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Concept Paper

Viability Studies and the Working Repository: An Orientation and Situated Starting Map for Comparative Enquiry into Form Persistence and Change

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Abstract

Reality appears saturated with recurrent but non-identical patterns. Distinguishable regularities give grounds to investigate constraints on possibilities and the dynamics through which configurations arise, persist, change and dissolve. The Teabag Test justifies selective reverse engineering: a purpose-relevant reconstruction can support enquiry or participation without an exhaustive causal history. Minimum relational legibility floors identify what must become sufficiently intelligible for that purpose and what would require further reconstruction. Viability Studies is proposed as a field of comparative enquiry into these relationships across domains, scales and boundaries. The Working Repository supplies a substantive initial instance: a candidate map and an architecture for accumulating situated relational accounts, their evidence, limits, comparisons and revisions. Specialist participation is constitutive of its development. Contributions need not report new discoveries; organising knowledge already dispersed across specialisms may expose relationships, consequential differences and further questions. Each instance remains partial, while maintaining and comparing its records can develop the resolution available for enquiry. Participants can extend the architecture or build independent instances from the public orientation; comparisons between builds can investigate what organising choices reveal or obscure. Sustained availability and stewardship exceed the current author's capacity. The Repository is subject to the constraints and dynamics it investigates, including the effects of its own categories and uses on participation. Increased legibility does not guarantee desirable emergence. The contribution is the connected orientation, substantive map and cumulative comparative architecture. Close antecedents inform its assessment; historical distinctiveness and additional utility remain open. No specialist pilot or implemented governance is reported.

Keywords: comparative enquiry; constraints; corrigibility; emergence; embeddedness; form; legibility; participation; persistence; uncertainty; viability studies

1. Introduction

Reality appears saturated with recurrent but non-identical patterns interacting across different materials, organisational scales and rates of change. This observation offers a starting question: where a pattern is sufficiently distinguishable across instances, what constrains the range of possibilities from which that regularity arises? A further question concerns the dynamics through which those constraints are produced, maintained, modified or overcome. Observed recurrence does not establish the answer: the apparent pattern may depend on sampling, a chosen category or a mistaken description. Those alternatives belong within the enquiry.

Recognisable forms amid change supply a further question: what persists, at which resolution, for how long and under which conditions? A form can remain identifiable while its components and relationships change. Conversely, a relationship that appears stable within one interval may

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disappear, reverse or acquire a different function elsewhere. Investigating these differences does not require treating recurrence as identity or every pattern as evidence of a common mechanism.

Complete causal reconstruction need not be a prerequisite for every enquiry or action. The Teabag Test develops this point through an ordinary case in which a selective understanding of relevant relationships can support a purpose despite incomplete causal access. This does not establish a sufficient account for every problem. It motivates investigating what must become legible to make a particular question or participation possible, and how insufficiency can be recognised. Section 3 situates that possibility within embedded perception, participation and ongoing recursive emergence.

Viability Studies is proposed as a field of comparative enquiry into patterning, constraints and dynamics: how forms arise, persist, change and dissolve at specified resolutions, scales and boundaries. The proposal supplies an orientation and research programme through which that field could develop. Its subject exceeds any particular catalogue or architecture. The Working Repository presented here is a substantive initial construction within the programme, comprising a candidate map and a proposed record architecture. Specialist encounters can change both its content and its organisation; independent instances can begin from other maps.

The paper's contribution comprises an argument for pursuing this enquiry, a substantive initial map of candidate relationships, and a proposed means of developing and examining it collectively. Section 1.2 specifies scope. Section 2 positions the proposal among antecedents; Section 3 develops its foundational reasoning. Section 4 describes this Repository instance and comparisons between instances. Sections 5 and 6 present the candidate map and questions it opens; Section 7 specifies the record protocol. Sections 8 and 9 examine limitations, authority, stewardship and further work.

The Working Repository developed from the author's reasoning about perception and participation within a changing, historically conditioned reality. It was not constructed by synthesising the literatures reviewed in Section 2. The order of exposition begins with the accessible question of pattern and persistence so that readers can examine the reasoning; it is not a claim that the work developed in exactly that sequence. Developmental independence does not establish intellectual priority. The antecedents locate and challenge the proposal, and closer historical comparison may alter its scope or claims.

1.1. Contribution and Proposed Novelty

Novelty requires assessment at several connected levels: the foundational reasoning; the proposed scope and organisation of Viability Studies; the substantive candidate map; the relational record architecture; comparison between architectures; and the connection of these elements to enquiry and participation. Each requires its own close antecedents. A new field proposal need not occupy previously untouched intellectual territory, but must explain why its shared questions and organising practices warrant explicit development. Historical priority, conceptual contribution and additional practical utility are distinct questions. This paper specifies a construction for assessment without establishing historical uniqueness.

The field proposal concerns a continuing domain of questions about relationships among patterns, constraints and dynamics, rather than the final correctness of a catalogue. Situated accounts can be revised, divided or superseded without exhausting that domain. Establishing a sustained field would require work and participation beyond this manuscript. The Working Repository is the programme's initial instance, not the first repository or comparative knowledge object in history and not the field's definitive vocabulary. Its commitments are:

1. distinguishable recurrence provides grounds to investigate constraint and its dynamics, while apparent recurrence remains open to correction;
2. selective reconstruction asks which relations are relevant to a specified enquiry or participation and what omissions could defeat a provisional threshold of sufficiency;
3. the candidate map makes an initial act of recognition available for collective examination, while comparisons reconnect its handles to independently described phenomena and mechanisms;

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4. versioned records preserve evidence, differences, informative failures and reasons for changes, including changes to the organising architecture;
5. increased legibility may change what can be asked in subsequent enquiry and considered in subsequent participation, without ensuring uptake or desirable outcomes; and
6. different versions and instances can become objects of comparison, and the Repository remains subject to the dynamics and constraints it investigates.

The reasoning moves from apparent recurrence to questions about constraints and dynamics, and from incomplete causal access to the possibility of purpose-relative relational understanding. The Teabag Test supplies an illustration of that possibility, not a deduction of sufficiency from recurrence. The foundational orientation explains why enquiry and participation remain situated and revisable. This combination motivates a programme whose handles, procedures and uses can themselves become objects of investigation.

The rationale for conducting this enquiry lies in making the choice of relevant relationships and provisional omissions open to examination under uncertainty. Its empirical wager is whether comparing domain records in this disciplined way produces distinctions or questions of consequence beyond what the source enquiries already disclose. For example, a candidate relationship might appear to hold at one organisational scale but reverse at another; documenting the conditions of that reversal could reveal a boundary that neither source enquiry had made explicit. A failure to transfer may likewise expose a false equivalence; repeated failures that add nothing would count against the instrument. Closer antecedents may also narrow the originality claim.

A possible scale and time reversal illustrates the kind of test required. Suppressing a fire may preserve a particular stand in the immediate event, while repeated fire exclusion can permit fuel accumulation and alter later landscape-level fire risk in some conifer forests (Keane et al., 2019). This is not a general rule about suppression: analyses of Californian shrublands have challenged that causal account in their fire regime (Keeley et al., 1999). The proposed record would specify the stand, landscape, timescale, vegetation and competing explanations before asking whether the apparent preservation at one resolution becomes a loss of persistence at another. These studies are a prompt for a specialist comparison, not a pilot of this protocol or proof of a cross-domain law.

1.2. Scope and Bounded Starting Points

Viability Studies asks how forms and patterns arise, persist, change and dissolve, and which constraints and dynamics are implicated in those processes. Forms include configurations of matter, living organisation, practices and institutions where participants can specify what is being tracked and how. Viability concerns conditions of continued existence or functioning relative to an account; the enquiry also includes transformation, breakdown and the disappearance of recognisability. Continued existence does not establish desirability, and persistence at one level can impose costs at another.

A contribution can begin within one domain. A defence researcher could compare how transmission, latency, maintenance and feedback relate to the persistence or alteration of a specified operational arrangement across cases. A journalist could examine how verification, deadlines, source access and editorial feedback differ between a breaking-news desk and a long investigation. These are possible enquiries, not findings or endorsements of the candidate vocabulary. Each would need an independently described phenomenon, relevant evidence and an explicit purpose.

The comparison would ask what remains recognisable, at which organisational scale, over what duration, through which mechanisms and under what conditions. It would also ask where the description ceases to apply and what its clarification makes available for further enquiry or participation. A bounded investigation may provide value without leaving its source domain. Comparison across defence and medicine, politics and teaching, or cases in mycology could follow when a sufficiently specified question warrants it. Breadth of invitation does not establish applicability in advance.

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Nor must contributors reconstruct an entire domain. They can begin with enough relational resolution to investigate a stated question, recording unresolved dependencies and reasons for omissions. The resulting account may expose a need for further reconstruction. Alternative groups may organise this work through different candidate maps; comparisons between those maps can examine whether an apparent difference belongs to the phenomena, the chosen boundaries or the architecture of description.

2. Antecedents and Related Work

2.1. Systems Cybernetics and Complexity

General systems theory sought concepts capable of travelling across disciplinary boundaries while resisting analysis restricted to isolated components (von Bertalanffy, 1968). Cybernetics foregrounded communication, regulation and feedback, while Ashby's law of requisite variety linked regulatory capacity to the range of disturbances a regulator can answer (Wiener, 1948; Ashby, 1956). Simon's work on complexity emphasised hierarchy and near decomposability, and complex adaptive systems research examined large-scale organisation emerging from interactions among adaptive agents (Simon, 1962; Holland, 1992).

These traditions precede the cross-domain orientation and many candidate concepts. Ashby (1956, §§6/13–6/15 and 7/14–7/21) connects invariant regularities with constraints and their practical use, justifies partial knowledge sufficient for a purpose, and examines how observers' simplified accounts relate. This is a direct antecedent to the Teabag Test's justification for selective reverse engineering. The test supplies an accessible formulation within this programme, not the historical origin of purpose-relative partial understanding. The proposed addition must be assessed through the particular questions, candidate relationships and cumulative records it supplies.

2.2. Bounded Rationality Learning and Uncertainty

Simon (1955) replaced models of exhaustive optimisation with decision-making under cognitive and informational limits. Dewey (1938) treated enquiry as the transformation of an indeterminate situation through the selection and testing of relevant conditions; the present paper does not claim to originate the idea that inquiry can be bounded by a practical problem. March (1991) later showed how organisational adaptation depends on a difficult allocation between exploiting established knowledge and exploring uncertain alternatives. These traditions directly precede the emphasis here on finite perception, selective reconstruction, usable compression and revision.

Post-normal science addresses enquiry where facts are uncertain, values disputed, stakes high and decisions urgent, extending quality control beyond conventional expert communities (Funtowicz and Ravetz, 1993). Decision-making under deep uncertainty similarly develops robust and adaptive strategies where parties cannot agree on models, probabilities or consequences (Lempert et al., 2003). Dynamic adaptive policy pathways make this temporal by combining near-term action with signposts and later adjustment as conditions change (Haasnoot et al., 2013).

Wimsatt (2007) supplies a further close antecedent by relating a complex world to the heuristics, piecewise approximations and error correction available to limited investigators. The Teabag Test gives the selection problem a simple formulation within this proposal; it does not originate the possibility of useful knowledge without omniscience. The proposed minimum legibility floor asks what must become sufficiently distinguishable for a stated enquiry to proceed, including how omissions and subsequent use can reopen that judgement.

2.3. Resilience Adaptive Management and Viability

Ecological resilience distinguishes persistence under disturbance from equilibrium or simple return to a prior state (Holling, 1973). Adaptive environmental assessment and management treats intervention as an opportunity for structured learning rather than an application of complete prior

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knowledge (Holling, 1978). Social-ecological systems research develops multilevel frameworks for examining resources, governance, actors and interactions without reducing sustainability to one variable (Ostrom, 2009).

These traditions strongly anticipate the present roles assigned to Feedback, Variation, Standing Capacity and cross-level Alignment. The Repository's distinct task is not to rename resilience. It is to place such specialist concepts beside candidate relationships from other domains under a protocol that preserves differences in scale, evidence and mechanism.

The term viability also has established technical uses. Aubin et al. (2011) develop mathematical and algorithmic methods for studying evolution under viability constraints across several domains. Beer (1984) presents the Viable System Model as an account of viable organisation. Viability Studies is proposed as a broader comparative enquiry into form, persistence and change. It does not claim to replace either framework or to derive their technical results; their assumptions and applications are potential objects of grounded comparison.

2.4. History Environment and Reciprocal Participation

Path-dependence scholarship demonstrates how earlier events, increasing returns and lock-in alter later possibility (David, 1985; Arthur, 1989). Niche-construction theory treats organisms as participants in modifying selective environments inherited by later populations (Laland et al., 2015). Biological relativity contests the assumption that causation is privileged at one organisational level (Noble, 2012), while participatory sense-making examines how interaction can generate meaning not reducible to isolated individuals (De Jaegher and Di Paolo, 2007). Basal cognition research extends questions of competency and goal-directedness across unfamiliar biological forms and scales (Levin, 2022).

These bodies of work provide powerful precedents for historical conditioning, distributed participation and reciprocal change. Viability Studies does not generalise their mechanisms beyond their evidence. It asks whether the distinctions they make can help specify more carefully what participation, inheritance, contact or cross-level viability mean elsewhere.

Process philosophy of biology addresses stability attained through continual change and the conditions of identity and persistence (Nicholson and Dupré, 2018). Montévil and Mossio (2015) analyse biological organisation through interdependent constraints conserved at relevant timescales. Montévil (2019) further treats biological constraints as historically contingent regularities that can change or disappear, making their duration something to explain. These are close conceptual antecedents to the form–persistence question. Their biological accounts do not by themselves warrant extension to every proposed domain.

2.5. Boundary Objects Legibility and Public Corrigibility

The Repository has a close methodological antecedent in the boundary object: an object that maintains sufficient common identity to coordinate distinct social worlds while remaining differently usable within them (Star and Griesemer, 1989). Work on legibility also shows that representations enable intervention by simplifying the realities represented, often with serious consequences when the compression is mistaken for the territory (Scott, 1998).

The Repository is intended to function as a boundary object, a category that already included repositories in Star and Griesemer's account. Its proposed workflow explicitly retains candidate correspondences, failed translations, counterexamples, boundary conditions and changes to classifications. Public revision history forms part of its evidence. These features should be compared with existing collaborative knowledge infrastructures; the label or versioning alone cannot establish novelty.

Longino (2002) connects social interaction, theoretical plurality and uncertainty with the conditions of knowledge. This precedes the argument that scrutiny beyond an originating observer can expose background assumptions. Distributed participation here must include opportunities for criticism to change an account; public access or a larger contributor population alone does not secure

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that outcome. Section 8.1 distinguishes relevant domain expertise from authority over an entire comparison or architecture.

2.6. Reverse Engineering and Design for Emergence

Reverse engineering has established technical uses. In biology, Csete and Doyle (2002) used it to investigate how robustness, complexity and fragility arise from system architecture. In systems biology it commonly refers to inferring structure or dynamics from observations. The present phrase **distributed comparative reverse** engineering weakens the architectural assumption: there is no presumed engineer, completed blueprint, single inferential method or investigator outside the changing object. Specialists reconstruct partial conditions and compare those reconstructions through a shared interface.

The phrase **design for emergence** also has clear antecedents. Pendleton-Jullian and Brown (2018) explicitly develop a practice for agency in radically contingent, interconnected settings by designing contexts rather than fixed outcomes. Viability Studies should not claim this territory as new. Its proposed addition is upstream and comparative: the Repository is intended to accumulate the relational legibility from which participation in such contexts might be better informed, while its protocol records where cross-domain comparisons fail.

2.7. Location of the Present Proposal

The proposal sits among established enquiries into process and persistence, constraint, selective understanding, systems comparison, pluralism and the consequences of representation. The developmental route described in Section 1 remains distinct from this intellectual location. Antecedents need not have supplied the author's initial reasoning to be relevant to assessing its contribution.

The present claim concerns the connected argument, candidate map and architecture through which this enquiry might develop. The programme can investigate phenomena within and across domains while also comparing the frameworks that make them describable. This is a proposed articulation with substantive content, not an established historical novelty or demonstrated comparative gain. The closest neighbours below constrain what can responsibly be claimed.

2.8. Metapatterns Systems Processes and Comparative Infrastructure

Bateson's Mind and Nature (1979) and Volk's Metapatterns (1995) are direct antecedents to enquiry into patterns connecting different phenomena. Volk et al. (2007) propose a science of metapatterns founded on functional convergences across biological, cultural and cognitive systems. Bloom and Volk (2007) develop recursive movement between local depth, abstraction and extension across contexts. Their subsequent account explicitly considers the limits of explanatory applicability and allows the approach to use other pattern concepts (Bloom and Volk, 2012). Bounded transfer, context and recursive comparison therefore belong to the inherited terrain.

Troncale (2006) compares cross-level hypotheses with relationships among candidate systems processes and cites earlier work on relational databases of isomorphies and linkage propositions. His evolving systems-process programme revises both the candidate list and criteria of recognition (Troncale, 2014). This is a close antecedent to a substantive candidate map organised for further investigation. Its stated aim of a unified science differs from the present invitation to compare potentially divergent instances, but that difference does not establish priority for plural comparative enquiry.

Gentner's structure-mapping account (1983) distinguishes relational analogy from surface resemblance and other comparisons. Checkland (1985) explicitly examines relations among intellectual frameworks, methodologies and applications, with practice informing theory. Comparing organising frameworks is therefore established territory. The proposed comparison

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between Repository versions concerns what different architectures enable participants to express and test, and whether documented differences yield further discriminating enquiry.

Principia Cybernetica connects an intellectual orientation with a collaboratively maintained conceptual network (Heylighen, 2000). It accepts existing material as well as original contributions, supports criticism and correction, and applies its evolutionary account to the development of the network itself. These features closely anticipate specialist participation, cumulative organisation and the Repository's inclusion in its own account. Its stated aim of an integrated worldview differs from the present programme's provision for independent instances and justified incompatibilities; that difference requires comparison rather than a presumption of novelty.

The Open Research Knowledge Graph already supports collaborative descriptions and published comparisons of research contributions (Oelen et al., 2020). Its comparison documentation also provides for successive versions (ORKG, n.d.-a). Comparative infrastructure and versioning alone cannot carry a novelty claim. Section 4.7 identifies the proposed record's focus on the grounds, limits and outcomes of relational encounters, while leaving its additional value against feasible existing workflows to evaluation.

Knowledge Federation supplies a further close architectural antecedent. Karabeg and Lachica (2009) propose a Domain Map Object that places existing knowledge, offers multiple abstract views, exposes gaps to orient research, and supports exchange between domains while preserving local autonomy. Buckingham Shum (2008) develops hypermedia discourse for contextualised, contested accounts and networks of claims, issues and arguments. ORKG templates likewise permit configurable structures and reusable instances (ORKG, n.d.-b). The proposed Repository therefore cannot claim mapping, plurality, structured comparison or reuse as unprecedented. Its particular focus is on the grounds and outcomes of relational encounters at stated resolutions and on what changes when the organising architecture changes.

These antecedents constrain historical claims without deciding whether Viability Studies warrants development as a field. Its proposed subject is comparative investigation of relationships among patterning, constraints and dynamics; the Repository supplies one research instrument for that work. The specific construction joins purpose-relative reconstruction, explicit resolution and boundaries, records of comparative outcomes, and revision of both relational accounts and organising architectures. An exact predecessor to the complete workflow has not been established by the targeted review, but absence of a matching source is not evidence of uniqueness. Historical assessment of individual entries and comparison with feasible existing workflows remain necessary.

3. Foundational Reasoning and Situated Orientation

The foundational orientation begins with distinguishable patterning. A pattern here means a specified regularity or relational configuration recognised across observations at a stated resolution. Instances need not be identical. Where that regularity recurs, investigators have grounds to ask what restricts or enables the possible configurations and what produces the observed recurrence. This inference is defeasible: a statistical regularity, observer-imposed category or sampling artefact may not support the proposed causal account. The orientation therefore opens an investigation rather than declares that every apparent pattern reveals an independently existing constraint.

Constraint here provisionally names a restriction or enabling condition on possibilities at a specified boundary and scale. Dynamics concerns how configurations and relationships arise, persist or change, including how constraints are maintained or altered. These concepts need not stand in a one-way causal sequence: a dynamic can establish a constraint, while an existing constraint can shape later dynamics. Some constraints may be structural rather than actively maintained during the observation interval. Pattern, constraint and dynamics are therefore distinguishable questions whose relationships require domain-specific investigation.

The possibility of selective enquiry is developed within an orientation that treats emergence as ongoing. Embeddedness here denotes physical constitution within relationships that constrain and enable change; partial perception is one consequence of this condition. Configurations arise within

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conditions they can subsequently alter, and what emerges remains embedded in the field of what follows. Recursive emergence names this conditioning; it does not entail that every event produces an unprecedented organisational property. The metaphysical commitment is that enquiry belongs to an unfolding reality whose participants inherit and alter its conditions. This commitment generates the programme's questions about what persists, what changes and how participation enters those changes; it is not merely a preface to the comparative procedure.

Recursive Novelty follows within this orientation from the reasoning that an event and its consequences enter the conditions of subsequent recurrence. Where participation alters conditions, a later recurrence inherits a causal situation that includes that participation. This gives enquiry a rule: recognisable recurrence does not imply identical conditions or consequences. Historical non-identity must be distinguished from consequential novelty at a specified resolution: the reasoning does not entail that every iteration looks different, that every difference matters equally or that useful repetition is impossible. The comparative record investigates which inherited or changed conditions matter to a bounded account; it is not tasked with proving the foundational rule. Directionality denotes such conditioning without a predetermined destination or tendency towards improvement.

This orientation is pursued under the following working commitments:

- finite embedded observers have partial rather than exhaustive access to causal reality;
- participation follows from embeddedness, although causal contribution should not be confused with agency;
- participation is distributed across components, relationships and organisational levels;
- history remains causally active through inherited structures and consequences;
- recurrence can be adequate at a selected resolution while instances differ in consequential or inconsequential respects;
- direction does not imply destination; and
- adaptation occurs within a persistently emergent, historically conditioned field rather than towards a guaranteed final state.

3.1. Persistent Relationships as a Possible Hinge

Some relationships may remain recognisable through changes in their components or surroundings. A constraint, rule or dependency may continue to limit and enable possible configurations without fixing a unique outcome. Recognising a dog across changes in its cells, behaviour and environment is an ordinary example of stable identification at one resolution; it does not prove that one invariant mechanism or boundary explains every instance. What persists depends on the feature being tracked, the time and scale selected, and the conditions under which the description remains useful.

Here, form denotes a contingent configuration described at a chosen resolution; persistence denotes the continued recognisability of a specified form or relationship across relevant changes. Neither term establishes an invariant essence. A record must therefore describe the configuration observed and separately test what, if anything, continues to constrain possibilities as that configuration changes.

A relationship that persists sufficiently at a relevant resolution can supply an object of enquiry without requiring reconstruction of every causal history. Persistence alone does not ensure that the relationship can be correctly identified or understood well enough for a purpose. The Teabag Test below adds the practical proposition that selective understanding can sometimes suffice. Together, these considerations motivate investigating a minimum legibility floor rather than assuming one is attainable for every question.

3.2. Uncertainty as an Operational Consequence

Uncertainty follows operationally from partial causal access, changing conditions and the possibility that a selected description omits something consequential. The limit of causal reconstruction is not itself a limit of causal conditioning: consequences may continue through

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transformed relationships after their origins become untraceable. Embedded participants inherit histories they cannot exhaustively reconstruct, face delayed or displaced effects and may alter what they investigate. Recursive Novelty supplies a reasoned foundational rule for this attempt: a recurrent form need not recur under identical causal conditions. This explains why enquiry must attend to inheritance and change as well as recognisability. A participant can nevertheless investigate a bounded relationship without endorsing the whole orientation or adopting its terminology.

The claim is operational rather than psychological. It does not imply that an immune system, institution and person experience uncertainty in the same way. It states that each may contain arrangements for continuing under conditions that cannot be completely specified in advance. The mechanisms, representations and relevant boundaries remain domain-specific.

Uncertainty is an organising condition of this attempt. The candidate constraints and capacities offer provisional ways to ask how systems continue, perceive and revise under that condition. Their classification is not entailed by the foundational orientation and can itself be reorganised.

3.3. Perception Participation and Sufficient Relational Legibility

Participation has two distinguishable senses. **Ontological participation** is unavoidable causal inclusion resulting from embeddedness. **Participation as an adaptive capacity** is the organisation of distributed contributions into usable perception, feedback, learning or coordinated action. The distinction prevents agency from being attributed to every causal contribution while retaining the fact that apparently passive structures can shape what follows.

Perception is itself produced from within participation. Different configurations make different features available at different organisational levels. Once produced, perception can reorganise subsequent participation, alter relationships and change later conditions. The relationship is recursive: inherited conditions shape perception and participation; perception informs participation; participation alters conditions; and later perception arises from the altered field.

Finite embedded participants have incomplete causal access, but an exhaustive account need not precede every specified enquiry or action. What must become legible depends on the purpose, boundary, affected parties and consequences of error. Sufficient relational legibility names a provisional condition in which relevant relationships are observable, interpretable and communicable enough to support that purpose. Its adequacy must be argued from the case and remains open to reopening. The phrase minimum legibility floor does not imply a unique, mathematically minimal description. Several different selective accounts may enable an enquiry, while a boundary sufficient for one purpose may be dangerously narrow for another.

The Teabag Test gives the selection problem a simple procedural form. To prepare tea, one needs to attend to such relations as heated water, a vessel, infusion and foreseeable handling risks; one need not first reconstruct every history of agriculture, manufacture or electricity. The enquiry is not whether the other histories are causally real, but whether an omitted relation would change what one does for the stated purpose, and what observation would reveal the omission. Contamination, sourcing or power failure could alter that judgement. A domain record can state the purpose, selected relations, omitted histories, reasons for omission and triggers for reopening the selection. The test prompts those questions; it sets neither a fixed quantity of knowledge nor a threshold adequate for complex or high-stakes interventions.

The test's methodological role is to justify attempting selective reverse engineering. Investigators can work from an observable configuration or a stated purpose towards relevant conditions without treating an exhaustive reconstruction as the admission requirement for enquiry. It does not guarantee that a sufficient account can be reached in every case. The minimum legibility floor makes the adequacy of that reconstruction a question for the specified purpose, evidence and consequences.

Because sufficiency is conditional and fallible, investigators should state the purpose and boundary, justify what has been compressed, seek counterexamples, preserve feedback from affected levels, monitor delayed and displaced consequences, and retain capacity to revise. Where error is serious or hard to reverse, more investigation and precaution may be required. Increased legibility

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can be ignored, misused or outweighed by other interests; it changes informational possibilities, not outcomes by necessity.

Legibility is an epistemic relationship between a specified object of enquiry and an embedded observer, including the means by which an account becomes observable, interpretable and communicable. It should be distinguished from the pattern, constraint or dynamic being investigated. Section 5 uses Legibility as a candidate capacity for organising that relationship; this does not make legibility an additional causal object inferred from every pattern.

4. The Working Repository

4.1. Status and Function

The Working Repository is a substantive initial instance of Viability Studies and a research object in its own right: a maintained, cumulative map of situated relational accounts. Its candidate constraints, dynamics and capacities compress the author's reasoning into provisional handles for investigation. Its record architecture would organise existing and new accounts, preserve their evidence and limits, and accumulate the outcomes of comparative encounters. Its function is to make relationships navigable for stated enquiries and to retain distinctions, failures and revisions so that others can examine and build upon them. No instance is an exhaustive account of reality; particular records can remain well-supported within their boundaries while the collection remains partial and revisable.

For this purpose, a relationship is a specified connection among phenomena whose direction, dependency, distribution or change may be informative for an enquiry. A candidate must state the phenomena and proposed connection, its boundary, organisational scale and timescale, and conditions under which that description would cease to be useful. Dynamics, constraints and capacities are provisional ways of locating such connections; a shared name across domains is not itself a shared relationship. The unit of comparison is the specified connection and its limits in each case, not the label attached to it. A further wager is that a handle may retain investigative usefulness as resolution changes, even where its mechanisms, effects or boundaries differ. This portability requires testing; it does not establish resolution-invariant relationships.

An entry earns a continuing place by supporting a discriminating enquiry, not by appearing to name a common pattern. Its comparative record should reconnect a portable description to specialist phenomena, mechanisms, evidence and limits. An investigator asks what exists independently of the label, where the proposed connection holds, what would restrict or defeat it, and whether comparing cases reveals a question or distinction that analogy alone would miss. If no such gain appears, the attempted transfer still needs a clear result, even if that result is removal.

Failed translation is a first-class output. Similar terms may designate different causal processes; a proposed relation may disappear or reverse when boundaries, scale or sequence change. Such results can expose a false equivalence or specify the limits of a useful comparison. They should be retained with the conditions that produced them, rather than silently folded into a broad label. A catalogue of labels would not perform this function.

A specialist might reasonably publish an analysis in a disciplinary venue rather than contribute it to this interface. The Repository is intended to serve a different, complementary function: to index a bounded comparative claim, link it to its domain evidence and original publication where available, and make a failed transfer or unresolved edge case discoverable across fields. It need not host an unpublished finding or replace peer review. Its usefulness to contributors depends on clear attribution, low effort and evidence that the cross-domain record yields questions worth their time.

Contributions need not originate new domain findings. Relevant knowledge may already exist in dispersed publications, datasets or specialist practices. Bringing accounts into contact can make relationships between them inspectable without erasing their evidential contexts. Specialist participation is constitutive of this development because appropriate expertise is needed to interpret those accounts and their limits; distributed participation does not imply equal evidential authority

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for every claim. Comparative organisation may produce a useful distinction, but simply collecting material is not itself evidence of additional resolution.

4.2. Distributed Comparative Reverse Engineering

Distributed comparative reverse engineering begins with observable configurations and asks backwards, forwards and across levels: what conditions contributed; through which relations did they become consequential; what constraints and capacities shaped the available responses; what has this configuration introduced into later conditions; and which relationships remain visible across repeated but non-identical cases?

Specialists compare the provisional reconstruction with higher-resolution disciplinary knowledge and return amendments to the shared interface. Four qualifications are essential:

1. there is no presumed engineer or designed object;
2. there is no completed architecture waiting to be recovered;
3. the investigator remains embedded, and enquiry can change the relationships examined; and
4. directional conditioning does not license prediction of destination.

The enquiry is distributed because no participant can supply adequate resolution across its proposed domains, scales and histories. This requirement follows from its ambition to move beyond one situated interpretation, not from a claim that every bounded study needs many contributors. It is comparative because differences and failed transfers can clarify relationships alongside recurrence. Reverse engineering denotes an inference of partial conditions from what becomes observable, with no requirement to recover a completed blueprint.

The developmental starting point was the author's perception–participation reasoning. The candidate map condensed the relationships the author thought recognisable into handles intended to support further contact. Literature subsequently provides disciplinary resolution, competing explanations and antecedents. Whether this particular construction adds a useful distinction can be assessed independently of whether the developmental route was literature-led. Participants can investigate the candidates without accepting the complete foundational orientation.

4.3. From Observation to Participation

The programme asks what relational understanding makes available for further enquiry and participation. A useful within-domain distinction is already a possible contribution; cross-domain transfer is not a prerequisite. Whether the resulting account supports a decision is a further question, dependent on evidence, purpose and the people able to act upon it. Any route from observation to participation is conditional:

- specialist encounters may increase, restrict or correct relational legibility;
- participants may use the available resolution to organise an intervention or preserve options;
- the intervention changes conditions beyond its initial representation;
- consequences become perceptible through feedback; and
- models, boundaries and participation are revised.

Neither the availability nor the use of additional information guarantees a more desirable outcome. The more limited proposition is that a newly legible relevant relationship can enter subsequent deliberation; if it is used, feedback can reveal limits in the prior account. The value and distribution of resulting changes require separate assessment.

Viability is therefore an object of investigation, not a promised product. Better for whom, at which level, over what timescale and at whose cost are substantive questions that systems language cannot settle. Alignment, distribution, power and displaced uncertainty must remain visible. A locally successful intervention may reduce viability elsewhere or transfer volatility onto participants with less capacity to absorb it.

The institutional ambition is to make consequential relationships available to more of the participants who must live with or act upon them. In governance, design or institutional repair, a

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bounded account might help someone question an inherited arrangement, identify where a cost is displaced, or examine whether a proposed reform closes later options. For example, a record concerning a service redesign could distinguish improved response time at one administrative level from work or delay transferred to another. That distinction could inform deliberation without selecting the policy on participants' behalf.

A hypothetical tax enquiry illustrates a purpose-directed application. A fiscal research institute might ask how specified taxation arrangements constrain or enable options at household, firm, regional and national scales. Specialists could contribute independently grounded accounts of those relationships, using candidate handles such as Alignment Constraint or an independently defined account of concentration where useful. The Repository would organise the evidence, dependencies, disagreements and gaps into a navigable map for that question. It would not select a tax policy or substitute for fiscal analysis. The stated purpose gives this application direction while leaving the broader architecture available for other enquiries.

The practical question is whether such legibility changes the topology of participation: who can recognise a dependency, challenge an explanation, contribute evidence or make feedback consequential. An intelligible account does not confer the power or resources to change an institution. The Repository's possible political significance therefore lies in making those relationships and limits contestable, alongside any gains in understanding, rather than assuming that improved representation produces institutional repair.

4.4. Enquiry-Specific Minimum Legibility Floors

Sufficient relational legibility in Section 3.3 concerns whether a particular enquiry or contemplated action can proceed with a defensible provisional account. A related question concerns whether an enquiry can yet be specified at all. An enquiry-specific minimum legibility floor is the provisional resolution needed to distinguish a relationship, question, comparison or candidate intervention well enough to investigate it. A relationship that remains identifiable across relevant changes may give that enquiry a starting point; investigators must still test when the identification fails. The floor is neither a fixed amount of information nor a universal threshold beyond which a system is understood. What must become distinguishable depends on the question, domain, scale, available methods and consequences of error.

The Repository may make some such floors reachable through interaction among records. Clarifying one candidate relationship may expose a dependency, temporal condition or boundary relevant to another entry; testing that second relationship may then require the first to be narrowed or divided. In this sense, accumulated records could be more than additive: greater resolution in one place may change which questions can be formulated elsewhere. A failed translation could be equally productive if it reveals a previously hidden distinction. Crossing one floor may expose another uncertainty requiring its own investigation. A single grounded contribution may supply a distinction that revises several entries or makes a previously unspecified question investigable. Specialist and distributed participation can therefore change the organising map as well as the accounts recorded through it.

The accumulated accounts can themselves become material for pattern discovery. Participants may draw a different candidate map from the same records, trace relationships across several accounts, or compare maps assembled for different purposes. These further patterns require their own evidence and boundaries. Resolution is maintained through correction, reconnection to evidence and renewed examination as conditions change; it does not increase automatically with record count. A living map supports movement between scales by testing what remains recognisable, transforms or ceases to apply.

This is a proposed effect of the comparative workflow, not a result established by the present manuscript. It would be tested by tracing whether a documented new question depended on distinctions produced through interactions among independently grounded domain records, whether specialists could investigate it, and whether it differed consequentially from questions

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already available in the source enquiries or neighbouring methods. A larger or denser Repository would not by itself show that a floor had been crossed. Records might also duplicate existing insights, generate spurious connections or leave an important relation inaccessible. Increased legibility can enter subsequent enquiry as well as possible participation, but neither development is guaranteed.

4.5. Public Scrutiny and Alternative Instances

Distributed expertise motivates an interface whose assumptions, evidence and revisions can be examined beyond the originating observer. Public access is proposed to widen opportunities for contact, correction and independent reuse. Partial perception does not logically entail unrestricted disclosure in every case: legitimate privacy, consent and evidential limits may constrain what can be shared. Publicness here is a design commitment to make the inspectable record and reasons for its limits available as far as responsibly possible, rather than a guarantee of truth or participation.

The orientation is made public to support examination and independent development. Participants can build upon this instance or construct another directly from the orientation, without adopting the original map in full. The author welcomes accounts of reuse and modification as material for understanding the programme's development; reporting back is an invitation, not a condition of participation. Reuse must remain attentive to attribution and to the rights and limits attached to source material.

The candidate map and record architecture together constitute one situated instance. Someone could adopt the current version, return to an earlier one, discard categories or organise the enquiry around different concerns. An alternative instance could accommodate a relationship the initial architecture makes difficult to express. Authorship, size or institutional recognition does not establish a final boundary to enquiry. Exportable records, intelligible provenance and documented architectural decisions are proposed to support development beyond the originating interpretation.

Comparison can occur across successive versions and between divergent instances. It could ask which relationships each makes perceptible, which distinctions disappear during translation and whether differences reflect evidence, boundaries or categories. Such comparison need not seek convergence on one architecture. A justified incompatibility may itself clarify what the enquiry requires. Version history should preserve reasons for changed and abandoned categories so that later participants can revisit an earlier direction without erasing subsequent developments.

The Lego-brick analogy describes the status of this initial construction: a bounded contribution that others can understand, alter and incorporate into builds the author has not anticipated. Its scholarly claim remains the particular content and questions supplied, while its potential utility includes what others make possible by changing it. Multiple builds alone would not establish a field; sustained comparisons and consequential findings would give that ambition substance.

4.6. Research Questions Enabled by Comparative Records

The following questions state what the architecture is intended to help formulate and preserve. They are not claimed to be exclusive to it. Each would require independently grounded records and comparison with what existing methods already make available.

- Under which boundaries and timescales does an apparently persistent relationship weaken, disappear or reverse, and does comparison reveal a condition absent from the initial accounts?
- When a translation fails, which omitted mechanism or distinction explains the failure, and does that correction make a further domain question investigable?
- Can a distinction established in one record expose a previously unspecified dependency in another, and what evidence would show that the new question depended on that encounter?
- When additional relational legibility is used in governance, design or repair, whose participation changes, which consequences become perceptible and what revision follows?
- How do alternative Repository architectures change which relationships can be expressed, compared or contested, and what is learned from translation between them?

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A useful answer must identify the records, evidence and change in the question or interpretation. Merely generating more questions would not demonstrate value: the questions must be sufficiently specified for domain investigation, and misleading or redundant questions must also be recorded.

4.7. Relationship to Existing Research Infrastructures

The Repository is intended to complement disciplinary publications, data repositories and collaborative knowledge resources, including infrastructures such as ORKG. A domain finding remains linked to its original evidence and publication. A proposed comparative record specifies a relational claim, its grounds and limits, what the encounter changes and the history of challenges or revisions. Records should also identify the organising version or instance, permitting investigation of the architecture's effect on interpretation. Existing platforms may support this work; the proposal does not require inventing a separate software system.

In practice, that means citing source records rather than reproducing whole literatures, preserving attribution, identifying the versions being compared and distinguishing a contributed interpretation from a reviewed finding. Existing infrastructures may already provide these functions. A pilot should therefore compare the proposed procedure with a feasible literature review or existing collaborative workflow using the same material and expertise. The relevant question is whether the explicit comparative record makes a consequential distinction easier to establish, revisit or contest, and whether that gain warrants its additional work.

5. Current Candidate Map

The following entries condense the dynamics and constraints recognised through the author's foundational reasoning, together with candidate capacities implicated in responding to them. Their purpose is to operationalise the orientation: to provide provisional handles broad enough for specialist contact and precise enough to begin asking about relationships. This is a selective compression, not an exhaustive inventory or a set of capacities necessarily deduced from metaphysical premises. Its substantive content lies in the proposed connections it makes available for investigation. Breadth can conceal differences, which the record protocol is intended to expose. Informal specialist exchanges have supplied disciplinary connections, complications and antecedents; these indicate communicability and possible relevance rather than validation or demonstrated comparative gain. This selection asks how embedded organisations maintain, navigate or modify their dependencies: Inheritance and Transmission concern what is carried forward; Feedback and Legibility concern access to consequences and relationships. This rationale explains the map's development without making its categories necessary features of every organisation. Other instances may begin from different selections and divisions.

For example, embedded perception and finite interpretive capacity imply selective representations. Those representations can shape participation and persist after their fit deteriorates, a dynamic compressed here as Interpretive Capture. Legibility, Feedback and Corrigibility name candidate capacities for making relevant conditions perceptible, comparing consequences with expectations and revising an account. This connection opens a bounded question: when does an institution's inherited reporting model obscure a changed dependency, and which routes for feedback allow that dependency to become visible and alter participation? The capacities do not guarantee correction, and their mechanisms require domain-specific investigation. The example shows how the compression turns the orientation into an enquiry without requiring the entire map to be adopted.

5.1. Candidate Dynamics and Constraints

Recursive Novelty: Events and their consequences enter subsequent conditions. The foundational rule is that recognisable recurrence does not imply identical conditions or

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consequences. Records investigate consequential novelty at their chosen resolution, while allowing useful repetition.

Recursive Emergence: Emergent patterns remain embedded and participate in producing subsequent emergence.

Directional Emergence: Later configurations arise from conditions partly constituted by what has already emerged. Direction names causal inheritance and asymmetry, not purpose or destination.

Alignment Constraint: Viability at one scale does not guarantee viability at another; effects may support, undermine or compensate across levels and through time.

Maintenance Cost: Accumulated organisation creates continuing obligations of coordination, repair, renewal and oversight.

Irreversible Path Dependency: Earlier participation changes later possibility, opening some pathways while narrowing or closing others.

Embedded Capture: Embedded systems perceive and act through partial representations rather than from an external view of reality.

Interpretive Capacity: A system has finite capacity to transform available information into usable understanding.

Interpretive Capture: Systems become shaped by the models through which they perceive and participate, sometimes preserving an interpretation after its fit has deteriorated.

Compression: Finite systems simplify reality to represent and act within it, preserving some information while omitting other information.

Recursive Selection Pressure: Changing configurations continually alter which structures, behaviours and interpretations remain viable.

Constraint Interaction: Constraints combine, amplify, moderate and transform one another rather than operating independently.

Adaptive Possibility: A system's changing range of viable future adaptations emerges from the cumulative interaction of constraints, capacities and prior participation.

5.2. Candidate Adaptive Capacities

Variation Engine: The organised capacity to generate, evaluate and metabolise variation over time.

Participation: The capacity to organise distributed contributions into usable perception, knowledge, feedback and learning.

Feedback: The capacity to compare consequences with expectations and revise perception, interpretation or behaviour.

Legibility: The capacity to make relevant aspects of reality sufficiently observable, interpretable and communicable for a specified participation.

Resource Legibility: Perception of what resources and capabilities exist, where they are, who can access or control them, how they move and in what condition they remain available.

Influence Legibility: Perception of how participation, relationships and concentrations of power shape decisions and outcomes, including influence outside formal authority.

Process Legibility: Perception of how outcomes are produced through stages, rules, dependencies, decisions, responsibilities and routes for feedback or correction.

Corrigibility: The capacity to recognise limitations in existing models or strategies and revise them as consequences and conditions change.

Continuity: The capacity to preserve enough orientation, identity and coherence for cumulative adaptation.

Memory: The capacity to retain information, structures, experience and learning through time.

Transmission: The capacity to propagate adaptive information, behaviours, structures and capabilities.

Inheritance: The capacity to receive and build upon information, structures and capabilities accumulated through earlier participation.

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Maintenance: The capacity to preserve functionality and adaptive capability through care, repair, renewal and stewardship.

Standing Capacity: The maintenance of resources, relationships, capabilities and readiness before the precise form of need is known.

Adaptive Substrate: The underlying conditions through which adaptive capacities can interact and remain available without determining outcomes in advance.

6. Comparative Questions from the Situated Starting Map

The following questions illustrate what the present map makes available for investigation. They are author-generated conjectures, neither results established by the Repository nor necessary implications of the orientation. A different map may generate different questions. Domain-specific evidence must determine whether each account supports a useful comparison or instead needs narrowing or rejection.

First, viable systems may preserve a workable relation between continuity and variation. Too little continuity prevents learning from accumulating; too little variation leaves the system dependent on conditions repeating. March's exploration–exploitation problem is one domain-specific expression of this wider comparative question, not evidence that one mechanism governs all cases.

Second, systems may differ in where uncertainty is absorbed, delayed or exported. Apparent order at one level can depend on volatility imposed elsewhere. The Alignment Constraint makes this distribution available for comparison across organisations, ecosystems and institutions while requiring each domain to specify the actual pathway.

Third, legibility may be unevenly distributed. A system can make resources visible while obscuring influence, or render formal process clear while hiding informal dependencies. Increased information does not automatically increase usable perception; it can exceed Interpretive Capacity or intensify Interpretive Capture.

Fourth, adaptive capacity may depend on infrastructure maintained before need becomes specific. Standing Capacity, Memory and Transmission preserve responses that cannot be created instantly when disruption arrives. Maintenance Cost may nevertheless make such redundancy politically or energetically difficult to sustain.

Fifth, participation that improves immediate performance may narrow later Adaptive Possibility. Irreversible commitments, suppressed variation or loss of feedback can make a system more efficient under present conditions and more brittle when those conditions change.

These are candidate comparative propositions. They become research only when translated into domain-specific questions, measures, counterexamples and boundary conditions.

7. Proposed Comparative Record Protocol

The comparative record is a proposed working unit of this Repository instance. Investigators may begin within one domain, compare separately grounded cases across domains, or examine how versions and architectures represent the same material. They can use, modify or bypass the candidate map. The fields make selection, testing and failed translation inspectable while retaining the evidence and methods appropriate to each case. For a proposed comparison, investigators could:

- identify the phenomenon without relying on Repository terminology;
- locate established disciplinary concepts, measures, mechanisms and antecedents;
- specify the system boundary, organisational level, timescale and purpose of enquiry;
- state the enquiry or contemplated participation, then identify which relations must become legible for that purpose, why selected causal history may provisionally be compressed and which omissions could defeat the selection;
- describe the observed form at the selected resolution; ask what, if anything, persists in the proposed relationship, at which scale and over which interval, under what conditions, and what observation would defeat or reverse the description;

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- distinguish structural resemblance from mechanistic identity;
- identify necessary conditions, counterexamples, displaced consequences and boundary conditions;
- test interactions with other relationships, using or replacing Repository entries where helpful;
- assess what the observation makes available for possible participation, who could use or ignore it and where the resolution remains inadequate;
- record whether the encounter supports retention, refinement, subdivision, merger, reclassification or rejection; and
- return the revised record to the shared interface for further cross-domain testing.

The output is a versioned account of what was attempted and what followed, not a verdict that a label applies. A first record would specify the phenomenon, evidence, scale and purpose; the proposed relation and compressed history; the reasons for including or omitting conditions; domain mechanisms and counterexamples; where transfer holds, changes, breaks or cannot yet be judged; any consequential question or distinction; and the resulting Repository revision. A failed translation with an explained boundary is a substantive result. If the form hides a domain-specific issue, specialists should change the form and record why.

A record should also preserve unresolved disagreement: the claims at issue, relevant evidence, participants' stated scopes of expertise, competing boundary choices and reasons for any provisional decision. It should identify the protocol and architecture version used, and distinguish a domain correction from a comparative judgement or a change to the organising categories. Endorsement may differ across participants; lack of consensus should not be rendered as an agreed finding.

For comparisons between architectures, the record should identify the versions and their lineage, the shared material or question, the categories and boundary choices that differ, and what becomes easier or harder to express or investigate. A comparison should distinguish a change in evidence from a change in representation, and retain both translation losses and justified incompatibilities. Architectural plurality earns value through what it reveals, rather than through the number of instances produced.

7.1. Criteria of Usefulness

Three requirements distinguish a successful comparison from a completed record. First, the record must ground each domain account in identifiable evidence and specify its purpose, boundary, scale and proposed relationship. Second, the comparison must produce an inspectable distinction consequential to that purpose, such as a bounded correspondence, an explanatory divergence or a justified rejection. Third, it must show what changed relative to the source accounts and an appropriate comparison with existing practice. Specialist disagreement can remain, but the record must state which claims are supported, contested or unresolved.

For example, discovering that a relationship holds only under a particular sequence would count as a comparative gain if that condition had not been explicit in the source accounts and specialists could investigate its consequences. A shared label, a completed template or an unexplained refusal of transfer would not meet the criterion. Records without a gain may still be retained as documented null results; their retention is not evidence of success. A useful failed comparison rejects or narrows a claim for stated reasons, whereas a successful correspondence remains provisional and bounded.

A comparative encounter should count as useful only if it adds something inspectable beyond the source domain account or a loose analogy, such as:

- a more precise domain question;
- a previously obscured contrast between cases, scales, mechanisms or timescales;
- a portable distinction with stated limits;
- a justified correction, rejection or failed translation that exposes a consequential boundary or false equivalence;
- a clearer account of what must become legible before a specified intervention; or
- a feedback requirement or displaced consequence that the prior model omitted.

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Repeated use of a word is not evidence of recurrence, and recurrence is not evidence of a common mechanism. Conversely, simply recording different mechanisms is not enough: the contrast must clarify a relationship, boundary or question that matters to the stated enquiry. If repeated encounters produce neither informative transfer nor informative difference, the protocol has not earned its comparative role.

7.2. Illustrative Protocol Template

This author-generated template shows what a candidate domain record should make visible: an independently described phenomenon, established antecedents, a proposed connection, points of mechanistic divergence, discriminating questions and conditions for narrowing or rejection. Its immunology and organisational-learning descriptions are offered solely to demonstrate those fields and the proposed guardrails. They have not been validated by domain specialists and do not establish the correspondence. Specialists should correct both the case descriptions and the template if their methods require it.

Provisional comparison: Retention and variation in adaptive immunity and organisational learning.

Candidate relationship: Viability may depend partly on how systems retain previously effective responses while generating, selecting or preserving alternatives under changing conditions. The proposal concerns a possible relationship, not a presumed equilibrium or universally optimal balance.

Domain A: adaptive immunity. At cellular and molecular scales, adaptive immunity retains information from previous encounters through several populations and processes, including memory B and T cells (Victora & Nussenzweig, 2012; Farber et al., 2014). Receptor diversity is generated through V(D)J recombination during lymphocyte development (Schatz & Swanson, 2011). Following antigen encounter, activated B-cell lineages can undergo somatic hypermutation and selection during affinity maturation (Victora & Nussenzweig, 2012). These processes should not be compressed into one undifferentiated "variation engine": they occur at different stages, involve different cells and are subject to distinct forms of regulation.

A possible continuity cost appears in immune imprinting. Prior exposure can support rapid and effective later responses, but under some conditions established memory can bias responses to an altered antigen; sequential influenza infections in mice provide one experimental example (Kim et al., 2009). This is not evidence that immunological memory is generally maladaptive, nor that "excessive continuity" supplies a complete explanation. Likewise, autoimmunity should not be treated simply as excessive immune variation; failures of tolerance, regulation and selection involve mechanisms requiring specialist specification (Goodnow et al., 2005).

Domain B: organisational learning. At group and institutional scales, organisations retain routines, records, competencies and expectations. They also generate alternatives through experimentation, research, recruitment, dissent and strategic exploration. March's exploration–exploitation account identifies an established tension: exploiting existing knowledge can support near-term performance, while exploration is costly and uncertain but may preserve adaptation when conditions change. Organisational processes remain intentional, contested and socially mediated in ways that immune processes are not.

Provisional cross-domain correspondence. Both domains contain mechanisms through which previously successful responses are retained alongside processes capable of producing alternatives. The proposed correspondence concerns the consequences of how retention and variation are organised through time. It does not establish a common trade-off, regulatory mechanism, optimum or experience of uncertainty.

The comparison may hold at the level of a relational question: when does retained information enable faster and more effective response, and when does it inhibit the generation, recognition or uptake of alternatives? It breaks at the level of mechanism. Lymphocyte development, clonal selection and affinity maturation are not organisational learning; institutional experimentation and

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strategic choice are not biochemical diversification. The relevant system boundaries, timescales, selection processes and forms of agency differ.

Discriminating question: Under what conditions do retained responses enable or inhibit the generation, selection and uptake of alternatives, and how do sequence, latency and organisational scale alter that relationship?

Conditions for rejecting or narrowing the correspondence:

- retention and variation do not interact in one domain at the specified scale;
- their apparent relationship disappears when domain-specific causal variables are identified;
- the comparison produces no discriminating question beyond those already available within each discipline;
- the relevant phenomena require incompatible system boundaries or timescales; or
- specialist examination shows that either term compresses causally distinct processes that cannot usefully remain grouped.

Possible Repository implications for specialist review: Continuity may require an explicit distinction between retained information that enables response and inherited response biases that restrict later perception or selection. Variation Engine may need to distinguish the production of alternatives from their regulation, selection and uptake. Temporality may need to become explicit wherever the same retained structure changes function as sequences, delays or environmental relations change. These are proposed questions, not adopted amendments.

Record status: Retained only as an illustrative candidate correspondence pending specialist review. Mechanistic identity is explicitly rejected. No Repository amendment is warranted on the basis of this example alone.

7.3. Participation Without Jeopardy

Repository contributions should be treated as attributable proposals for collective testing, not declarations that a contributor must defend indefinitely. Domain specialists remain embedded observers: expertise can greatly increase resolution without producing an exhaustive view, and specialists can reasonably disagree or revise their interpretation as evidence, scale or questions change. A contribution can therefore be valuable even when it is later narrowed, divided or rejected.

The interface should make revision low-friction. Contributors should be able to state confidence, scope and unresolved questions; distinguish personal interpretation from disciplinary consensus; invite correction; and withdraw endorsement from a later version without erasing the earlier record. Version history should preserve what changed and why without presenting correction as reputational failure. Disagreement, failed translation and acknowledged uncertainty are substantive outputs.

This principle does not remove responsibility for evidential quality or consequences. It separates accountability from infallibility. The appropriate expectation is that contributors represent their available evidence and limits honestly, remain open to correction and do not claim authority beyond the slice of reality their methods make perceptible. The Repository should provide enough structure to make participation useful, but not so much jeopardy that specialists contribute only when certain they cannot be wrong.

8. Open Questions Limitations and Falsification Risks

The foundational orientation is high-level and may be too permissive. Almost any phenomenon might be redescribed as pattern, constraint or dynamics. Recognisable forms may reflect an observer's category rather than the proposed causal relationship. Investigators may justify omissions after the fact, select favourable cases or treat every failure as useful. A failed translation counts as a substantive result only when it specifies a consequential boundary, false equivalence or further test. If repeated comparisons add no discriminating question or distinction beyond domain methods or existing comparative approaches, the instrument has not demonstrated value. Rejecting a candidate handle

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is not by itself evidence that the instrument succeeds: what the correction makes newly available must be shown.

The programme also risks circularity. If persistence is explained by capacities observed only in systems that persist, the map may merely redescribe survivorship. Comparative studies must include failure, collapse, maladaptation and cases in which apparently desirable capacities impose costs or become pathological.

The threshold of sufficient relational legibility is purpose-relative, but this cannot become an escape from evaluation. Investigators must state the contemplated participation, affected levels, plausible consequences, reasons for excluding causal histories and evidence by which insufficiency would be recognised. Where stakes are high, irreversibility substantial or feedback delayed, the burden of legibility and precaution should increase. Additional relevant knowledge makes informed participation possible; it does not force uptake, wise judgement or favourable emergence.

Power is not resolved by improved representation. Participants differ in their ability to define system boundaries, select valued outcomes, make uncertainty visible, impose costs and act on feedback. Public participation can itself be performative or extractive. The Repository must therefore record whose perception enters the model, whose consequences are delayed or displaced and who retains the capacity to correct an intervention.

This paper proposes the comparative record protocol and includes an author-generated illustration, but reports no completed specialist pilot. Section 7.2 provides an illustrative protocol template without validating its domain descriptions or correspondence. Specialists must determine measures, observations, comparisons and thresholds suited to each case. A first pilot could compare a specified relationship across two or three domains, include at least one attempted translation that fails, and evaluate whether the resulting contrasts were available without the protocol. Until such work exists, the claim that disciplined comparison yields additional legibility remains a testable proposal, not a demonstrated result.

The candidate classification is unfinished. Contact may be a relational dynamic, an event-form or a dimension of Participation. Temporality cuts across entries through sequence, duration, rate, latency and synchronisation. A further metaphysical question is whether temporal ordering is downstream of embedded relationships, or whether the two are inseparable. Ordering, elapsed duration and experienced time require distinction. The stronger proposal that embeddedness excludes an unconditioned seed or final closure remains open to argument and antecedent comparison; the comparative protocol does not depend on its resolution. Concentration recurs in distributions of matter, resources, information and influence, but its relation to constraint and phase change remains unresolved. Uncertainty itself should remain an organising condition unless specialist comparison demonstrates that this placement obscures more than it clarifies.

Historical originality remains provisional at the level of the connected argument, the candidate map and the comparative architecture. Process philosophy, constraint-based biology, cybernetics, metapattern research and systems-process programmes supply close conceptual and substantive antecedents; collaborative infrastructures already perform comparative and versioning functions. Further assessment may narrow or change the claim. Developmental independence and clear exposition do not establish priority or additional value.

8.1. Epistemic Deference and Comparative Authority

Epistemic deference is an unresolved methodological problem. Relevant specialists possess resolution unavailable to the originating researcher, and domain descriptions must remain answerable to domain evidence and appropriate expertise. Expertise nevertheless has boundaries, and specialists can disagree about explanations, scale or evidential standards. Deference needs an account of the claim being assessed and the grounds on which a particular judgement is relevant; status alone cannot settle it.

Domain authority concerns the description and evidence within a field. Comparative authority concerns whether accounts from different fields support an informative contrast or correspondence.

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Architectural authority concerns the categories, record form and admission procedures through which comparison is organised. These may overlap, but authority within a source domain does not automatically settle the entire comparison, and authorship of the first interface does not confer permanent authority over its architecture.

For example, one specialist may reject a comparison because its abstraction omits a decisive mechanism, while another considers the abstraction useful for a narrower question. The record should preserve the proposed purposes, omitted distinctions, evidence and competing boundaries. It may need to leave the comparison unresolved, retain separate versions or narrow its claim. Recording disagreement does not make all accounts equally warranted or remove the need for evidence.

This creates a reciprocal problem of deference. The originating map must answer to appropriate specialist evidence, while judgements about transfer must specify why that expertise bears on the comparison. Specialists remain situated participants and may differ in their methods or boundaries. Distributed scrutiny is needed to expose what any one account or architecture misses, with evidential weight determined by the claim and its grounds rather than an assumption that all contributions are equally warranted. For the proposed programme, participation beyond the author is constitutive of its development, not simply an optional review at the end.

The originating author does not possess the expertise to adjudicate disputes across the proposed domains. This manuscript supplies no general rule for allocating comparative authority. Legitimate procedures remain part of the research programme. They should make the reasons and provenance of decisions inspectable, preserve minority interpretations without presenting them as consensus, and permit revision of the adjudication procedure itself. This problem would remain in an institutional or specialist-led instance, although appropriate expertise and resources could improve its handling.

8.2. Practical Limits and Stewardship

The Repository has been developed by a single independent researcher working with substantial constraints of chronic illness and disability and without institutional support. The author can formulate the question, make a provisional interface and illustrate its use, but cannot alone supply domain-specific measurement methods, run sustained comparative pilots or establish the governance of a multi-field public research infrastructure. This is a limit on what the present manuscript claims to have done, not a condition that must be overcome before the question can be examined. The distributed method depends on specialists who can test its candidate relationships and correct the interface from within their own domains.

If the programme proves useful, a modest institutional home could provide a persistent public location where specialists access its current state, trace revisions, contribute disciplinary knowledge, record disagreement and develop independent applications. At minimum, a trial implementation would need stable identifiers for entries and domain records, explicit links to source evidence and contributors, dated version histories showing what changed and why, and a way to find records by domain, scale and proposed relationship. It should preserve rejected correspondences and allow records to be exported in an open format. These are functional requirements, not a choice of platform or an implemented governance architecture. Rules for evidential quality, attribution, stewardship and protection against capture should be developed with those doing the work. Until then, a public manuscript and provisional Repository invite scrutiny without claiming institutional authority.

Availability alone would not maintain the object. Sustained stewardship includes revisiting records, preserving provenance and disagreements, reconnecting accounts to changing evidence, and making architectural revision possible. These continuing responsibilities exceed the current author's capability. An institutional home is one possible means of supporting them, while independent stewardship and alternative builds remain open paths. Any instance's arrangements for participation, funding and maintenance are themselves subject to comparative scrutiny.

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8.3. Downstream Uses and the Development of the Repository

The Repository enters its own account of emergence. Its explanations may affect what participants notice and do; its categories and admission practices may shape what subsequent contributors can express. Use can alter the investigated conditions, and those altered conditions can change later interpretations and entries. This reflexive implication belongs to the foundational argument as well as to practical stewardship. The Repository has no position outside the field from which it develops.

Consider an explicitly hypothetical authoritarian use. An institution might ask whether making selected content legible through a particular medium, distribution route, duration and sequence changes what a population perceives. It might investigate selective disclosure, restricted contact or the filtering of feedback to decision-makers. A record contributed for public explanation could also inform coercive organisation of those encounters. No populated Repository, pilot or reliable capacity to engineer perception is reported here. The case illustrates why a useful relationship would not carry the author's purposes with it. Scott's (1998) analysis of state legibility is a direct antecedent to this concern.

Even successful intervention would enter conditions beyond its initial description. People may resist or reinterpret, effects may be delayed and locally increased control may produce fragility elsewhere. Uncertainty does not prevent harm. Greater legibility for an institution could narrow the possibilities of those it observes, while public availability might assist both scrutiny and coercive use. The relevant questions therefore include who can perceive what, who can act on it and whose feedback can change the arrangement.

The Repository would itself adapt around contributors, funding, admission practices, early categories and institutional relationships. Provisional choices might become difficult to change as later work depended on them. Some questions could become easier to formulate while others became harder to express. Its candidate concepts can help ask about such development, but cannot establish that an instance possesses the capacities it names.

Versioning, scrutiny, corrigibility and alternative instances provide opportunities to examine and respond to this development. They do not guarantee beneficial emergence or justify unrestricted access to every record. A contribution should be able to travel with its evidence, limitations and reasons for revision; later participants should be able to inherit failures as well as findings. Stewardship must also preserve the possibility of challenging an instance's organising terms and developing another build when internal revision cannot accommodate a concern. Such choices require resources and scrutiny of their own. The author's anti-harm motivation cannot bind subsequent users, but it can motivate making this construction understandable and alterable rather than allowing its limits to become everyone's limits.

9. Research Agenda

The following tasks specify what further participants could test or build. They are not results reported by this paper, nor commitments that the author can execute alone.

First, specialists could conduct bounded investigations within a domain and worked comparisons across domains using or revising the record structure. They should evaluate the candidate map as substantive proposals, reconnect handles to independent phenomena and include cases of dissolution or failure alongside persistence. Initial relationships could include continuity–variation, cross-level alignment or maintenance–adaptation trade-offs, with evidence that could defeat a proposed correspondence.

Second, collaborators with relevant methodological and technical expertise could develop versioning and provenance practices. A trial record would identify the domain encounter, evidence, contributor, affected entry and reason for retention, revision or rejection; governance rules would need to be developed with participants rather than assumed by the author.

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Third, where appropriate, investigators could operationalise the Teabag Test for a stated domain and purpose: identify the contemplated enquiry or action, specify potentially consequential relationships and omissions, select appropriate observations or measures, and state what would prompt further reconstruction. No universal quantitative threshold is proposed. Separately, a study of the participation bridge could ask what changed in available legibility, whether and by whom it was used, and what consequences and revisions followed.

Fourth, compare the connected proposal with close antecedents. Examine the candidate map against metapattern and systems-process accounts, the sufficiency reasoning against established approaches to partial understanding, and the record workflow against feasible literature reviews and existing infrastructure. Use the same material and expertise where possible. Evaluation should ask what conceptual distinction or investigable question this particular construction adds, alongside the effort it requires.

A further test is whether interactions among separately grounded records make previously inexpressible or insufficiently specified questions investigable. Investigators should document the contributing records, the distinction that enabled the new question, its domain-specific test, and plausible prior formulations outside the Repository. They should also record cases where accumulated entries generated no new question or produced a misleading one. The proposed minimum legibility floor is enquiry-specific and provisional, not a numerical target for Repository growth.

Fifth, examine epistemic deference and stewardship through actual encounters, including comparisons between successive versions and divergent instances. Record shared material, lineage, evidential and architectural differences, translation losses and what each makes easier or harder to investigate. Preserve disagreement and reasons for provisional decisions without treating plurality as evidence of success. Study whether scrutiny changes the instance, whether an alternative reveals exclusions the first cannot accommodate, and how access and reuse affect subsequent participation. Such work would help determine whether the field ambition acquires sustained substance.

10. Conclusion

Viability Studies is proposed as a field of comparative enquiry into relationships among recurrent, non-identical patterns, constraints and dynamics. Its shared questions concern form, persistence, transformation and dissolution at stated resolutions, scales and boundaries. The Teabag Test justifies selective reverse engineering without demanding exhaustive causal reconstruction, while minimum relational legibility asks what is sufficient for the specified enquiry and what would reopen that judgement.

The foundational orientation situates that possibility within embedded perception, participation and ongoing recursive emergence. Later configurations inherit and alter conditions, and enquiry enters what it investigates. Recursive Novelty gives a rule within this reasoning: recognisable recurrence does not imply identical conditions or consequences. Whether a difference changes a relationship or possibility at a selected resolution remains an investigable question. The orientation generates the programme's concern with persistence, inheritance and change without prescribing a complete classification of them.

The Working Repository gives this enquiry one situated, usable form and serves as the paper's central research instrument. Its candidate dynamics, constraints and capacities compress the foundational reasoning into proposed relationships that other participants can examine. The map is an attempt at operationalisation whose value lies in the enquiries it supports; expanding the catalogue is not an end in itself. The protocol would preserve the evidence, limits and outcomes of those encounters. A bounded within-domain finding can be useful; cross-domain comparison may expose further distinctions, including informative failures of transfer. The compression and procedure require evaluation both separately and in their connection.

The Repository is a cumulative object whose records and architecture can both become material for enquiry. Existing specialist knowledge can supply its content; maintaining its resolution requires

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more than adding records. Other participants can extend this instance, adopt an earlier version or build independently from the public orientation. Comparisons between builds can examine what their organising choices reveal or obscure. The field proposal concerns that continuing domain of enquiry beyond any one map; sustained participation and consequential findings would establish its development.

The contribution offered for assessment is the connected argument, candidate map and architecture, including their implications for participation. Relevant expertise must constrain domain claims, while comparative and architectural judgements require reasons open to further scrutiny.

The authoritarian legibility example makes the practical stakes explicit. Understanding can support purposes the author opposes, and the Repository's own circulation and organisation can change subsequent conditions. Distributed scrutiny, versioning and alternatives are proposed ways to retain opportunities for correction and divergence within that unfolding. They cannot guarantee desirable use, equal participation or protection from capture.

The initial construction is offered as a building block others can examine, alter and develop. Its ambition is to make enough of consequential relationships legible for further enquiry and potentially better-informed participation, while allowing later work to challenge both its answers and its organising questions. What persists of this Repository should depend on what those investigations establish.

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