain. The paper’s contribution would then become a harm-focused application of capability analysis.

9.2 Paternalism and Adaptive Preference

This subsection tests the valued-domain bridge. It addresses the dual risks of external imposition and uncritical reliance on current preference.

An external analyst can assign value to traditional continuity, innovation, professional identity, or community participation in ways the person rejects. A current rejection can also reflect exclusion, fear, misinformation, or an adaptation to constrained options. A single privileged observer leaves both problems unresolved.

The evaluative-process record should include informed individual reasoning, protected dissent, alternative perspectives, historical conditions, practical experiments where safe, and revision. A disputed or power-saturated process can yield ?. This response limits determinacy and preserves the paper’s anti-paternalist aspiration.

9.3 Baseline Manipulation and Counterfactual Limits

This subsection tests the comparison architecture. It addresses idealization, status-quo bias, overdetermination, preemption, and non-identity.

A comparison family can be engineered to produce a desired result. Independent technical, counterfactual, and signature criteria reduce that risk, and a construction log makes it auditable. Rival plausible families should be reported. The resulting robustness remains relative to those declared sets.

Some cases strain the architecture more deeply. Removing one event can leave the outcome unchanged because another sufficient cause remains. Prevention can change identity or institutional history. Diffuse omission can resist a clean intervention. P028 treats these as event-link or admission

problems. A plural causal theory or non-comparative harm branch may later improve coverage. The current account should return indeterminate when its semantics fail.

9.4 Pro Tanto Proliferation and Decision Guidance

This subsection addresses the concern that every choice creates many small harms and that a plural profile offers weak practical guidance.

Choice forecloses alternatives. A generous pro tanto vocabulary can therefore produce an extensive set of losses. Coherent baselines, reason-valued domains, materiality, security, and recovery conditions constrain the account. The method also permits an application-specific reporting threshold while retaining the underlying profile for audit.

Plurality limits direct choice. That limit is deliberate at the present stage. An overall decision can use a defended partial order, public-reason procedure, sufficientarian threshold, priority rule, or bounded scalar index. The paper requires explicit addition of that procedure and preserves its disagreement with the harm diagnostic.

9.5 Latent Capability and Empirical Burden

This subsection tests operational feasibility. It asks whether a concept tied to unrealized trajectories can support determinate findings.

Complete repertoires are typically latent. Direct access logs, policy changes, controlled contrasts, viability tests, and longitudinal restoration can identify parts of the object. Formal bounds can establish robust comparisons across an equivalence class when the capability gap exceeds ambiguity. Many cases will remain unresolved.

Frequent unresolved status becomes acceptable only if the method also yields supported negatives and states its evidential ceiling. A framework that returns positive or unresolved results in every application would fail its discrimination requirement. Negative controls and cases with stable capability under substantial output change are therefore essential.

9.6 Collective, Ecological, and Artificial Bearers

This subsection limits the carrier scope. It distinguishes person-centered capability from claims concerning languages, communities, ecosystems, generations, institutions, and AI systems.

Collective practices have structures that resist reduction to an average of individual capabilities. Direct collective standing can also reify a group, silence dissent, or restrict mobility. Ecological and intergenerational cases add nonhuman and future interests. AI systems add unresolved questions about sentience, agency, interests, and standing.

P028's central harm predicate therefore concerns persons. Collective and ecological generativity can enter as conversion conditions, objects of agency, or effects on persons. A direct extension requires an explicit bearer theory, internal plurality, membership and exit rules, temporal representation, and aggregation or nonaggregation method.

10 Future Research Programme

This section identifies the work required to test, revise, extend, or abandon the proposal. It divides the programme into philosophical, formal, empirical, collective-standing, and downstream normative tasks.

10.1 Philosophical Development

This subsection specifies the conceptual literature and argument work still required. It focuses on the relationship among capability, interests, agency, harm, and impairment.

A systematic review should compare the proposal with capability deprivation, secure functionings, fertile and corrosive effects, education, cultural participation, autonomy, future options, and disability scholarship. The word *impairment* deserves particular scrutiny because technical use can carry normalizing assumptions from other contexts. Participation by disability scholars and affected persons is necessary before extending the term into those domains.

Harm theory requires broader comparison across temporal, causal, non-comparative, hybrid, and non-identity accounts. The valued-domain bridge should be tested against interest, desire, objective-list, autonomy, and agency accounts. A stronger paper may ultimately adopt several harm branches and state their disagreements.

10.2 Formal Development

This subsection states the main mathematical obligations. It focuses on order preservation, identification, temporal dynamics, and cross-domain comparison.

The functioning projection should be studied for order-preservation and information loss. Enriched-coordinate identification needs bounds comparable to the existing set-valued repertoire lift. Temporal recovery can be developed as a stochastic hitting-time problem with viability, recurrence, and competing risks. Baseline families require sensitivity measures over models as well as rows.

Cross-domain evaluation remains the largest formal gap. Partial orders, thresholds, lexical priorities, social choice, and deliberative procedures should be compared through explicit counterexamples. Any scalar summary should publish its weights, sensitivity, and erased incomparabilities.

10.3 Empirical Programmes

This subsection proposes bounded domains for initial testing. It selects cases with observable conversion changes and practical recovery measures.

Promising domains include revocable research infrastructure, professional platform access, apprenticeship disruption, language-technology mediation, recognition-gated funding, and restoration after temporary institutional closure. These settings can provide logs of permissions, actions, gate decisions, switching costs, and later continuation. Studies should include negative cases in which output changes while capability remains stable and cases in which restrictions provoke new routes.

Each domain needs participant governance, privacy safeguards, withdrawal options, and a limited diagnostic purpose. The research should avoid creating the impairment it seeks to measure through

unsafe withdrawal experiments.

10.4 Standing and Normative Successors

This subsection locates the paper within the broader Generative Injustice programme. It identifies the bridges deliberately reserved for later papers.

A collective-standing project should examine when persons, groups, practices, ecologies, and future generations bear distinct or overlapping claims. An injustice project should add distribution, procedure, domination, historical structure, and institutional power. A responsibility project should distinguish causal contribution, role, benefit, knowledge, capacity, and forward-looking repair. Legal work should select a jurisdiction and doctrinal object.

The broad portfolio title *From Generative Pathology to Generative Injustice* is best treated as a synthesis architecture. P028 supplies only the pathology-to-harm branch. Its results should enter later work with their assumptions, uncertainty, and person-centered scope intact.

Open Problem 10.1 (Generative capability and harm plurality). *Develop a formally explicit comparison among counterfactual, temporal, causal-contribution, and non-comparative accounts of generative-capability harm, including cases of overdetermination, preemption, identity change, and secure recovery.*

Open Problem 10.2 (Person and collective capability). *Identify conditions under which collective generative structure adds an evaluative object beyond the profile of members while preserving internal dissent, mobility, privacy, and individual capability.*

11 Conclusion

This section states the contribution that survives the paper’s qualifications. It returns to the capability approach, the four-stage diagnostic, the formal results, and the downstream stopping point.

The paper has proposed a conditional account of pro tanto harm through generative capability impairment. Its evaluative ancestry lies in Sen’s shift from resources and achievements toward real opportunities, conversion conditions, agency, plurality, incomplete ordering, and public reasoning. The proposal specializes that space through a horizon-indexed repertoire of viable trajectories whose exercise can sustain, transform, transmit, recover, or alter later opportunities. This specialization and its formal machinery remain revisable constructions.

The diagnostic proceeds through capability contraction, material disadvantage, event-linked impairment, and a reasoned well-being or agency bridge. A three-valued status at each stage preserves missing evidence and incomparability. A complete baseline profile reveals sensitivity across counterfactual arrangements. Duration, security, route-back cost, recovery probability, and lost branches prevent nominal restoration from closing the temporal inquiry.

The formal results are limited and useful. Under explicit monotonicity conditions, a restriction contracts the reachable repertoire. A material lost trajectory supports the harm row only after every bridge input is supplied. Finite countermodels show that achievement and capability, pro tanto harm and benefit, harm and wrongfulness, and a selected baseline and a complete profile can diverge.

The resulting position is conservative. Generativity has value only through a declared relation to persons’ well-being or reasoned agency. A positive harm row is domain-specific and pro tanto. Overall harm, wrongfulness, injustice, exploitation, responsibility, remedy, and law await independent principles and evidence. These limits define the paper’s contribution: a clearer and more auditable bridge from impaired real opportunity to one bounded form of harm.

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