Transactions in Generativity: Future Value, Attribution, and Institutional Form

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Abstract

Some transactions concern a productive or creative capacity whose future exercise can generate further capacities, outputs, relations, and options. A present payment offers a compact exchange coordinate, while the transacted position may also include control, licensing, attribution, participation, reversion, governance, and exposure to uncertain downstream trajectories. This paper proposes the term *transaction in generativity* for an arrangement whose object includes a declared generativity or a material position governing its future exercise. The proposed evaluation method preserves a typed profile containing the trajectory law, reachable repertoire, position bundle, temporal value coordinates, descendant rule, attribution registers, uncertainty, and third-party standing. Three elementary results establish the framework's formal limits. First, an undiscounted infinite-horizon flow diverges when it remains bounded below by a positive constant after some date. Second, normalized descendant-allocation weights preserve an allocated total as a bookkeeping identity. Third, equal current payments and equal expected output leave the institutional position underidentified. Two countermodels further show that equal expectations can preserve sharply different risk and option structures. The paper compares sale, fixed-term licence, continuing return, equity, stewardship, and shared governance as configurable ideal types. Each form changes several positions and introduces its own monitoring, revision, foreclosure, and third-party questions. The paper's scope is conceptual and formal. Empirical estimation, fair pricing, legal classification, universal alienability, and general justice principles remain open research tasks. The main proposal is a profile-preservation discipline for research on transactions whose object extends beyond a present output.

Keywords: generativity; intertemporal value; descendant attribution; institutional form; cumulative innovation; alienability; control rights; shared governance.

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. Its definitions, distinctions, and formal constructions remain provisional. Circulation across scholarly and practical communities is part of the purpose of releasing the manuscript at this stage.

The author treats the viewpoints, concepts, and lines of reasoning presented here as contributions to a shared field of inquiry. Similar or related ideas may have appeared in other intellectual, cultural, and disciplinary traditions. The manuscript therefore states its known antecedents, separates the researcher-origin proposal from later formal reconstruction, and leaves historical priority open pending a systematic originality review.

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Statement on the use of language models. The exploratory discussions and preparation of this paper involved OpenAI's Codex. Codex supported exploratory dialogue, formal reconstruction, source discovery followed by website verification, argumentative criticism, and drafting in LaTeX. The author selected the research questions, directed and approved the theoretical commitments and epistemic status of the claims, and bears sole responsibility for the manuscript, including its definitions, formal constructions, taxonomy, arguments, conclusions, and errors. Authorship credit remains with the human author. The access level and claim limit for every cited source are recorded in the accompanying literature audit.

Related research programme. This paper is project P016 and the second promoted paper in the research-stage *Generative Injustice* programme. P015 develops a typed lifecycle diagnostic for value circulation. Earlier P005–P014 manuscripts provide revisable companion analyses of exploitation, propagation, identification, cycles, commons, expansion, dependency, AI mediation, recovery, and legal relations. These projects function as related research states; the present argument states its own premises.

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1 Introduction

This section establishes the paper's object, motivation, central proposal, and inferential boundary. It begins with the distinction between later effects and a transacted future-generative position, then states the profile-preservation principle, source provenance, formal status, and organization of the argument.

Many ordinary goods have later effects. A purchased tool may increase output; a book may alter a reader's work; a machine may generate a stream of services. This temporal fact alone produces an expansive category with little analytic discrimination. The narrower object considered here arises when an arrangement directly changes a party's exercise, access, control, alienation, licensing, governance, attribution, return, or continuing participation concerning a declared generativity. Examples may include an algorithmic capacity, a research platform, a patent position, a productive infrastructure, a knowledge corpus, or an organized practice. Each example remains provisional until its carrier, domain, conditions, and relevant positions are declared.

The motivating question originated in a research discussion in which Wanhong Huang rejected an earlier, overinclusive future-effects account. The correction identified a transaction whose object is a generativity and proposed that its value may extend over an indefinite future. Later dialogue introduced temporal integrals, branching descendants, uncertainty, weighting functions, attribution kernels, and continuing-return instruments. This manuscript retains the original correction and reconstructs the later sequence under explicit typing, integrability, allocation, and institutional assumptions.

Definition 1.1 (Transaction in generativity)**.** A *transaction in generativity* is an arrangement whose object includes a declared generativity or a material position concerning its future exercise, access, control, alienation, licensing, governance, attribution, return, or continuing participation.

Definition 1.1 classifies the object of inquiry. Questions of price, permission, validity, fairness, ownership, exploitation, responsibility, and legal status require additional premises. This boundary supplies the paper's central methodological proposal.

Claim 1.2 (Profile-preservation principle)**.** Evaluation of a transaction in generativity should preserve a typed profile of future trajectories, reachable possibilities, position changes, attribution registers, uncertainty, and affected standing until an explicit argument licenses compression, ordering, or institutional judgment.

The claim is a proposed research discipline. Its motivation comes from two forms of underidentification. Equal expected output can accompany different trajectory laws, and equal present payments can accompany different control, participation, and reversion positions. Sections 4 and 6 give elementary countermodels for these statements.

The paper makes four bounded contributions. First, it integrates a transaction ontology with temporal and stochastic valuation under declared assumptions. Second, it distinguishes descendants, causal relations, contribution allocations, and normative entitlements. Third, it represents institutional forms as bundles of changing positions and continuing relations. Fourth, it supplies a reporting method capable of returning comparative, mixed, and unresolved results. The mathematical contributions are elementary conditional results and bookkeeping identities. Empirical identification and normative evaluation remain separate stages.

Section 2 positions the proposal against verified antecedents. Section 3 defines the analytical registers. Section 4 develops temporal and stochastic valuation. Section 5 separates descendant and attribution relations. Section 6 models institutional forms. Section 7 tests the framework on constructed configurations. Section 8 states defeat conditions, and Section 9 records the research programme and conclusion.

Table 1: Verified antecedent families and transfer boundaries

Family	Representative sources	Licensed role	Transfer boundary
Intertemporal evaluation	Ramsey; Koopmans; Weitzman; Chichilnisky	temporal streams, impatience, uncertain discounting, sustainable criteria	generativity, standing, and justice weights require separate definitions
Irreversible choice	Arrow and Fisher	option value under uncertainty and irreversibility	environmental assumptions require target-specific reconstruction
Cumulative innovation	Scotchmer; Green and Scotchmer; Furman and Stern	sequential creation, spillovers, profit division, institutional access	patent and research settings provide bounded domains
Causal and contribution formalisms	Shapley; Pearl; Halpern and Pearl	cooperative allocation, structural causation, actual-cause analysis	allocation, causation, desert, and entitlement retain distinct semantics
Control and governance	Grossman and Hart; Schlager and Ostrom; Ostrom	residual control, differentiated rights, institutional diversity, self-governance	local position vectors require domain and enforcement evidence
Alienability and generative justice	Radin; Eglash and colleagues	market-inalienability inquiry, generator control, circular value flow	the present definitions and results remain local proposals

2 Antecedent Architectures and Transfer Boundaries

This section establishes the paper's intellectual location and controls the transfer of concepts across fields. It organizes the literature into temporal evaluation, cumulative generation and attribution, and institutional form. The method is comparative: each source receives a licensed role and a transfer limit. Table 1 summarizes the result.

2.1 Temporal evaluation

This subsection identifies the mature intertemporal problems that constrain the paper's temporal notation. It moves from infinite-horizon saving and impatience to uncertain discount rates, sustainable criteria, and irreversible choice.

Ramsey's saving model and Koopmans's axiomatic analysis of impatience establish major antecedents for formal evaluation across time [12, 8]. Weitzman's gamma-discounting model shows, within cost-benefit analysis, how uncertainty over constant rates can generate a declining effective rate [16]. Chichilnisky develops axioms intended to preserve sensitivity to present and distant-future welfare [2]. These traditions make the choice of a weighting function theoretically substantive. The manuscript therefore indexes every temporal functional by its horizon, value coordinate, evaluator, and weight.

Arrow and Fisher analyze environmental preservation under uncertainty and irreversibility [1]. Their source-domain result motivates an option coordinate when present action closes future possibilities. Application to knowledge, organizational capability, cultural practice, or digital infrastructure requires an explicit target account of irreversibility, learning, substitution, and standing.

2.2 Cumulative generation and attribution

This subsection locates descendant generation within prior work on cumulative innovation, cooperative allocation, and structural causation. Its objective is to preserve the differences among sequential production, causal ancestry, cardinal contribution, and justified claims.

Scotchmer examines cumulative research and the allocation of incentives between earlier and later innovators [14]. Green and Scotchmer model profit division in sequential innovation [5]. Furman and Stern provide empirical evidence from biological resource centers that institutional access can amplify cumulative research impact [4]. These works directly precede the paper's concern with downstream generation, while their patent, profit, and biological- resource assumptions preserve domain boundaries.

Shapley's cooperative-game value supplies a canonical allocation rule under a specified characteristic function [15]. Pearl's structural causal framework and Halpern and Pearl's analysis of actual causation supply formal approaches to causal and counterfactual questions [10, 7]. The manuscript uses these sources to impose a separation rule: a causal model, an allocation rule, a contribution measure, and an entitlement principle are separately specified objects.

2.3 Institutional form

This subsection establishes the antecedents for representing transactions as bundles of positions. It connects residual control, differentiated rights, institutional diversity, alienability, and generative-justice lineage.

Grossman and Hart analyze ownership through residual control rights under incomplete contracts [6]. Schlager and Ostrom distinguish access, withdrawal, management, exclusion, and alienation within natural-resource regimes [13]. Ostrom's study of common-pool-resource governance establishes institutional diversity and self-governance as serious alternatives within its domain [9]. The present position vector adapts this rights-bundle lesson while adding attribution, continuing return, reversion, and governance coordinates for a different analytic target.

Radin's market-inalienability analysis establishes a major tradition in which alienability itself becomes a substantive question [11]. Eglash and colleagues develop a generative-justice programme centered on generator control and unalienated circular value flow [3]. These sources are antecedents for the paper's questions. The transaction definition, formal profile, and institutional comparison remain proposed constructions whose originality and value require further audit.

3 Transaction Object and Analytical Registers

This section supplies the paper's local vocabulary and complete specification rule. It first types generativity and actor positions, then defines temporal, descendant, attribution, and institutional registers, and closes with the non-scalar transaction profile. Table 2 records the principal symbols.

Definition 3.1 (Domain-indexed generativity)**.** A generativity $G \in \mathfrak{G}_d$ is a latent organization capable, under declared realization conditions C, of producing or transforming a repertoire of domain-d outcomes, relations, capacities, or later generativities.

The term *latent* marks a capacity relative to conditions. Effective exercise depends on access, feasible action, institutional support, and constraints. An observed output provides evidence about one realization and leaves the wider repertoire open.

Table 2: Principal symbols and analytical roles

Symbol	Object	Required declaration	Principal caution
$G \in \mathfrak{G}_d$	domain-indexed generativity	carrier, domain, organization, conditions	latent organization and effective exercise remain distinct
C, h, a	conditions, history, arrangement	scope, feasible actions, institutional setting	counterfactual variation requires an intervention semantics
$\boldsymbol{\pi}_i$	actor position vector	effective rights, powers, obligations, enforcement	formal entitlement may diverge from practical access
K_G	trajectory law	model class, conditioning data, identification status	probabilities may remain partially identified
v_k	typed value flow	units, evaluator, carrier, sign convention	heterogeneous coordinates require explicit transformations
$\mathcal{D}_t$	descendant set	causal graph, horizon, collision and interaction rule	ancestry can expand rapidly through shared causes
κ^c, a, κ^n	causal, accounting, normative weights	semantics and normalization	one kernel serves one declared role
$\mathcal{I}$	institutional form	position change, payments, duration, monitoring, revision, standing	labels such as licence or equity remain domain-dependent
$\mathfrak{P}_{\mathcal{T}}$	transaction profile	included coordinates and ordering rule	scalar compression requires a separate warrant

Definition 3.2 (Position vector)**.** For actor or collective i, let

$$\boldsymbol{\pi}_i = (u_i, m_i, x_i, a_i, r_i, y_i, g_i, e_i) \tag{1}$$

record effective positions concerning use or exercise u, management m, exclusion x, alienation a, attribution r, continuing return y, governance g, and exit or reversion e.

Each coordinate can be binary, graded, set-valued, or relational. A complete application states its domain-specific semantics and enforcement conditions. The vector serves as an analytic register with a narrower role than a universal theory of property.

Definition 3.3 (Complete transaction specification)**.** A complete specification for a candidate transaction is

$$\Theta_{\mathcal{T}} = (d, G, C, h, A, \boldsymbol{\pi}^0, \boldsymbol{\pi}^1, H, K, \mathbf{v}, \mathcal{D}, \boldsymbol{\kappa}, \mathcal{I}, S), \tag{2}$$

where A identifies affected actors and collectives, H the horizon, K the trajectory representation, $\mathbf{v}$ the typed value coordinates, $\mathcal{D}$ the descendant rule, $\boldsymbol{\kappa}$ the declared attribution registers, $\mathcal{I}$ the institutional form, and S the standing of affected parties and publics.

The specification can contain unresolved entries. Such entries become reported uncertainties. Completion records the research status of every entry; empirical omniscience lies outside this requirement.

Definition 3.4 (Transaction profile)**.** For a specified transaction $\mathcal{T}$, define

$$\mathfrak{P}_{\mathcal{T}} = \left\langle K_G, \mathcal{P}^{H,\epsilon}(G, C), \Delta\boldsymbol{\pi}, \mathbf{V}^m, \mathbf{V}^q, \mathsf{Desc}, \mathsf{Attr}, \mathsf{Unc}, S \right\rangle. \tag{3}$$

Table 3: Formal result ledger and inferential stopping points

Result	Mathematical status	Required assumptions	Authorized conclusion
Sustained-flow divergence	elementary proposition	unit weight, infinite horizon, eventual positive lower bound	selected functional has extended value $+\infty$
Exponential constant-flow value	elementary corollary	constant flow, positive rate	selected functional equals c/r
Expectation-profile separation	countermodel	two declared laws with equal means	expectation leaves distributional structure open
Descendant allocation identity	bookkeeping proposition	finite or summable descendants, normalized weights	allocated totals equal the declared total
Present-coordinate underidentification	logical countermodel	equal payment, distinct position vectors	payment leaves institutional form open
Audit-vector separation	proposed reporting rule	coordinate-specific criteria and evidence	each status remains separately reviewable

Here $\mathcal{P}^{H,\epsilon}$ is a declared effective reachable repertoire; $\mathbf{V}^m$ contains market or exchange summaries; $\mathbf{V}^q$ contains separately defended evaluative coordinates; Desc and Attr report descendant and attribution assumptions; and Unc records identification and model uncertainty.

The profile preserves structural differences during analysis. A later decision may select, order, aggregate, or discard coordinates through an explicit rule. Table 3 previews the formal status of the results used in the remaining sections.

4 Temporal and Stochastic Valuation

This section reconstructs the proposed future-value integral under explicit mathematical conditions. It defines a trajectory-law functional, derives two elementary special cases, and supplies a countermodel to scalar sufficiency. The section treats each functional as an optional representation chosen for a declared value coordinate.

Assumption 4.1 (Temporal construction)**.** Let $\Gamma_{t_0:H}$ be a measurable trajectory space and let $K_G(d\gamma \mid h, C, a)$ be a probability law on it. For a value coordinate k, let $v_k(t, \gamma)$ be jointly measurable and let $w : [t_0, H] \to [0, \infty)$. The relevant iterated integral is licensed by nonnegativity or absolute integrability.

Definition 4.2 (Trajectory-law value functional)**.** Under Assumption 4.1, define

$$V_{k,w}(G; C, h, a, H) = \int_{\Gamma_{t_0:H}} \int_{t_0}^{H} w(t) v_k(t, \gamma)\, dt\, K_G(d\gamma \mid h, C, a). \tag{4}$$

Definition 4.2 includes deterministic trajectories as degenerate laws. The evaluator, units, sign convention, horizon, and weight remain part of the object. A market functional and a justice-relevant functional can therefore use different inputs:

$$V_k^m = V_{k,w_m}, \qquad V_k^q = V_{k,w_q}. \tag{5}$$

Equation (5) states a register separation. Selection of w_q requires an independent normative argument.

Proposition 4.3 (Sustained-flow divergence)**.** *Suppose $H = \infty$, $w(t) = 1$, and there exist $T \geq t_0$ and $c > 0$ such that $v_k(t, \gamma) \geq c$ for all $t \geq T$ on a set of trajectories with probability one. Then $V_{k,1}(G) = +\infty$.*

Proof. Nonnegativity and monotonicity of integration give

$$V_{k,1}(G) \geq \int_{\Gamma} \int_{T}^{\infty} c \, dt \, K_G(d\gamma) = +\infty.$$

□

Proposition 4.3 characterizes the selected functional. A market price, alienability status, ownership relation, or continuing claim requires further premises.

Corollary 4.4 (Exponential weighting of a constant flow)**.** *If $v_k(t, \gamma) = c \geq 0$, $H = \infty$, and $w(t) = e^{-r(t-t_0)}$ for $r > 0$, then*

$$V_{k,w}(G) = \int_{t_0}^{\infty} e^{-r(t-t_0)} c \, dt = \frac{c}{r}. \tag{6}$$

The contrast between Proposition 4.3 and Corollary 4.4 makes the role of the weighting function visible. The literature reviewed in Section 2 supplies several theories of intertemporal evaluation. The present paper selects among them only within a declared application.

Constructed Configuration 4.5 (Equal expectation and distinct trajectory law)**.** Let transaction $\mathcal{T}_1$ produce terminal value 100 with probability one. Let $\mathcal{T}_2$ produce terminal value 10,000 with probability 0.01 and value 0 with probability 0.99. Then

$$\mathbb{E}[V(\mathcal{T}_1)] = \mathbb{E}[V(\mathcal{T}_2)] = 100, \qquad K_1 \neq K_2. \tag{7}$$

The transactions can also differ in downside exposure, tail opportunity, learning, reversibility, and feasible continuation.

Configuration 4.5 establishes a logical separation. Its numbers are constructed and carry a purely logical role. A decision rule may still rank the transactions after declaring risk attitudes, standing, option treatment, and relevant constraints. The profile-preservation principle keeps those choices visible.

An infinite horizon creates further obligations. Tail behavior may determine finiteness; value coordinates may change sign; the trajectory law may remain partially identified; and future participants may differ from current parties. A reachable-repertoire representation can therefore complement the integral:

$$\mathcal{P}^{H,\epsilon}(G, C) = \{\gamma : \gamma \text{ remains feasible and viable under the declared rule}\}. \tag{8}$$

Set inclusion, distance, robustness, or a partial order can compare repertoires. Each choice requires its own semantics.

5 Descendant Generation and Attribution

This section develops the branching part of the source discussion. It first defines descendants within a causal model, then separates causal, bookkeeping, contribution, and normative relations. A normalized allocation identity supplies the sole arithmetic result; the substantive attribution questions remain research obligations.

Definition 5.1 (Generative descendant)**.** Relative to a declared causal model M, contrast b, horizon H, and domain rule d, an event or generativity z is a descendant of G when the model supports a relevant directed causal path from G to z. Write the resulting time-indexed set as $\mathcal{D}_t(G; M, b, H, d)$.

The definition requires a model and a contrast. Shared causes, mediation, preemption, interaction, feedback, and copying can change the descendant set. Structural causal models provide one formal route [10, 7]; historical and qualitative process tracing may supply another route in suitable research designs.

For typed descendant values, define a causal bookkeeping functional

$$V^{c}_{k,w,\kappa^c}(G) = \int_{\Gamma} \int_{t_0}^{H} w(t) \sum_{z \in \mathcal{D}_t(G)} \kappa^{c}_{G}(z, t, \gamma) v_{k,z}(t, \gamma)\, dt\, K_G(d\gamma). \tag{9}$$

The causal weight κ^c reports the semantics chosen by the causal model. It can be binary, graded, interval-valued, or unresolved. Equation (9) leaves interaction value and shared ancestry exposed.

Definition 5.2 (Attribution registers)**.** For each descendant z, distinguish:

$$\mathsf{Cause}_G(z), \quad a_{G,z}, \quad \mathsf{Contrib}_G(z), \quad \mathsf{Entitle}_G(z). \tag{10}$$

These denote, respectively, a causal relation, an accounting allocation, a contribution assessment, and a justified entitlement relation.

The accounting coordinate a may be selected for auditability. The contribution coordinate may use a cooperative-game rule in a fully specified game, including a Shapley value [15]. The entitlement coordinate may draw on consent, agreement, labor, need, expectation, public interest, reciprocity, governance, or another defended ground. Equation (10) preserves their independent semantics.

Proposition 5.3 (Normalized descendant allocation)**.** *Let $\mathcal{D}_t$ be finite or absolutely summable. For each descendant z, let $S(z)$ be the declared candidate source set and suppose*

$$a_{G,z} \geq 0, \qquad \sum_{G \in S(z)} a_{G,z} = 1. \tag{11}$$

Then the allocated total equals the declared descendant total:

$$\sum_{G} \sum_{z \in \mathcal{D}_t} a_{G,z} v_z = \sum_{z \in \mathcal{D}_t} v_z. \tag{12}$$

Proof. Rearrange the finite or absolutely convergent sums and apply Equation (11):

$$\sum_{G} \sum_{z} a_{G,z} v_z = \sum_{z} \left(\sum_{G \in S(z)} a_{G,z} \right) v_z = \sum_{z} v_z.$$

□

Proposition 5.3 is a bookkeeping identity. The weights can be disputed, empirically unsupported, or normatively irrelevant while the identity remains true.

Claim 5.4 (Ancestry and entitlement separation)**.** A supported descendant relation licenses a causal report within its model. A continuing return, ownership position, governance authority, or liability requires a distinct institutional or normative ground.

Claim 5.4 protects both sides of the problem. Immediate-output accounting can miss cumulative dependence identified in innovation research [14, 5]. Unlimited origin claims can suppress later contribution, access, and revision. The audit should therefore report horizon, decay or persistence, shared ancestry, interaction, later contributors, and contestability.

Table 4: Position coordinates for transactions in generativity

Coordinate	Analytical content	Effective evidence	Typical ambiguity
Exercise u	ability to activate or use G	access, capability, resources, permitted actions	nominal permission and practical access may diverge
Management m	ability to shape operation and development	decision authority, budgets, technical control	managerial title may conceal external dependence
Exclusion x	ability to determine access by others	enforceable rules and technical barriers	security, scarcity, rent, and stewardship can share a mechanism
Alienation a	ability to transfer relevant positions	transfer rule, consent, legal authority	full, partial, conditional, and temporary forms differ
Attribution r	claim to authorship, credit, or provenance	records, norms, verification, contest routes	attribution and economic return can separate
Return y	claim to current or later benefit	payment rule, trigger, duration, accounting	return can preserve participation or sustain control
Governance g	authority over rules and collective decisions	voting, representation, veto, delegation	voice, control, accountability, and deadlock differ
Exit or reversion e	route to leave, restore, or recover positions	termination, portability, reversion, support	formal exit may preserve dependence

6 Institutional Forms and Position Changes

This section turns from future-value objects to institutional arrangements. It defines an institutional form as a structured bundle, compares six ideal types, and proves that current price underidentifies the bundle. The comparison is analytic; domain-specific law, practice, and evidence determine actual forms.

Definition 6.1 (Institutional form)**.** For a transaction in generativity, an institutional form is

$$\mathcal{I} = (\Delta\boldsymbol{\pi}, P_0, \alpha, \tau, \rho, M, Q, S), \tag{13}$$

where $\Delta\boldsymbol{\pi}$ records position changes, P_0 current transfers, α contingent or continuing returns, τ duration and reversion, ρ revision and exit rules, M monitoring and enforcement, Q decision and governance procedures, and S affected standing.

Table 4 expands the position bundle. The coordinates adapt rights-bundle and residual-control antecedents [6, 13] and add local registers needed for the present research question.

Institutional labels compress these coordinates. Table 5 presents six ideal types as prompts for specification. A royalty can accompany a sale or a licence; equity can carry income, voting, or liquidation positions; stewardship can arise through several legal or informal forms; shared governance can distribute voice through many decision rules.

Proposition 6.2 (Current-coordinate underidentification)**.** *There exist two coherent institutional forms $\mathcal{I}_1$ and $\mathcal{I}_2$ such that*

$$P_0(\mathcal{I}_1) = P_0(\mathcal{I}_2), \qquad \mathbb{E}[V(\mathcal{I}_1)] = \mathbb{E}[V(\mathcal{I}_2)], \qquad \Delta\boldsymbol{\pi}(\mathcal{I}_1) \neq \Delta\boldsymbol{\pi}(\mathcal{I}_2). \tag{14}$$

Consequently, current payment and expected output underidentify institutional form and the complete transaction profile.

Table 5: Institutional ideal types and primary audit dimensions

Ideal type	Stylized position change	Potential function	Primary audit exposure
Sale	broad transfer of exercise, control, exclusion, and alienation	finality, liquidity, concentrated decision authority	valuation, consent, residual dependence, future options
Fixed-term licence	scoped use with retained title and scheduled reversion	access, experimentation, bounded duration	scope creep, renewal leverage, monitoring, lock-in
Continuing return	present payment plus contingent share α	participation in later realization, risk sharing	duration, accounting control, surveillance, remote descendant claims
Equity	residual economic claim with class-dependent governance rights	pooled risk, participation in enterprise growth	dilution, control asymmetry, liquidity, entity-level spillover
Stewardship	management under declared purpose and beneficiary constraints	continuity, preservation, plural standing	authority, accountability, competence, purpose revision
Shared governance	distributed decision positions and procedures	voice, mutual adjustment, collective learning	transaction cost, capture, veto, deadlock, representation

Proof. Let $\mathcal{I}_1$ be a transfer of exercise and management for a fixed term with reversion to the initial holder. Let $\mathcal{I}_2$ be a permanent transfer of exercise, management, exclusion, and alienation. Assign the same current payment and the same output trajectory law to both forms. Their position-change vectors differ in duration, exclusion, alienation, and reversion. Hence the first two equalities coexist with the third inequality. □

The proof constructs a logical countermodel. Actual contracts may differ in price and output precisely because positions differ. The proposition establishes the information gap in a two-coordinate description.

A continuing-return schedule can be represented as

$$R_A = P_0 + \int_\Gamma \int_{t_0}^{H} \sum_z \alpha_A(t, z, \gamma) v_z(t, \gamma)\, dt\, K_G(d\gamma), \tag{15}$$

when the integral exists. Its institutional meaning depends on descendant scope, duration, audit authority, modification rules, later contributors, transferability, and termination. The formula provides a payment description.

For evaluation, define a non-aggregated audit

$$\widehat{\mathcal{J}}_{\mathcal{T}} = \langle J_{\text{acquisition}}, J_{\text{control}}, J_{\text{trajectory}}, J_{\text{attribution}}, J_{\text{return}}, J_{\text{options}}, J_{\text{revisability}}, J_{\text{third parties}} \rangle, \tag{16}$$

with each coordinate positive, adverse, mixed, baseline-sensitive, or unresolved under a stated criterion. Aggregation requires a separate ordering rule and conflict procedure.

7 Constructed Configurations and Comparative Method

This section tests the framework's discrimination through six constructed configurations. Their role is logical and methodological: each isolates a combination of price, trajectory, position, and

Table 6: Constructed configurations and unresolved evidence

Configuration	Fixed features	Profile difference	Required evidence
Equal-price sale and licence	same P_0, same modeled output	reversion, exclusion, alienation, exit	enforceability, dependence, alternatives, bargaining process
Equal-expectation trajectories	same expected value	downside, tail possibility, learning, resilience	model identification, risk-bearing, standing, option semantics
Participatory continuing return	bounded share and transparent accounting	sustained participation and risk sharing	duration, costs, consent, later contributors, realized effects
Foreclosing continuing return	remote descendants and originator veto	monitoring, control persistence, later-creator constraint	causal scope, governance, contestability, chilling effects
Purpose-bound stewardship	management under beneficiary and purpose rules	constrained alienation and plural standing	competence, accountability, purpose revision, beneficiary voice
Shared governance	distributed decision rights	voice and mutual adjustment with coordination cost	representation, capture, deadlock, speed, domain outcomes

institutional form. Prevalence estimation and named-institution classification require separate empirical work.

Table 6 displays the principal contrast. Price equality leaves position changes open. Expectation equality leaves trajectory structure open. A continuing return changes participation and can also extend monitoring or control. Stewardship changes purpose and standing. Shared governance changes decision procedures and exposes coordination burdens.

7.1 Configuration analysis

This subsection applies the profile in a fixed sequence so that each constructed case can be reproduced. The sequence begins with the object and ends at the evaluative stopping point.

First, declare G, its carrier and domain, and the realization conditions. Second, record $\boldsymbol{\pi}^0$ and $\boldsymbol{\pi}^1$ for every party with relevant standing. Third, identify the current transfer, temporal horizon, trajectory law, and reachable repertoire. Fourth, state descendant and attribution rules. Fifth, specify duration, revision, reversion, monitoring, governance, and exit. Sixth, report each audit coordinate with its evidence and uncertainty.

The equal-price sale and licence instantiate Proposition 6.2. A licence may preserve reversion and future participation while creating renewal leverage or monitoring burdens. A sale may provide finality and liquidity while transferring wider future-control positions. The comparison depends on the actors' alternatives, bargaining conditions, domain rules, and third-party effects.

The two continuing-return configurations share Equation (15) and differ in institutional incidence. A bounded, auditable, revisable share can sustain a relation between an originating contributor and later realization. A remote- descendant share paired with veto or broad audit powers can burden later contributors and preserve originator control. The payment form alone therefore leaves the audit open.

Purpose-bound stewardship can preserve continuity, public benefit, ecological limits, or collective memory. It can also centralize interpretive authority and exclude affected groups. Shared governance

can distribute voice and enable learning; it can also generate capture, strategic veto, decision delay, or unclear responsibility. Institutional comparison requires both intended function and realized effect.

7.2 Empirical comparison design

This subsection converts the constructed contrasts into a later research design. It defines the minimum evidence needed to move from a configuration to a target-domain claim.

A comparative dossier should select one domain and identify matched or process-comparable arrangements. It should document the initial position bundle, bargaining and consent process, payment and risk allocation, implementation, later position changes, outputs, descendant pathways, revisions, exits, and third-party effects. Rival explanations should include selection, underlying quality, capital access, management competence, network position, regulatory change, and demand shocks.

Furman and Stern's institutional study of cumulative research illustrates the level of design needed to distinguish institutional effect from selection [4]. Its specific intervention and domain remain separate from the six ideal types here. A later P016 empirical study could focus on one setting such as research tools, platform creator relations, community knowledge, or mission-bound infrastructure. Cross-domain generalization would follow after domain-specific identification.

Research Obligation 7.1 (Institutional comparison dossier)**.** Before an ideal type acquires an empirical or evaluative ranking, the project should supply at least two positive, two boundary, and two adverse cases within a fixed domain, together with rival explanations and evidence concerning effective positions over time.

8 Objections and Defeat Conditions

This section subjects the proposal to adversarial tests. It groups objections by conceptual redundancy, formal choice, attribution, institutional idealization, and normative scope. Each objection names a revision or defeat condition.

8.1 Conceptual redundancy

This subsection tests whether the proposed transaction category adds useful discrimination beyond assets, contingent claims, intellectual property, and incomplete-contract theory.

Many assets yield uncertain future services and revenues. Contingent claims can represent state-dependent payment. Cumulative-innovation theory addresses sequential value. Residual-control theory addresses incomplete contracts. The paper earns a distinct role only when the combined profile of reachable repertoires, plural positions, descendant attribution, revision, and third-party standing changes the research question or comparison. If a target case reduces adequately to an existing asset or contract model, the local generativity vocabulary should be removed from that case.

8.2 Functional selection and scalar compression

This subsection tests whether the framework moves arbitrariness from one scalar into a larger vector. The response is procedural and remains incomplete.

Horizon, weight, value coordinate, probability law, repertoire rule, and ordering all require selection. The profile makes these choices inspectable and postpones aggregation. A practical

decision eventually requires a rule for action. The next research stage should compare expected value, stochastic dominance, robust decision, option-preserving, viability, and multi-criteria approaches under one application. Profile preservation is useful only when it clarifies that selection.

8.3 Attribution expansion

This subsection tests the tendency of descendant language to extend origin claims through long causal chains.

A causal path can persist through many stages, while contribution becomes interactive and later agents introduce independent work. The framework requires a horizon, contrast, model, collision rule, later-contributor register, and contest procedure. Causal status licenses a causal statement within the model. Contribution and entitlement follow their own rules. A target application that uses one numerical kernel for all four registers defeats the separation principle.

8.4 Institutional idealization

This subsection tests the portability of the six institutional labels.

Sale, licence, royalty, equity, stewardship, and shared governance vary across jurisdictions, industries, communities, and informal practices. The tables are configuration prompts. An application must replace each row with operative rights, effective powers, duration, enforcement, decision rules, and affected standing. Legal conclusions require jurisdiction-specific primary authority. Institutional recommendations require comparative evidence concerning benefits, burdens, feasibility, and competence.

8.5 Normative scope and future standing

This subsection tests the relation between the analytic profile and justice.

Future value can belong to different actors, communities, publics, ecosystems, or generations. Greater generativity can create harm, domination, ecological burden, or exclusion. Current consent may coexist with constrained alternatives, and future participants may lack representation. The audit therefore keeps acquisition, control, trajectory, attribution, return, options, revisability, and third-party standing separate. A justice conclusion requires an independent account of standing, procedure, autonomy, distribution, non-domination, ecological limit, and intergenerational obligation.

The project should narrow or abandon a component when it duplicates an existing framework, lacks observable semantics, hides a contested evaluator, produces equivalent descriptions across institutionally different forms, or converts model structure into entitlement. A systematic originality review may also show that the proposed synthesis has a clear prior formulation. Such a result would shift the paper's role toward clarification, comparison, or application.

9 Research Obligations and Conclusion

This section consolidates the work required beyond the present position paper and states its bounded conclusion. It orders the obligations from formal and empirical identification through normative, legal, and originality analysis.

Research Obligation 9.1 (Trajectory identification)**.** Specify estimands or bounds for trajectory laws, reachable repertoires, tail behavior, substitution, and learning. Report model uncertainty and sensitivity to horizon and weighting choices.

Research Obligation 9.2 (Attribution architecture)**.** For each target domain, distinguish causal structure, accounting allocation, contribution assessment, and normative entitlement. Supply rules for interaction, shared ancestry, later contributors, decay or persistence, and contestability.

Research Obligation 9.3 (Institutional incidence)**.** Replace ideal-type labels with effective position bundles, payment and risk rules, duration, reversion, monitoring, governance, exit, enforcement, and third-party standing. Compare intended function with realized effect.

Research Obligation 9.4 (Normative and legal bridges)**.** Develop independent accounts of standing, intergenerational concern, alienability, consent, control, distribution, public interest, and ecological constraint. Use jurisdiction-specific primary authority for every legal classification.

Research Obligation 9.5 (Originality and comparative advantage)**.** Extend the literature review across contingent claims, real options, intellectual property, incomplete contracts, knowledge commons, benefit sharing, intergenerational ethics, and theories of contribution. Identify equivalent prior frameworks and test the incremental value of the proposed synthesis.

The paper began from a narrow correction: the object of inquiry is a generativity or a material position concerning its future exercise. That correction changes the analytical unit from one present output to a typed transaction profile. Temporal functionals can summarize declared value streams; their finiteness depends on horizon and weight. Trajectory laws and reachable repertoires preserve risk and option structure. Descendant graphs preserve propagation questions. Separate causal, accounting, contribution, and normative registers preserve attribution discipline. Position vectors and institutional forms preserve control, participation, reversion, monitoring, and governance.

The formal results are deliberately limited. A sustained positive flow makes one undiscounted functional diverge. Normalized allocation weights preserve a declared total. Equal expected values leave trajectory structure open. Equal current payments leave institutional form open. These results support the profile-preservation principle and leave substantive evaluation to declared empirical and normative premises.

The proposed framework is therefore a research architecture for transactions whose object extends through future generation. Its value will depend on comparative discrimination, empirical identifiability, institutional realism, normative clarity, and originality. Each remains revisable through the research obligations above.

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