

Constituted Agency: Self-Authorship, Local Control, and Conscious Participation

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Abstract

An individual's dependence on its constitution need not make understanding ineffective. This paper develops a cumulative account of constituted agency: received capacities can support deliberation, warranted commitment and self-transformation without supplying ultimate independent self-authorship. The argument separates common constitution, inherited authorization, complete-history ontology, uniqueness from prior data and token-causal constitution. Each supports a different conclusion. Relativistic geometry constrains temporal descriptions; stronger exclusions of a dependent initiating power require additional causal or modal premises. Detailed engagement with block-compatible accounts of freedom clarifies where those premises are disputed. Positively, Shadow Theory's source-readout framework connects a nominated physical history to the records available to an embedded organization. An exact 64-history construction follows acquisition of a self-mechanism model, retained interpretation, assessment, authority revision and fresh action while distinguishing task uncertainty from command prediction. Costed selectivity yields advantages of $1/16$ and $1/256$ under declared noiseless and noisy contracts with task stability under diagnostic selection; a direct neutral-write counterexample shows why successful output alone does not establish recognition. A checked 1,874-window transaction and a separate causal-order construction make the implementation obligations explicit. Understanding can change which dispositions govern action while useful self-information, memory and commitments remain available. The resulting freedom is consequential participation through an assessable organization. The unknown Ground, awareness attribution, localized experiencing occurrence and constructed self-story retain distinct roles. The actual A0–A3 consciousness constitution is preserved, and its complete-occurrence boundary remains a separate psychophysical obligation.

Keywords: agency; free will; self-authorship; constitution; consciousness; Shadow Theory; reversible control; learning; grounding; block universe; temporal experience; relativity.

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1 Agency as constituted participation

A person can understand a source of their conduct without having created the capacity to understand it. That understanding can nevertheless change what the person does. A complete physical history can contain both the earlier absence of understanding and the later competence it makes possible. This paper develops these claims together. Its negative argument limits ultimate independent self-authorship under explicit premises. Its positive argument explains how a constituted participant can acquire an account of a recommendation, assess its authority and change its subsequent use while retaining memory, practical identity and the ability to act.

The motivating image is a sandpit. People, cities and civilizations are distinguishable organizations of its material without obtaining a separately constituted existence outside it. The analogy identifies a question rather than proving a conclusion. If a person's body, understanding, self-image and decisions are constituted within a common reality, what limits follow for authorship? What changes when the person understands those limits? The intended shift is from a self-originating spectator to an organized participant. It does not make the person a helpless piece controlled by an external puppeteer.

Within Shadow Theory the fundamental Ground remains unknown. Awareness provisionally names an attributed intrinsic quality; localized experiencing occurrences require further constitutive and organizational laws. A nominated mathematical source, a physical history, an available record and an interpreted self-description are therefore not interchangeable. Common constitution neither establishes one cosmic subject nor makes every physical interaction conscious. Its positive explanatory role is to make personal understanding and its realized activity one occurrence rather than competing causes. Reality's activity through this organization need not be the action of another person instead of this person.

The block-universe question sharpens that proposal. Relativity represents events through spacetime geometry with invariant causal structure, local durations and frame-dependent simultaneity. A complete-history interpretation places perception, retained records, anticipation and decisions within that structure. From a situated stage, some later events remain inaccessible and some actions remain responsive to deliberation. Describing the whole history does not remove those differences. The substantive question is whether their reality requires an independently originating chooser, or whether the organization and its admitted alternatives can explain them.

We defend the second possibility without assuming that it excludes every rival. A complete actual occurrence fixes what actually happens, but does not by itself establish uniqueness from earlier conditions. A dependent agent might claim to settle an otherwise open continuation from within reality. The strongest supported argument has distinguishable dependencies: common constitution excludes a separately constituted author; inheritance and well-founded authorization obstruct ultimate authorship of the whole enabling basis; suitable complete-data uniqueness excludes same-prior-data alternatives; a further token-causal constitution premise excludes an irreducible initiating addition. The paper investigates rather than hides those additional steps.

The positive thesis is more specific than the observation that conditioned systems learn. Understanding can alter the authority of a self-model while preserving useful information. A disposition's origin does not automatically disqualify it, and recognizing conditioning does not automatically warrant revision. The needed relation is selective: acquire a credible account, assess it under independently defensible standards and actual costs, then carry warranted retention or revision into action. Verbal assent, unused description, compensation, authority revision and passivity are distinguished by actual routes.

The retained construction follows that sequence. A finite organization probes its own

recommendation-producing mechanism, retains a predictive model, assesses an installed route, archives its old authority state and acts on fresh inputs. Diagnosis outperforms a declared source-blind comparator by 1/16 in the costed example, falling to 1/256 under specified noise. A direct neutral write achieves the same raw accuracy without diagnosis. Recognition’s value concerns selective assessment and costs rather than a monopoly on successful behavior. Model error, missing actuators and relapse expose failure conditions.

The connection to complete histories is explicit. An exact 64-history ensemble separates improving self-mechanism knowledge from task uncertainty and action prediction. A finite causal-order result makes compatible event records independent of the serialization of disjoint spacelike operations. Revealed-forecast fixed points distinguish deterministic evolution from universally successful disclosed prediction. Compatibility and compactness arguments test whether distributed choices can jointly specify a block’s boundaries. These are worked applications and deductions from standard mathematics, with no unsupported priority claim.

Brennan’s full paper supplies a demanding interlocutor. His objections separate complete-state determination from fragmentary power, entailment from efficacy, and free parameters from an explanation of authorship. Hoefer contests an unwarranted explanatory privilege of the past without supplying a complete positive theory. Ismael develops constituted judgment and self-governance while expressly rejecting self-creation all the way down. Thyssen’s libertarian synthesis contributes a serious alternative and a precise compatibility problem. Their disagreements shape the argument rather than serving as authorities for one conclusion.

The physical discussion makes only the inferences its regimes support. Newtonian uniqueness requires conditions; relativistic simultaneity is not a universal present; general-relativistic uniqueness is conditional and gauge-relative; quantum theory does not give an interpretation-free proof of unique outcomes. The earlier 31-bit transaction and its 1,874 local windows remain intact, including ingress, controller, holding and error obligations. The four-task reward calculation remains distinct from an end-to-end physical cost certificate for that apparatus.

The consciousness distinction is equally important. A complete physical trace does not automatically identify its native counterfactual operation structure, still less a complete experiencing occurrence. An experienced present is proposed as organized local access involving retention and anticipation, without an external awareness sweeping through spacetime in a second time. A0–A3 retain their actual realization requirements and open adequacy questions. The philosophical and physical argument develops together with the operational foundations retained in Appendix A. The supporting records make preservation, source engagement, mathematical dependencies and executed verification independently inspectable.

2 Common constitution and the sources of an act

2.1 Dependence, exercise and authorship

Three dependence claims and two authorship questions must be distinguished. A person’s existence can depend on constituting reality. Their capacities can depend on embodied organization, development and environment. A particular exercise can itself be an occurrence within that constitution. Ultimate authorship asks whether the person authored the enabling and authorizing basis of those capacities. Present authorship asks whether this exercise is the person’s decision, including, on a libertarian account, whether the person settles an open alternative. The first three relations do not by themselves decide either authorship question.

An unchosen ability can be genuinely exercised. A writer authors a chapter without first authoring language or the capacity to write. Similarly, a person may assess reasons, commit to an intention and execute an action without producing every condition that makes

assessment possible. Local causal control concerns callable effects under actual operations and resources. Evaluative self-governance concerns the operative use of considerations in assessing alternatives and revising rules. Historical ownership concerns the process by which the operative organization was acquired, including persuasion, deception, coercion, bypass and later reassessment. Agency is therefore not interchangeable with moral responsibility, which introduces additional questions about answerability, desert and justified responses.

Common constitution has a substantive explanatory use when it prevents a mistaken competition. If the person is a realized organization, the organization's assessment need not occur somewhere else while the person watches. The person's understanding is the relevant organized activity. This does not make every internal event an intentional action. Reflex, compulsion, accident, assessment and commitment still require differentiation. Under the realized account, their differences are located in the organization and its relations. Whether those relations exhaust a proposed irreducible personal cause remains a further question.

This is an immanent account of action, not an argument for ubiquitous causal connection. A common constituting reality could include dynamically isolated factors. Nor does the claim that parts depend on a whole prove that the whole is ontologically prior in Schaffer's stronger sense. Priority monism is a close philosophical comparison, with its own grounding commitments (Schaffer, 2010, pp. 35–37, 51–55). Constitution should not receive consequences merely because the word “whole” makes them sound natural.

2.2 Four routes to a stronger exclusion

The first possible route invokes the completeness of the whole. A complete actual occurrence includes the decision, so fixing that occurrence fixes the decision within it. This does not show that fixing the temporally prior occurrence fixes its successor. In schematic notation, $a = d(g_{\text{actual}})$ does not entail $a = f(g_{\text{prior}})$.

Example 2.1 (An entirely constituted but open exercise). A nominated carrier has states g_*, g_0, g_1 . From g_* the transition reaches g_0 with probability p and g_1 with probability $1 - p$, where $0 < p < 1$. Personal existence and availability of the capacity are represented by constant functions equal to one. The actual action is $a(g_i) = i$. Every actual action and capacity is represented within the carrier; the prior state permits two actions. A Dirac transition instead makes the same constitution scheme deterministic.

The example tests an implication, not a proposed state space of the unknown ground. Adding a primitive interpretation that the dependent person activates the selected transition, or withholding that interpretation, leaves the displayed laws unchanged. The written premises therefore have not excluded agent causation. They do not prove that every such interpretation is coherent either. Their role is to locate the missing argument.

The second route moves from dependence of a power to dependence of each exercise. It is correct that an exercise requires its power and conditions. It does not follow that those conditions antecedently necessitate the exercise or that exercising an unchosen power cannot be present authorship. The strongest embedded agent-causal rival grants physical composition and unchosen reasons while claiming a nonstructural personal power of activation. O'Connor's inspected author draft explicitly distinguishes physically composed agents from causally reducible ones and separates propensity-conferring reasons from activation (O'Connor, 2010, draft pp. 6–7, 20–22, 29–31). The rival is inside reality, not an independent visitor to it.

The third route strengthens constitution to a claim about token causal relations:

Token-causal constitution. In the nominated regime, the initiating and controlling relations are fully constituted by the causal relations of the independently specified realized organization. No further irreducible agent-to-act initiating relation supplements that realization, whether or not its effect is the same token event.

This premise conflicts with an ontologically distinctive agent-causal addition. Its consequence is substantive but follows from the stronger causal premise, not from oneness alone. It permits stochastic realized dynamics. A probability law, covariance of mental and physical descriptions, or physical composition does not establish the premise. An event-causal libertarian can also accept the realized organization while denying deterministic evolution; whether indeterministic efforts supply authorship requires a further account of control and attribution, not merely a random seed.

The fourth route asks what a realized explanation can earn through scientific adequacy. A mechanism that identifies acquisition, retention, assessment and installation routes can predict the effects of cutting and restoring them, changing task contexts and imposing deadlines. Such predictions supply evidence of operational adequacy within the declared regime. They are stronger evidence than fitting intact behavior alone. If an additional selector changes no admitted law, those data provide no preference for its addition. This supports using the adequate realized model without the extra mechanism. It does not prove that every metaphysical interpretation of the same exercise is false.

For probability laws, $\text{TV}(P, Q) = \sup_A |P(A) - Q(A)|$. In the finite constructions it equals $\frac{1}{2} \sum_z |P(z) - Q(z)|$.

Proposition 2.2 (Bounded residual contrast). *Let P_i be actual complete transcript laws and Q_i registered comparison laws for interventions $i = 0, 1$, with $\text{TV}(P_i, Q_i) \leq \epsilon_i$. For any fixed measurable score $0 \leq f \leq 1$,*

$$|(\mathbb{E}_{P_1} f - \mathbb{E}_{P_0} f) - (\mathbb{E}_{Q_1} f - \mathbb{E}_{Q_0} f)| \leq \epsilon_0 + \epsilon_1.$$

Proof. Each expectation error is at most its total-variation distance. Apply the triangle inequality to their difference. $\square$

This standard probability bound supplies an operational constraint, not an ontology detector. An observable additional contrast larger than the budget contradicts the conformance premises; an unobservable activation predicate is not bounded by it. Uniform joint-history instrument bounds later provide one route to the ϵ_i . Evidence for the realized model's causal adequacy is consequently regime-relative and revisable; it does not establish token-causal constitution against an activation interpretation with the same laws. Shared constitution supplies the interpretation of whose realized activity this is, while mechanism and intervention evidence supply the explanation of how it occurs.

2.3 What evidence for a realized account can establish

The strongest dependent agent-causal rival accepts that the person's body, reasoning and powers are constituted within reality. It does not require an external visitor or a person who first chose the reasons presently moving them. O'Connor permits physically composed agents whose personal causal powers are compositionally irreducible, and distinguishes an unchosen motivational basis from direct settlement of a particular intention (O'Connor, 2010, draft pp. 6–7, 20–22). A fair comparison must therefore ask whether the realized account explains settlement, rather than treating the rival's acceptance of received capacities as its defeat.

Two distinctions prevent the comparison from becoming verbal. The identity of an act does not settle the identity or grounding of its causal relations. A rival may identify the bodily and intentional event while holding it to be irreducibly agent-caused. It need not posit a second physical event. Conversely, personal explanation can remain irreducible as an explanation without adding an irreducible initiating relation. Reasons, commitments and historical ownership can explain why conduct is this person's action while its causation is realized through the nominated organization. Token-causal constitution concerns the

constitution of initiating relations, not the elimination of personal explanation or merely the counting of event tokens.

The realizer must be nominated independently of the conclusion. Its states, inputs, retained records and operations cannot be defined as whatever already excludes agent causation. The recognition construction supplies a limited nomination: an acquired model, assessment, separate write route, archive and fresh action. Cutting and restoring these routes has declared effects. This account can fail its tests before we decide whether it exhausts every metaphysical fact about a person's activity.

There are then three comparisons. An account that gives the same realized process a personal, reasons-based explanation can be compatible with token-causal constitution. An account that adds a basic personal initiating relation disputes that constitution even if the effect is the same event. If that addition changes an admitted intervention law, the models can disagree about complete transcripts. If it leaves every such law unchanged, those intervention data cannot decide between them. The classification concerns claimed relations and consequences, rather than terminology.

The last case gives the rival its strongest reply. Objective propensities may structure a person's choices while leaving it to that person to activate the power on an occasion. O'Connor expressly denies that matching propensity frequencies makes token activation redundant (O'Connor, 2010, draft pp. 29–31). Accurate frequencies do not answer that objection: an exact stochastic distribution does not itself identify what, if anything, settles an individual outcome. Likewise, placing a random variable in a representation does not prove that the represented process lacks a personal cause.

Even agreement under all admitted interventions establishes an evidential limit, not the truth of either interpretation. Let P_i, Q_i be complete transcript laws for the realized model and its rival under admitted protocol i , including its retained records, stopping rule and adaptive interventions. If $P_i = Q_i$ throughout the declared family, every measurable transcript statistic has the same distribution under both. A decision rule using only those transcripts therefore receives identical likelihoods. This elementary consequence of equal measures applies the existing identifiability distinction; it is not a new no-agent-causation theorem. Enlarging the family may break agreement but requires newly justified operations and access. Agreement within one family is not agreement under every metaphysically possible counterfactual.

Positive support for the realized account is consequently comparative. Successful predictions of intact conduct, read disruption, failed installation, compensatory support and fresh action earn operational adequacy over a tested contract. Explaining those contrasts through the same independently identified organization gives the account unity. It does not need a new selector to repair each result. If a rival adds an initiating relation while accepting those explanations and contributing no further explanatory or predictive achievement, economy favors using the realized account. This is a reasoned preference conditional on the agreed explanatory task, not a deduction from an unconditional law of parsimony.

The irreducible-settler theorist can dispute that the task is complete. Perhaps only a primitive personal relation, the theorist argues, explains the difference between controlled resolution and a fortunate stochastic occurrence. The response is to require that achievement to be articulated: what does the relation explain, how does it belong to the person, and why does it supply the disputed control? Merely naming it does not answer Brennan's demand for an account of the chooser's activity (Brennan, 2007, pp. 215–217). Conversely, insisting that only a measurable frequency difference could count as explanation would assume too much against the rival. The comparison concerns causal, semantic and modal explanation together. Our finite results explain acquisition, assessment and installation without resolving every proposed primitive relation.

Attribution supplies no shortcut either. On the realized account the deciding participant is the organized person, not an executive component isolated from its support. Ismael’s whole-company analogy locates judgment in that organization (Ismael, 2016, p. 82; pp. 107–108). Appropriate attribution still requires relevant reasons, capacities, histories and an absence of pertinent bypass or coercion. These conditions give a positive account of this act’s ownership; they do not establish authorship of every condition enabling the owner to exist.

2.4 Why self-revision does not create its entire authorization basis

The inherited non-origination argument concerns a different ambition. Suppose ultimate self-authorization requires that an exercise’s relevant authorizing conditions were themselves established by a qualifying exercise. Suppose also that required prior authorization is well founded, with no infinite descending chain or self-authorizing cycle. These are philosophical premises about ultimate authorization, not a demand placed on every ordinary rational judgment.

Proposition 2.3 (Inherited authorization obstruction). *If $\prec$ is well founded on a set E and $Q \subseteq E$ satisfies*

$$e \in Q \implies \exists d \in Q \quad d \prec e,$$

then $Q = \emptyset$.

Proof. A nonempty Q has a $\prec$ -minimal member. Its required predecessor in Q contradicts minimality. $\square$

The formal core is inherited from the control monograph’s Appendix C.4, in dialogue with Strawson’s Basic Argument (Rodgers, 2026j; Strawson, 1994). It shows why repeated self-forming choices cannot upgrade received enabling conditions into ultimately self-established ones under those premises. Its least premises do not include common ground, physicalism or determinism. An infinite authorization descent or a primitive self-authorizing cycle rejects well-foundedness; invoking one does not satisfy the displayed argument. Whether either supplies a coherent alternative account is philosophical work beyond the contradiction.

The inheritance requirement has force against the claim to be the final author of one’s whole source-making capacity. If that capacity’s authorizing basis remains unchosen, the stronger achievement has not been supplied. It has no comparable automatic force against authorship of a particular decision. A person need not create the truth of a reason before acting on it. Strawson’s further conclusion about ultimate moral responsibility requires a responsibility-transfer premise, contested by compatibilists and acknowledged as contested in his discussion (Strawson, 1994, pp. 16–17). The present result does not settle that normative dispute.

Spinoza and Schopenhauer clarify why these distinctions matter. In the supplied *Ethics*, Part I, necessitation draws on Axiom III and the modal-causal argument of Propositions 16 and 26–32, not bare substance unity (Spinoza, 1997). Schopenhauer eventually locates freedom in intelligible character, despite his necessitating account of action (Schopenhauer, 1985, ch. V, pp. 96–99). Neither is simply an authority for denying every serious form of freedom. Their arguments help expose what additional claims a stronger conclusion requires.

2.5 The cumulative argument and constituted participation

The central conclusion survives without treating comparison as deductive exclusion. Common constitution rules out an individual whose being is wholly independent of the reality constituting it. Inherited authorization addresses a different ambition: ultimate authorship of the relevant enabling and authorizing basis. If each qualifying authorization requires an earlier

qualifying authorization and that dependency is well founded, no ultimately self-authorizing exercise exists. These are not conditions imposed on ordinary decisions. They explicate the stronger source-of-the-source achievement being tested.

Complete-history ontology adds that the actual decision and its making belong within one actual history. It does not show that the prior part uniquely entails the decision. Appropriate prior-data uniqueness supplies that further exclusion in its physical regime; token-causal constitution would additionally exclude the nominated irreducible initiating relation. An embedded settler can reject either stronger claim without acquiring authorship of its entire unchosen basis. The paper thus has a stable central result and a separately identified stronger exclusion claim, rather than one conclusion that falls with every disputed premise.

Carrying premise	Consequence earned
Common constitution	The person's existence, capacities and activity are not separately constituted outside their shared reality.
Inheritance and well-founded authorization	No qualifying exercise ultimately establishes its entire required authorization basis.
Complete-history ontology	Deliberation, its making of a commitment and its consequences belong within one actual history; prior necessitation is a further question.
Future-target constancy, implied by forward uniqueness	The nominated act cannot differ between histories with the same declared complete prior data and laws.
Token-causal constitution	The relevant initiating relation is realized by the organization rather than supplied by an irreducible personal addition; intervention agreement alone does not establish this premise.

The remaining authorship is substantive. Deciding a particular question can form a judgment through an organization able to consider reasons, retain commitments and carry assessment into action. Its enabling conditions need not be self-created for that activity to belong to it. Ismael expressly accepts the absence of self-creation all the way down while defending such self-governance (Ismael, 2016, p. 204 n. 16). A dependent agent-causal theory can defend some of this positive account too. The dispute concerns the constitution of settlement, not whether reflection and commitment occur.

Recognition now has a precise role. A disposition can claim unconditional priority because it allegedly expresses an independently originating author. Rejecting that justification removes only that entitlement. Evidence, care, practical identity or a warranted commitment may still support retaining the disposition. Understanding can change the grounds and operation of authority without loss of memory or indiscriminate removal of constraints. The finite construction makes one such relation inspectable through acquisition, assessment, installation and retention. It does not encode a metaphysical doctrine in a bit and call its alteration insight.

The result is consequential participation through a changed relation to one's constitution. Common reality is not a second personal controller; it is the reality in which the person's inquiry and action are realized. A complete history can include an earlier recommendation, its later examination and subsequent warranted retention or revision. The negative limit concerns ultimate independent authorship. The positive achievement concerns how a received but real participant understands and governs some of its activity.

Constitutive physicalism and some other monisms can offer the same noncompetitive explanation. Shared ground alone has no unique operational prediction over them. Shadow Theory adds a provisional awareness interpretation of experiential presence, with separate occurrence laws still owed. Pluralism can explain interacting personal organizations while disputing their ultimate grounding; embedded strong emergence can share common ground

while disputing token-causal constitution. The comparison concerns explanatory architecture and irreducible powers. The finite results below cannot decide it merely by working successfully.

2.6 One physical bearer and the priority of the whole

Schaffer's *Spacetime the one substance* supplies a stronger comparison than a generic appeal to monism. Its central claim identifies material objects with spacetime regions bearing fundamental properties. His starting substantivalism is already a claim about fundamentality: the relevant spacetime entities are not grounded in anything deeper. The question is then whether material occupants constitute an additional fundamental kind (Schaffer, 2009, pp. 131–134). This starting point matters for Shadow Theory. If physical spacetime is a manifestation or operational readout of an unknown ground, then it is not fundamental in Schaffer's stipulated sense. The present account can accept an identification within the physical description while withholding the identification of ultimate ground with spacetime. That is a qualification of his proposal, rather than his conclusion under another name.

Schaffer explicitly distinguishes supersubstantivalism from priority monism (Schaffer, 2009, p. 133 n. 5). One concerns whether matter needs another fundamental bearer; the other concerns whether the whole cosmos is prior to its proper parts. His preferred package connects them through the additional premise that the entire manifold is prior to its subregions. He supports this premise through globally constituted topological and geometric features, and, under metric essentialism or moderate structural realism, individuation through position in the whole. His plane and cylinder can match locally while differing globally. The package also requires perdurance and unrestricted composition for regions. He expressly permits disagreement with these connecting premises, and observes that a constitution view need not transfer either persistence conditions or priority from constituting matter to constituted objects (Schaffer, 2009, pp. 135–137).

The argument therefore deserves engagement at its strongest point. Spacetime already supplies a bearer for properties. A second substratum appears redundant unless it earns its place. Moreover, shape and parthood of a body systematically match those of its region. Material objects materialize somewhere, exclude competing exact occupants, and occupy one region over their complete careers. Identity explains this harmony without independently imposing each occupancy constraint. A rival that merely repeats the ordinary distinction between what and where leaves that explanatory challenge unanswered. Schaffer's replies to modal difference and empty regions are also substantive: counterpart comparisons can vary with conceptualization, and a region with zero stress-energy need not lack a physical bearer (Schaffer, 2009, pp. 137–146).

His two physical arguments reinforce this proposal. General relativistic models describe metric and stress-energy fields on a manifold, rather than listing independent bodies in fundamental occupancy relations. Quantum field theory likewise motivates treating particles through field excitation rather than as additional localizable occupants. These considerations support a parsimonious interpretation of physical structure. They do not, by the syntax of the equations alone, determine metaphysical grounding. Nor does the failure of local intrinsic descriptions to fix global topology establish whole-to-part dependence: a relational pluralist can put *relata* and their relations together in the fundamental base. The disagreement concerns which base best explains the organization, rather than whether the organization exists.

For agency, the positive lesson is that realized activity need not belong to an alien substratum acting instead of the person. An organized material process can be the person's understanding and action. But neither this identification nor whole-priority establishes

deterministic evolution, excludes a dependent irreducible initiating power, or selects a phenomenal subject. Physical bearers, temporal ontology, causal sufficiency and psychophysical constitution remain different claims.

The distinction also sharpens the source–readout comparison. A Lorentz transformation is an invertible redescription of nominated spacetime events. A many-to-one operational readout can instead omit distinctions relevant to an independently specified target. Both involve perspectives, but only the latter entails a loss of accessible discrimination under its stated map. Identifying a body’s organized activity with physical organization does not make that map injective, or establish that its nominated source exhausts the unknown ground. Nor does a four-dimensional physical bearer determine the boundary of an experiencing episode. A physical “observer” in Putnam’s argument need not be conscious; treating physical systems as eligible does not turn their coordinate frames into phenomenal subjects. The constitution of a complete occurrence still requires its own organizational and psychophysical justification.

3 Physical histories and the temporal organization of a participant

The complete-history picture has a serious physical basis, but several claims that are often bundled together must be separated. A four-dimensional representation assigns physical quantities to events. Determinism concerns uniqueness across admissible histories under specified data. Reversibility concerns recovering a state from its evolution. Time-reversal invariance concerns a symmetry of the laws under an appropriate reversal operation. Eternalism concerns the reality of events at different times. None is a definition of the others. Their separation improves the argument: a limitation on authorship should depend on the premise that actually carries it, while the positive account should survive wherever its physical organization is possible.

3.1 Newtonian histories already have a four-dimensional representation

A Newtonian system with configuration q , momentum p and Hamiltonian $H(q, p, t)$ obeys

$$\dot{q} = \partial_p H, \quad \dot{p} = -\partial_q H.$$

When the resulting vector field is continuous in time and locally Lipschitz in state, locally uniformly in time, initial data have locally unique solutions. Additional bounds or completeness assumptions are needed for a solution over the whole interval under discussion. Where evolution exists uniquely in both directions, the evolution maps $\phi_{t,s}$ satisfy

$$\phi_{t,s}^{-1} = \phi_{s,t}, \quad \phi_{t,u}\phi_{u,s} = \phi_{t,s}.$$

This is an invertibility statement. Time-reversal symmetry additionally requires an appropriate operation, commonly momentum reversal, to relate solutions of the same laws. A time-dependent protocol can have invertible evolution without being invariant under reversing its unchanged schedule.

Uniqueness is not guaranteed merely by writing Newton’s second law. For the elementary mathematical equation $\ddot{x} = \sqrt{x}$, $x \geq 0$, data $x(0) = \dot{x}(0) = 0$ admit the zero solution and, for each $T \geq 0$,

$$x_T(t) = \begin{cases} 0, & t \leq T, \\ (t - T)^4/144, & t > T. \end{cases}$$

The function and its first two derivatives join at T , and for $t > T$ both $\ddot{x}_T$ and $\sqrt{x_T}$ equal $(t - T)^2/12$. The force fails the usual local Lipschitz condition at zero. This is a countermodel

to an unrestricted mathematical inference, not a claim that a human choice is such a solution or that the force is a complete realizable apparatus.

A solution can be represented as a worldline or field history in $\mathbb{R} \times \mathbb{R}^3$ even when Newtonian time supplies a preferred simultaneity. Thus four-dimensional representation predates relativity's challenge to a privileged present. Thyssen explicitly distinguishes representation from a proof of eternalism (Thyssen, 2020, pp. 9–10). The stronger relativistic contribution concerns which temporal structures are physically available, rather than the mere possibility of drawing an entire trajectory.

3.2 Relativity makes local order objective without making simultaneity universal

In an inertial chart on Minkowski spacetime,

$$ds^2 = -c^2 dt^2 + dx^2 + dy^2 + dz^2.$$

A boost along x gives

$$t' = \gamma(t - vx/c^2), \quad x' = \gamma(x - vt), \quad \gamma = (1 - v^2/c^2)^{-1/2}.$$

For spatially separated events simultaneous in one chart, $\Delta t = 0$ need not imply $\Delta t' = 0$. In contrast, proper orthochronous Lorentz transformations preserve the future order of timelike and null related events. There is no contradiction between frame-dependent ordering of spacelike separated operations and an invariant fact that a message must reach the assessor before it can influence assessment.

For a timelike worldline z , a clock measures proper time

$$\tau[z] = \frac{1}{c} \int_z \sqrt{-g_{\mu\nu} dz^\mu dz^\nu}.$$

Different paths between meetings can accumulate different durations. For example, in units $c = 1$, a clock resting for coordinate duration 10 records 10, whereas a two-leg path at speed magnitude $3/5$ records $10\sqrt{1 - 9/25} = 8$. The instantaneous reversal idealizes a short acceleration interval; it is not a discontinuity of the clock's proper-time order. The relevant point is the physical availability of local duration without a unique universe-wide present.

An embodied organization occupies an extended worldtube, not a coordinate point. Its sensory inputs, recurrent processing, motor outputs and archives have spatial and temporal extent. Its experienced present therefore need not correspond to a global hypersurface of simultaneity. A finite integration process can unite recent records and anticipation at a local stage, with earlier contributions arriving along causal paths. Relativity constrains those paths. It does not by itself say which integration constitutes experience, or why an episode has the phenomenal temporal character it does.

The same point applies to deliberation. A decision region can contain a sequence of comparisons, bodily changes and commitment events. A later action is not independent of that sequence merely because the whole sequence admits a spacetime description. Temporal ordering and change are relations within the history. To infer their unreality from the absence of a moving global now would confuse the absence of one proposed temporal structure with the absence of all temporal organization.

3.3 General relativity supplies conditional initial-value uniqueness

In general relativity the metric is dynamical:

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G_N}{c^4} T_{\mu\nu}.$$

One cannot generally prescribe arbitrary metric and matter values independently. Gauge freedom also prevents treating different coordinate expressions as different physical futures. For smooth vacuum initial data with $\Lambda = 0$ on a connected three-manifold Σ , the spatial metric h and extrinsic curvature K satisfy

$$R(h) - |K|_h^2 + (\text{tr}_h K)^2 = 0, \quad \nabla^i K_{ij} - \nabla_j \text{tr}_h K = 0.$$

The classical maximal-development result states that such data possess a maximal globally hyperbolic development, unique up to an isometry preserving the initial embedding. Sbierski supplies a direct reconstruction of the Choquet-Bruhat–Geroch result; the precise statements used here are his Theorems 2.6–2.8 (Sbierski, 2016, PDF pp. 11–12, 22–24). This is uniqueness within the globally hyperbolic class. It does not assert geodesic completeness, exclude extensions beyond a Cauchy horizon, or establish a corresponding result for arbitrary matter theories. Matter extensions require appropriate local existence and uniqueness.

A Cauchy hypersurface intersects every inextendible timelike curve once. Its complete admissible data can therefore support a global prediction question in an appropriate model. A small part of that surface, such as a brain-sized region, is not complete Cauchy data. Its future domain of dependence consists of events through which every past-inextendible causal curve meets that part; the past domain is defined with future-inextendible curves. Confusing these local domains with the development of complete data changes the theorem being invoked.

Nor is global hyperbolicity by itself a dynamical uniqueness theorem. It supplies causal structure on which suitable equations can have a well-posed initial-value problem. Non-globally-hyperbolic models, singular boundaries and Cauchy horizons require further conditions; global extrapolation is not automatic. In the deterministic regime that is actually justified, the natural histories are equivalence classes under the relevant gauge identifications. There is no reason to count a diffeomorphism of one development as a new agential alternative.

The constraint equations also discourage an image of many agents independently writing arbitrary boundary values. Legal changes must remain jointly consistent. Section 6 makes that problem explicit. It does not follow that legal changes are impossible or that only an observer outside the universe can specify an intervention. An embedded intervention is another physical operation, whose admissible comparison must respect the equations, boundaries and resources.

3.4 Quantum theory limits the inference to a unique future

For an isolated quantum system with a specified time-independent self-adjoint Hamiltonian, the unitary evolution $U(t) = \exp(-iHt/\hbar)$ determines its quantum state from the earlier quantum state. Whether that state is a complete physical state, and whether a particular outcome is uniquely fixed, are additional questions. A deterministic quantum-state equation cannot simply be substituted for an argument that every individual outcome is uniquely determined. Conversely, stochastic outcome laws do not supply independent personal authorship merely by leaving more than one outcome possible.

Relativistic covariance does not settle this interpretation dispute in favor of determinism. Tumulka’s relativistic collapse model gives a Lorentz-invariant stochastic law for spacetime flashes without a preferred foliation. The 2006 construction concerns distinguishable noninteracting particles; its ontology and modified dynamics are substantive hypotheses (Tumulka, 2006, Sec. 1, preprint pp. 1–3). A later interacting construction assumes suitable interaction-local unitary evolution and still does not constitute a general theory of all actual matter (Tumulka, 2020, Sec. 1). These models matter here as counterexamples to a claimed logical incompatibility between relativistic structure and objective stochasticity, not as established descriptions of this person’s brain.

The limited scope of these surveyed models gives no basis for identifying the unknown Ground with a classical manifold. The spacetime models used here are nominated physical descriptions in specified regimes. The source-readout programme can ask how those descriptions arise or fail to close without claiming that a presently available mathematical source describes the Ground exhaustively.

3.5 The strongest physical support for a complete-history interpretation

A Minkowski model represents distant and temporally separated events through one spacetime structure, invariant causal relations, local clock durations and no preferred inertial simultaneity. Suitable classical equations relate admissible data to entire developments. These features make a tenseless complete-history interpretation powerful and economical. They explain why treating an individual's decision as an extra addition from beyond physical reality is unnecessary within a successful realized account.

The inference to eternalism nevertheless requires an ontological bridge. A manifold used to represent events is not, just by being written down, a proof that all represented times are equally real. Putnam, Rietdijk and Thyssen examine arguments for that bridge, with importantly different conclusions. We next reconstruct their strongest steps, then ask which limitation on authorship they actually support. The positive account will require only that the participant and its records can be represented as related physical occurrences, together with whichever further constitution and experiential premises are explicitly invoked.

4 Relativity, common actuality and causal participation

4.1 The force of the relativistic argument

Putnam's argument begins from ordinary presentism: all and only what exists now is real. His principle that there are no privileged observers requires more than Lorentz covariance. If one real observer's physically defined relation identifies exactly the real things, the same relation applied to another real observer must identify that same reality. He also requires tenseless physical definability, coordinate independence and freedom from accidental selection (Putnam, 1967, pp. 240–241). Two observers crossing at one event are both real, yet their Einstein-simultaneity hyperplanes differ. Giving each extended present ontological import makes the “only” clause inconsistent. Retaining the “all” clause transmits reality beyond one observer's present (Putnam, 1967, pp. 242–243).

This is not an argument from differing visual appearances. The observers can agree on every observation and disagree only about coordinate simultaneity. Its strongest form combines a common actuality with three further commitments: every eligible inertial frame's distant present belongs to reality; reality propagates through those real observer-events; and enough observer/frame assignments are eligible. Putnam acknowledges that his initial example establishes only some future things under its stated setup. His all-events conclusion explicitly uses transitive closure and enough observers, including physical systems and coordinate systems in which they are not at rest (Putnam, 1967, pp. 246–247). The following reconstruction makes the geometric step precise.

Proposition 4.1 (Two spacelike links). *In Minkowski spacetime $M = \mathbb{R} \times \mathbb{R}^d$, $d \geq 1$, let $S(p, q)$ mean that $p = q$ or the separation is spacelike. Then $S \circ S = M \times M$. Consequently, every transitive relation containing S is universal.*

Proof. Write $p = (t, x)$ and $q = (s, y)$, with $c = 1$. Choose a spatial unit vector e and

$$r = \left(\frac{t+s}{2}, \frac{x+y}{2} + Le \right), \quad L > \frac{|t-s| + \|x-y\|}{2}.$$

Both spatial distances from r to the endpoints exceed $|t - s|/2$, their time distances, by the reverse triangle inequality. Thus pSr and rSq . Every spacelike displacement $(\Delta t, \Delta x)$ is simultaneous in some inertial frame: take $v = (\Delta t / \|\Delta x\|^2) \Delta x$, so $\|v\| < 1$ and $\Delta t' = \gamma(\Delta t - v \cdot \Delta x) = 0$. Conversely, a nonzero equal-time displacement is spacelike by interval invariance. $\square$

A nonempty ontological set closed under all such simultaneity links must therefore contain every event. This is a substantial constraint on a global present, not a verbal trick. The physical result, however, is the geometry. Its ontological use additionally requires closure under every frame's distant present. A defender of objective existence can argue for that closure; an opponent must explain its rejection rather than deny the transformation. The proof does not automatically extend to restricted spacetime domains or general curved geometries.

A precise rival relation helps locate the issue. Define $B(p, q)$ by $q \in J^-(p)$. It is reflexive and transitive: sums of future causal vectors remain future causal by the spatial triangle inequality. Proper orthochronous Poincaré transformations preserve it, yet it is not universal. It can represent what has become settled as of an event without privileging a human observer. Stein's event-indexed account develops this distinction and separates the physical rationale for Einstein simultaneity from the ontological role of a distant present (Stein, 1991, pp. 148–154). Interpreting B as becoming is a philosophical commitment; the mathematics alone proves neither an open future nor the falsity of eternalism. An eternalist can also use it for causal accessibility. What it establishes here is that invariant transitivity alone does not force universal actuality.

The eternalist retains an important reply. A causal-past relation may describe which facts can affect an event while leaving every spacetime event equally real. Its mathematical availability therefore does not explain why reality itself should be restricted. Furthermore, the ordinary intuition that a distant presently existing person is real motivates Putnam's inclusion premise; rejecting its global extension changes that intuition's theoretical interpretation. The rival's response is that the intuition concerns a locally coordinated encounter, whose ordinary temporal grain need not supply a fundamental spacetime-wide present. These are competing interpretations with different commitments. A preferred-foliation account instead preserves a global present by adding structure beyond bare Minkowski geometry. Neither rival can obtain its ontology merely from the existence of the displayed relation, and an eternalist cannot obtain causal impotence merely from its rejection.

Putnam separately argues that future contingents must have truth values. He does not assume tenseless truth at the outset, explicitly recognizing that this would beg the question against Aristotle. His remote space-fight is past by one observer's coordinates and future by another's; he then opposes observer-relative truth and a privileged-me causal-past cutoff, including the case of Oscar's remote life becoming past without an earlier present-tense truth (Putnam, 1967, pp. 243–246 and n. 1). An event-indexed settledness account must address those arguments. Nevertheless, coordinate pastness is not invariant causal pastness, and objective two-place settledness need not be a person's subjective opinion. Neither argument establishes uniqueness of evolution from earlier physical data.

4.2 Rietdijk's stronger claim and its missing transfer

Rietdijk explicitly reaches beyond eternalism. He defines predetermination through an observer's later demonstration that an agent could not have arbitrarily influenced or prevented an event while it remained future for that agent. He includes psychical events, denies free will, and rejects microscopic indeterminism as a rescue (Rietdijk, 1966, pp. 342–343). His geometrical construction should be granted before assessing that claim.

Let the current event of a stationary agent be $A = (0, 0)$, and a remote observer's event, simultaneous according to the agent, be $B = (0, -L)$. The remote observer moves toward the agent with $0 < v < 1$. With coordinates based at B ,

$$t' = \gamma[t - v(x + L)], \quad \gamma = (1 - v^2)^{-1/2}.$$

For $P = (T, 0)$, $T > 0$, choose $L > T/v$. Then $t'(P) < 0$, although P lies in the agent's timelike future. Rietdijk also recognizes finite event duration: a bounded extended event can be placed wholly earlier in the remote coordinate time by increasing the distance (Rietdijk, 1966, pp. 341–342).

But $L > T$, so P is spacelike separated from B . More decisively,

$$t'(P) - t'(A) = \gamma T > 0.$$

A causal signal from A to P is earlier than its effect in the remote coordinates too. A later photograph establishing where P occurred does not show that the earlier input at A could not affect it. Briefly stopping the remote observer at B , as Rietdijk proposes, changes the observer's rest-frame simultaneity assignment; it does not remove that causal route.

This criticism survives Rietdijk's strongest response to Grünbaum. He explicitly defends the physical significance of metrical simultaneity through isotropic light speed (Rietdijk, 1966, pp. 343–344 and n. 1). We may grant that defense. The unsupported step transfers fixity from remote coordinate pastness to immunity from the agent's causally earlier intervention. Neither the existence of an actual history nor Einstein synchronization supplies that transfer.

4.3 Complete actuality, dynamical uniqueness and control

Let $\mathcal{H}$ be the admissible complete histories of a theory. An actual $h \in \mathcal{H}$ specifies what happens throughout spacetime. Determinism instead requires suitably complete data on a Cauchy hypersurface to admit at most one continuation in its future domain of dependence. An assertion about the ontology of h does not establish a uniqueness condition on $\mathcal{H}$. Definite actuality and necessity from an earlier state are different relations.

For an explicit countermodel, consider a homogeneous Poisson process on Minkowski spacetime with intensity λdV , $\lambda > 0$. Its law is Poincaré invariant because spacetime volume is preserved. Counts on disjoint finite-volume regions are independent. For any bounded positive-volume region $K \subset I^+(\Sigma)$ to the future of a chosen Cauchy surface Σ ,

$$\Pr[N(K) = 0 \mid \mathcal{F}_{\Sigma-}] = e^{-\lambda V(K)} \in (0, 1),$$

almost surely. The sample space consists of locally finite point configurations. Here $\mathcal{F}_{\Sigma-}$ is exactly the sigma-field generated by counts $N(B)$ in bounded Borel sets $B \subset J^-(\Sigma)$. Every finite collection of those past counts is independent of $N(K)$, and a monotone-class argument extends that independence to their generated sigma-field. This specifies a conditional law, rather than conditioning naively on a particular zero-probability infinite past. If the future event $\{N(K) = 0\}$ were determined by that past sigma-field, its conditional probability would instead be its zero-or-one indicator. The nondegenerate displayed value therefore rules out such determination. Each realized sample nevertheless specifies one complete spacetime history. Choosing a surface to test uniqueness does not give the law a preferred foliation. This is a mathematical countermodel to an implication, not a realistic matter theory or a source of libertarian authorship.

Control requires another distinction. A local signal can carry an input bit A from an event a to an event p in its timelike future and set $Y = A$. Every complete realized history contains both input and output. Across the admitted operations $\text{do}(A = 0)$ and $\text{do}(A = 1)$,

the output changes. Stating the interactions through a worldline and proper-time order makes this relation covariant. Describing p as real, or assigning it a negative remote coordinate time, does not eliminate the dependence. The stochastic variant $Y = A \oplus N$, with independent error probability $\epsilon < 1/2$, likewise changes $\Pr(Y = 1)$ from ϵ to $1 - \epsilon$.

These are tests of a causal route, not demonstrations of ultimate self-authorization. They compare admissible operations or histories, rather than changing one part while fixing its complete actual world. A complete history can include the outcome occurring through deliberation, learning and commitment. Fatalism would require it to occur regardless of the relevant activity. Relativistic temporal ontology therefore leaves the manuscript's positive task intact: identify how understanding changes the organization through which the person participates, then assess that account's causal, semantic and experiential commitments separately.

The admitted counterfactual family must itself be justified. An output label that can be changed only by an impossible preparation would supply no practical control. In the present manuscript the acquisition, assessment and installation routes make the comparison more concrete: an intervention must pass through an available operation with its actual timing, records and resources. Temporal ontology does not certify those contracts, but it also does not cancel them. Their success concerns consequential participation; whether the participating individual is ultimately self-authorizing or deserves a particular form of responsibility remains a further question.

5 Inside-out determination and the authorship of an occurrence

The block-compatible defense of freedom deserves more than the reply that all choices already occur in a block. Its central challenge is that mathematical determination need not run from an independently privileged remote past toward a passive present. Hoefer asks why bidirectional state determination should assign all explanatory authority to an initial boundary. Brennan replies that changing the location of determining data does not by itself establish agential control. Both points survive close examination. Their combination motivates a stronger account of constituted agency: explain the work of the organization that decides, while refusing to obtain its independent sourcehood from the coordinate location of data.

5.1 What Hoefer proposes and what Brennan challenges

Hoefer distinguishes logical determination from causation and explanation. Under suitable laws a complete intermediate state can determine earlier and later states. Selecting the Big Bang rather than an intermediate slice as data is mathematically convenient, but is not itself a proof that the earlier slice exercises power over the later one (Hoefer, 2001, author preprint pp. 4–6). He also discusses one-way deterministic, many-to-one laws, so the proposal should not be reduced to a claim that every physical law must be invertible (Hoefer, 2001, preprint pp. 6–7).

The claim about human freedom needs more. Hoefer proposes that scattered macroscopic choices constrain the block while remaining compatible with a macroscopically fixed past. Changes in compatible microscopic detail need not be changes in that macroscopic past. His harmony argument is a plausibility argument about compossibility, not a general existence theorem for arbitrary collections of choices (Hoefer, 2001, preprint pp. 10–12 and n. 14). He also expressly leaves a positive account of freedom undeveloped (Hoefer, 2001, preprint p. 15 n. 18). The 2001 author preprint is the fully inspected original used for these locators; the

final publication is [Hofer \(2002\)](#). The editions must not be assigned interchangeable page numbers.

Brennan reconstructs the proposal sympathetically before isolating three difficulties. First, the symmetry of determination concerns complete data, not an arbitrary fragment containing a person's choice ([Brennan, 2007](#), p. 211). Second, logical entailment in both temporal directions is not the relation between acting on a goal and bringing it about. Setting an alarm now to ring at six tomorrow differs from trying now to make it have rung in the past ([Brennan, 2007](#), pp. 212–214). Third, even if freely selected acts could serve as boundary constraints, the existence of those acts and the power of selecting them still need an explanation. Calling a value free data does not supply that explanation ([Brennan, 2007](#), pp. 215–217).

These criticisms have different targets. The first corrects a mathematical inference. The second requires an account of directional efficacy. The third requires an agent-level explanation and challenges the proposed explanatory priority of arbitrarily selected choice data. They do not establish that a block contains no ordinary decision authors, or that control requires indeterministic laws. Brennan's own tentative reconstruction constrains compatible earlier and later states rather than literally changing an actual past ([Brennan, 2007](#), p. 214). We can retain that consistency insight while providing the missing operational distinctions.

5.2 Full-state uniqueness is not fragmentary power

Let $\mathcal{H}_L$ be a nominated space of complete physical histories satisfying laws L , with gauge-equivalent descriptions identified. Let

$$e_\Sigma : \mathcal{H}_L \longrightarrow \mathcal{D}_\Sigma$$

give complete admissible data at a chosen Cauchy surface, in a regime where such a surface and comparison map are available. The data and history equivalences, including the initial embedding or other required markings, must make this map well defined. Here complete data means fully specified data, not a geodesically complete initial metric.

Whole-history uniqueness means that e_Σ is injective: agreeing on those data fixes the entire nominated history, including its past. This is stronger than *forward uniqueness*. Let r_Σ^+ restrict a history to its future development under the same initial-data-preserving gauge identifications. Forward uniqueness requires only

$$e_\Sigma(h) = e_\Sigma(h') \implies r_\Sigma^+(h) = r_\Sigma^+(h'), \quad \ker e_\Sigma \subseteq \ker r_\Sigma^+,$$

where $\ker f$ denotes the relation of having equal images under f . For example, over the declared finite interval $\{-1, 0, 1\}$, the deterministic update $F(0) = F(1) = 0$ admits histories $(0, 0, 0)$ and $(1, 0, 0)$. Their present data and futures agree although their pasts differ. The example concerns that declared interval, without asserting that both histories extend to a bi-infinite trajectory.

Surjectivity of e_Σ additionally requires existence, for every declared datum, of a history in the same specified domain or development class. In the general-relativistic application, the maximal-development theorem supports comparison of maximal globally hyperbolic developments up to initial-embedding-preserving isometry. Arbitrary truncated developments with the same data need not be identical. These are properties of a comparison family, not powers possessed by a datum or an experimenter.

Proposition 5.1 (History parametrization and fragment determination). *If e_Σ and $e_{\Sigma'}$ are bijective on the same history family, their data descriptions are related by the bijection $e_{\Sigma'} e_\Sigma^{-1}$. For any fragment $a : \mathcal{H}_L \rightarrow \mathcal{A}$ and target $Y : \mathcal{H}_L \rightarrow \mathcal{Y}$, a rule $\bar{Y} : a(\mathcal{H}_L) \rightarrow \mathcal{Y}$ satisfying $Y = \bar{Y} \circ a$ exists exactly when Y is constant on each a -fibre.*

Proof. The first map is a composition of bijections, with inverse $e_{\Sigma}e_{\Sigma'}^{-1}$. For the second claim, factorization makes equal fragment values imply equal targets. Conversely, define $\bar{Y}(a(h)) = Y(h)$; constancy on the fibre makes this well defined on the image of a . $\square$

The second clause is an application of the canonical descent result, not a new theorem replacing it. The first clause states a redescription equivalence. Neither clause establishes causal or explanatory priority for either slice. Brennan’s schematic biconditionals between actual complete-state propositions should therefore be read through a cross-history uniqueness condition of this kind. A material biconditional between two true actual propositions would be too weak to express deterministic evolution.

For a finite counterexample let $\mathcal{H}_L = \{(i, j) : i, j \in \{0, 1\}\}$, let complete data be (i, j) , and let the purported determining choice be $a(i, j) = i$. The target $Y(i, j) = j$ is not determined by the choice, although complete data determine everything in this family. The target $Y'(i, j) = i$ does descend. This directly answers the whole-to-fragment inference while showing why its failure does not eliminate all target determination. Causal control requires the additional operative relations specified in the next example.

The fragment’s causal reach must also be distinguished from its domain of dependence. In $1 + 1$ dimensions with signal speed c , an initial interval $|x| < r$ determines a shrinking diamond $|x| + c|t| < r$ under an appropriate local hyperbolic law. Signals emitted within that interval can nevertheless affect events outside the diamond, whose other incoming data are not supplied by the interval. A small brain region’s inability to determine a complete distant state therefore does not establish inability to contribute to a distant goal. Brennan’s use of domain-of-dependence limits is strongest against total state determination, and needs environmental and channel premises to become a bound on ordinary goal-directed influence.

5.3 A reversible history with directional command efficacy

An exact four-register example separates symmetric full-state determination from an available forward command. Prepare

$$(R, A, C, F) = (r, 0, a, 0), \quad r, a \in \{0, 1\}.$$

Execute a controlled NOT $R \rightarrow A$, swap A with C , and execute a controlled NOT $A \rightarrow F$. The resulting history is

$$(r, 0, a, 0) \longrightarrow (r, r, a, 0) \longrightarrow (r, a, r, 0) \longrightarrow (r, a, r, a).$$

The raw map on all sixteen states is

$$(R, A, C, F) \longmapsto (R, C, A \oplus R, F \oplus C),$$

which is bijective. Every complete intermediate slice therefore determines the others. Across the admitted preparations with r fixed, changing the command a changes the later record F while leaving the earlier record R unchanged. Ready scratch registers, the command carrier and the schedule are explicit enabling conditions. If F is initially one, the final record is instead $1 - a$.

This is conditional command efficacy. It compares preparations with different initial C , so it is no counterexample to uniqueness from a fixed complete past. It nevertheless refutes an inference from two-way full-state entailment to the absence of an asymmetric command contract. A participant has access to some carriers at some stages, not arbitrary power to overwrite a complete Cauchy slice. Archives and actuators earn their roles through actual routes. Section 15 supplies a far more detailed version of those obligations for acquired recognition, including local routing and fresh ingress.

The example also makes Brennan’s demand constructive. A positive account must specify who or what carries a command, what preparation permits, which changes count as admitted operations, and which target changes through the route. It need not infer an independent author from a bare logical parameter. The apparatus does not decide whether a human’s deliberation has the relevant semantic and historical properties, but it identifies the additional account that mere block geometry lacks.

5.4 From an actual complete history to a limitation on authorship

Three comparisons now separate. Fixing the complete actual history fixes its act trivially. Fixing laws and complete earlier data fixes the act only under a uniqueness premise. Fixing accessible records, a macrostate or an environment may leave several acts compatible even under deterministic microphysics. Using one comparison in the premises and another in the conclusion creates a false proof.

Proposition 5.2 (Conditional prior-data exclusion). *Let $A : \mathcal{H}_L \rightarrow \mathcal{A}$ be a nominated decision or action target that factors through the physical future development: $A = \alpha \circ r_\Sigma^+$ for some α . If forward uniqueness holds, two histories with the same complete prior data cannot have different values of A . Whole-history injectivity of e_Σ is a stronger sufficient condition. More generally, for any nominated target the same conclusion holds whenever A is constant on every e_Σ -fibre, even if other future features are not uniquely determined.*

Proof. Equal prior data give equal future restrictions by forward uniqueness, hence equal values after applying α . Whole-history injectivity identifies the histories themselves. The final claim follows directly from target constancy on the prior-data fibre. $\square$

Forward uniqueness therefore need not reconstruct the past, and target constancy can be weaker still. Failure of whole-history uniqueness might concern only differing pasts; it does not by itself establish an open future choice. Conversely, if other future features vary while the act remains fixed, the nominated decision has no same-data alternative even though the entire future is not unique.

The conclusion excludes settlement between different acts while the declared complete prior data and laws remain fixed. It does not exclude the person’s settling a practical question through the uniquely realized deliberation, nor alternatives that hold the environment fixed while varying the person’s own organization. Ismael explicitly uses that latter comparison and accepts complete-state fixation in her deterministic treatment (Ismael, 2016, pp. 107–108; p. 230 n. 9). A compatibilist who calls that organized deliberation authorship has not contradicted the proposition. A libertarian who requires alternatives under the same complete prior physical conditions has instead challenged either uniqueness, the completeness of the nominated physical data, or the necessity of that comparison. The factorization premise must also be warranted for the intended target. A registered action value need not exhaust every alleged mental or sourcehood fact. An account locating freedom in an actual initiating relation rather than in a second value of this target raises the separate token-causal constitution dispute.

The strongest embedded agent-causal rival grants that its act occupies a complete block and that its power has an unchosen constitution. It claims that the person nevertheless determines which lawful continuation becomes actual. A space of complete histories can represent such an interpretation: include two histories with the same prior data and different acts, and attribute their difference to personal settlement. Geometry alone does not exclude it. Stochastic laws alone also do not establish it. If the additional personal relation changes no operational law, the represented causal structure underdetermines that metaphysical interpretation. If it changes an observable law, its consequences must be specified and tested.

There is therefore a stronger conditional result, with visible dependencies. Shared constitution removes an absolutely independently constituted personal source. Inheritance plus well-founded authorization obstruct ultimate authorship of the entire enabling basis. Appropriate complete-data uniqueness excludes a particular same-prior-data alternative. Token-causal constitution excludes a further irreducible initiating relation in a nominated regime. These are cumulative, distinguishable claims; the block contributes the coherent complete occurrence within which they can be assessed, rather than a replacement proof of all four.

Brennan’s final demand for an explanation of brute free data remains pertinent (Brennan, 2007, pp. 215–217). Yet his suggestion that inside-out reasoning becomes irrelevant unless it is necessary for the supplemental freedom theory is too restrictive. Removing a false picture of the past as a second agent can clarify a constituted account even when it does not prove that account. The constructive answer is to explain deliberation, model acquisition and warranted commitment as activities within the history. That reply accepts the need for a positive mechanism while refusing an unsupported claim that choosing a determining slice creates ultimate explanatory authority.

5.5 Thyssen’s libertarian reconstruction and the remaining selection problem

Thyssen’s Chapter 4, coauthored with Sylvia Wenmackers, explicitly limits its central analysis to alternative possibilities, a necessary rather than sufficient condition on its intended freedom; intentional control is largely set aside (Thyssen, 2020, p. 129 n. 5). Its classification usefully separates deterministic and probabilistic constraints on dynamics from constraints on boundary data. It therefore resists the false dichotomy that a decision must be either a deterministic consequence or an independently sampled random event.

The proposed repair to Hoefer takes two forms that should be distinguished. The pruning ladder treats a macrostate as actually multiply realized by a bundle of histories, with choices narrowing the bundle and its compatible past. The final presentation, under its simplifying unique-history assumption, withdraws that actual bundle, restores one deterministic microhistory, and locates alternatives in hypothetical macrohistories (Thyssen, 2020, pp. 156–159). Thyssen also allows that a residual thin bundle might remain (Thyssen, 2020, p. 158 nn. 39, 42); that qualification does not supply a selection mechanism. Earlier, mere epistemic or counterfactual alternatives were judged insufficient for the intended libertarian reading (Thyssen, 2020, pp. 154–155). The final appeal to hypothetical alternatives therefore leaves an obligation: identify what makes their availability more than coarse-grained compatibility.

The thesis’s general conclusion candidly lists stronger assumptions, including inside-out priority, boundary-condition indeterminacy, downward causation and actual multiple realization (Thyssen, 2020, p. 164). These are not identical to the restored deterministic microhistory formulation. On the stronger reading, the selection power is an additional metaphysical and causal premise; on the weaker reading, a branching coarse description has not yet established libertarian settlement. The issue is not settled by dismissing macrolevel explanation. Macrolevel reasons and commitments can be real and effective. The issue is which modal and operative relations the alternatives actually possess. The next section strengthens the proposal’s consistency side while keeping that selection obligation explicit.

6 Compatible histories and distributed choices

A complete deterministic history and a family of histories compatible with a partial description answer different questions. Thyssen’s final construction retains one actual deterministic

microhistory while locating agential alternatives in a hypothetical bundle. His earlier pruning construction instead treats multiple microhistories as jointly present before selection; the general conclusion returns to assumptions from that construction (Thyssen, 2020, pp. 156–161, 164). The following elementary representation clarifies what either use of a bundle establishes before attributing a power of selection. These are standard compatibility, counting and compactness facts; their application here is not a new theorem about free will.

Let H_L be a nonempty set of complete histories satisfying nominated laws L . Let $B \subseteq H_L$ impose any further shared boundary, resource and record constraints that the comparison holds fixed. Assume $B \neq \emptyset$. For each nominated decision region i in an index set I , let $A_i : B \rightarrow \mathcal{A}_i$ read its action from a complete history. The action sets $\mathcal{A}_i$ are declared comparison sets, rather than inferred from which outcomes happen to be available. Define the joint profile map

$$A : B \longrightarrow \prod_{i \in I} \mathcal{A}_i, \quad A(h) = (A_i(h))_{i \in I},$$

and, for a proposed profile $a = (a_i)_{i \in I}$, the feasible history set

$$B(a) = \{h \in B : A_i(h) = a_i \text{ for every } i \in I\} = \bigcap_{i \in I} A_i^{-1}(\{a_i\}).$$

The profile is legally realizable exactly when $B(a) \neq \emptyset$. This is an all-at-once consistency test. It does not privilege an initial, final or intermediate determining slice, and it does not install a selector outside the history.

Proposition 6.1 (Independent profile compatibility). *Every profile in $\prod_{i \in I} \mathcal{A}_i$ is legally realizable if and only if A is surjective. If B is finite and n nominated action sets are binary, realizability of every binary profile implies*

$$2^n \leq |B|.$$

More generally, for finitely many finite action sets, $\prod_i |\mathcal{A}_i| \leq |B|$ whenever every profile is realizable.

Proof. The image of A is exactly the set of realizable profiles, proving the first claim. Distinct profiles have disjoint fibres. If all fibres are nonempty, there are at least as many histories as profiles. The finite product has $\prod_i |\mathcal{A}_i|$ elements, which is 2^n in the binary case. $\square$

Here independence means the demanding compatibility property that every combination of the nominated choices has a legal completion. It is not probabilistic independence, causal independence, or a general requirement for agency. Shared resources, communication and ordinary commitments can properly restrict joint profiles. Also, B counts legal comparison histories, not the number of histories that are actual. Inserting only the actual history into B would change the comparison rather than establish the absence of agency. For an infinite physical history class the finite bound may have no force. It is a cardinality bound, not a thermodynamic entropy or physical memory law.

Example 6.2 (Local alternatives need not combine). Take two binary action regions and $B = \{(0,0), (1,1)\}$, with A_i the coordinate maps. Each region separately admits both alternatives, but neither $(0,1)$ nor $(1,0)$ is a legal profile. Even pairwise joint compatibility does not establish compatibility of all choices. For three regions take

$$B = \{(0,0,0), (0,1,1), (1,0,1), (1,1,0)\}.$$

Every assignment to any two coordinates has a legal completion, while the profiles of odd parity have none. Thus distinguish unary availability, pairwise compatibility and full profile compatibility.

This distinction matters to a distributed “starry sky” of choices. Giving each proposed act a possible-world witness does not ensure that all of the witnessed acts can occur together. Conversely, a failed combination need not show that any individual act lacks control: the combination may violate a shared physical or practical constraint.

6.1 What pruning does and what infinity does not supply

For decision regions $1, \dots, k$ and a partial action profile define

$$B_k = B \cap \bigcap_{i=1}^k A_i^{-1}(\{a_i\}).$$

Then $B_{k+1} \subseteq B_k$. In a Hamiltonian example with microstate x at a reference time and deterministic flow ϕ_t , a macroaction condition $\sigma(\phi_{t_i}(x)) = a_i$ is a constraint of exactly this kind. Thyssen’s typing example transports Γ_{M_t} and retains $\phi_1(\Gamma_{M_t}) \cap \Gamma_{M_s}$ when the selected outcome is s (Thyssen, 2020, pp. 156–157). Liouville’s theorem preserves the volume of the transported set before this restriction. It neither preserves the volume of the restricted set in general nor supplies a physical process that selects that restriction. On an epistemic interpretation the actual state is not physically removed: the represented alternatives are narrowed.

An infinite starting bundle does not alone guarantee indefinite choice or a complete legal limit. Let

$$H_{\text{fin}} = \{h \in \{0, 1\}^{\mathbb{N}} : h \text{ has finite support}\}, \quad A_i(h) = h_i.$$

Every finite collection of requirements $A_i(h) = 1$ is feasible: choose a sequence equal to one at those finitely many positions and zero elsewhere. In particular, each $B_k = \{h \in H_{\text{fin}} : h_1 = \dots = h_k = 1\}$ is infinite and nonempty. Nevertheless,

$$\bigcap_{k \geq 1} B_k = \emptyset,$$

because a sequence satisfying all these requirements would have infinite support. Thus continued feasibility of every finite prefix, even with infinitely many remaining histories at each stage, does not by itself produce one history realizing the whole sequence of constraints.

Proposition 6.3 (Compact compatibility). *Suppose B is a compact topological space and every constraint set $K_i = A_i^{-1}(\{a_i\})$ is closed in B . If every finite family of the K_i has nonempty intersection, then $\bigcap_{i \in I} K_i$ is nonempty.*

Proof. If the intersection were empty, the open complements $B \setminus K_i$ would cover B . Compactness would give a finite subcover, whose corresponding closed sets have empty intersection, contrary to the hypothesis. $\square$

Continuous action maps into finite discrete action sets give closed constraint sets. This is a sufficient repair, not a claim that all law-history spaces are compact. In the product topology on binary sequences, H_{fin} fails to be closed: the sequences consisting of k initial ones followed by zeros converge to the all-ones sequence, which it excludes. Closing an arbitrary history class can add illegal histories, so compactness must be justified for the nominated physical model. Nor does compactness by itself guarantee two available continuations at each later decision; it guarantees a completion of constraints already assumed finitely compatible. The finite realization bound and these infinite existence conditions therefore do not turn Thyssen’s one-hypersurface freedom heuristic into a count of independent free actions.

6.2 From a compatible profile to operative choice

Legal profile compatibility, caller ability and ultimate authorship are separate claims. A nonempty fibre establishes a legal history carrying the action profile. Caller ability additionally requires a nominated organization, its admitted acquisition and action routes, sufficient resources and an actual procedure for realizing the relevant contrast. Ultimate authorship asks whether the person authored the enabling and authorizing basis of those capacities. None follows merely from the cardinality of a history bundle. None is refuted merely because the act occupies one complete actual history.

The retained revision-preservation fixed point W_∞ answers a different question: under its finite operational contract, it identifies configurations from which an admitted procedure can continue to install endorsed amendments while preserving a certificate. Its witnesses are executable continuation trees, and its proof uses a finite greatest fixed point. The history-set intersection here has no such operational witnesses. The useful connection is the need to state a continuation/viability condition; the two constructions are not interchangeable, and neither is a new discovery of the other. A constraint account can therefore complement a realized account of inquiry and self-revision, while leaving Thyssen’s additional modal and causal interpretations open to assessment.

7 From a self-description to the organization it describes

7.1 Five uses of source

The unknown fundamental ground, a nominated mathematical source, an accessible readout, a self-description and an agent as a causal source of action are different objects. A source model X is a declared domain of states or preparations. An observation $m : X \rightarrow M$ specifies a readout. A self-description is a retained representation within an organization, possibly derived from that readout. An agent is a causal source when its realized activity makes the relevant contribution to action. Neither the word “source” nor an incomplete m proves that these objects coincide.

The canonical source–readout papers establish exact structural restrictions on nominated targets, not a theory that every finite model is the ground (Rodgers, 2026a,b,c). Consider a surjective readout $m : X \rightarrow M$ and an independently defined target $c : X \rightarrow A$. Here $c(x)$ might be a specified interventional signature of a recommendation-producing mechanism: its responses under nominated input, model-read and authority-write tests. An independently fixed signature avoids defining recognition as whatever a controller happens to report.

Proposition 7.1 (Inherited descent and target completion). *A function $\bar{c} : M \rightarrow A$ satisfying $c = \bar{c} \circ m$ exists exactly when c is constant on every m -fibre. Adjoining any auxiliary $w = \omega \circ m$ cannot repair a failure. The joint image*

$$E_c = \{(m(x), c(x)) : x \in X\}$$

is a coarsest target-sufficient extension: if $r : X \rightarrow E$ is a surjective extension with $m = \pi \circ r$ and $c = v \circ r$, there is a unique map $h : E \rightarrow E_c$ with $h(r(x)) = (m(x), c(x))$.

Proof. Descent implies fibre constancy immediately. Conversely define $\bar{c}(m(x)) = c(x)$; constancy makes it well defined. Since $(m, w) = (m, \omega(m))$, every function of that pair is still a function of m . Finally set $h(e) = (\pi(e), v(e))$. Surjectivity of r gives its image in E_c and uniqueness. It also shows that h is onto E_c . $\square$

This is the canonical completion result, restated for inspection; the self-mechanism target is its application (Rodgers, 2026b, Theorem 3.1, Proposition 3.4, Theorem 8.3). It says

what a sufficient extension must distinguish. It supplies neither a diagnostic procedure nor its physical availability. A description can be insufficient for this target while already sufficient for a task. Appendix A preserves the blind-control and powerless-informed-controller counterexamples.

There is a quantitative counterpart, using the total-variation distance defined in Section 2. Suppose two organizations have the same self-description but different laws P_0, P_1 for an admitted authority diagnostic. A description-only forecast must use the same law Q for both. The triangle inequality gives

$$\max\{\text{TV}(P_0, Q), \text{TV}(P_1, Q)\} \geq \frac{1}{2} \text{TV}(P_0, P_1).$$

The midpoint $(P_0 + P_1)/2$ attains the bound for the pair. This is the two-source radius result of *Sealed or Leaky*, now applied to self-mechanism forecasting (Rodgers, 2026p, §5, Theorem 5.2). It diagnoses an inadequate nominated account, not a loss of agency or the unique ontology behind an adequate one.

7.2 Information, access and authority

Three repair problems differ. Relevant distinctions may be absent from the current input. They may already be retained but inaccessible under the current operations or deadline. Or they may be accessible while the organization assigns them an inappropriate role in assessment. Passive postprocessing cannot solve the first problem. A new interpreter, dispatch rule or control route can solve the second or third without increasing Shannon information in a retained record. Thus not every recognition process needs new information, and not every useful instruction adds a previously absent fact.

Nor does the passive theorem show that words do nothing. An utterance can be a physical input that changes state, supplies a procedure or opens an existing route. That changes the unchanged-readout premise. In the construction below, paid diagnostics add a previously unavailable distinction, while a separate installation operation changes its practical use. Keeping those operations separate explains why a correct verbal self-description can coexist with an unchanged policy.

The canonical internal-observer ceiling likewise requires actual factorization of the admitted probes through the nominated readout (Rodgers, 2026e, Assumption 7.1 and Theorem 7.2; §8). Being physically internal does not prove that factorization. A new paid probe can refine the accessible distinction. Exact projected closure is also a separate question: a many-to-one description can evolve autonomously if its fibres are dynamically preserved (Rodgers, 2026d, Theorem 5.2). Incompleteness alone establishes neither nonclosure nor nonzero memory.

Sealed or Leaky distinguishes preserved information from accessible observables. Transport through a bimeasurable bijective evolution preserves full measurable distinguishability while a restricted readout can cease to expose it. A retained earlier record prevents that information from vanishing from the cumulative record, but a mathematical inverse is not automatically an implemented operation (Rodgers, 2026p, §7, Theorem 7.1). Its operational-surrogate result concerns equality of complete experiment laws, including adaptive records and interventions, rather than a unique physical ontology (Rodgers, 2026p, §5, Theorem 5.1). Its Bell results have additional preparation, outcome-determinism, measurement-independence and conditional no-signalling premises; they do not supply a universal no-agency theorem.

The extended treatment *Bounded Perspective, Real Control* distinguishes bounded observational competence from complete source reconstruction (Rodgers, n.d.a). The separation of retained history from present authority is explicit in *A Chooser with a History* (Rodgers, n.d.b). In the latter's reversible archive example, an old rule remains recoverable while future action uses its replacement. The new question is how the organization acquires a warranted

account of that rule and uses it in selective revision. Preservation, accessibility and authority are therefore not three names for one quantity. Information can survive without governing present action; a model can be accessible without being used; an accurate self-account can acquire a causal role through a retained assessment-and-write procedure. No external observer is required. The observer and updater are themselves parts of the organization being described.

8 Source, physical history and situated access

The proposed synthesis has two different explanatory transitions. One concerns how a nominated mathematical source gives a physical readout history. The other concerns how an organization within that history realizes a perspective. Treating both as an unexplained projection conceals the very work the consciousness programme must do.

8.1 Two relations, with different obligations

Let $\mathcal{S}$ be a nominated reduced source, after the model's declared gauge redundancies have been removed, and let

$$\Pi : \mathcal{S} \longrightarrow \mathcal{H}_L$$

give a physical history in an appropriate regime. The map may be an exact quotient, a modeled coarse presentation or a stipulated realization map. Its mathematical properties must be established in the model at hand. The unknown Ground has no symbol here and is not identified with $\mathcal{S}$, $\mathcal{H}_L$, a metric field or a probability law. A successful nominated source is not thereby a complete description of what ultimately constitutes it.

Within a physical history, choose an admitted organization, its worldtube W , its operation contract and a local stage label τ . The label can be proper time along an appropriate reference carrier or the ordered events of a finite protocol. For an extended organization it need not assign one proper time to all its parts. Its available physical record is a map

$$r_\tau : \mathcal{H}_L \longrightarrow \mathcal{Z}_\tau.$$

An interpretation or self-description is a further physically realized function of available and retained organization, schematically $m_\tau = \iota_\tau(r_\tau, \text{retained state})$. Its causal role depends on which later operations read it. A record expressing *my disposition is conditioned* can be accurate while neither supplying a new actuator nor changing the authority of that disposition.

These maps are not an observer looking down on spacetime. They describe the records and organization of a participant inside the physical model. The outside notation belongs to our description, as it does when describing a heart or a clock. In the recognition construction, the retained estimate, archive, assessment and commit route are all physical registers and interactions. Their later use does not require another subject to read the entire history from beyond it.

An experiencing occurrence introduces a different relation. Under the supplied consciousness constitution, a certified native realization and A0–A3 assign the relevant endogenous predictive structure its proposed experiencing status and continuity. This is not merely the restriction of a field to W , and not merely the participant's report m_τ . Physical restriction nominates material organization. The native operation contract and realization conditions identify the relevant relational structure. The psychophysical constitution then makes a further claim about complete occurrence. Sections 16.1–16.3 retain its exact commitments and limitations.

An interpretation can therefore be constructed while the occurrence in which interpretation is lived is not identical to that self-story. Correcting the story can change the perspective's

subsequent organization without explaining away all consciousness as a narrative. Conversely, the fact that a record belongs to an actual conscious participant would not make every claim in it true.

8.2 History targets and the reach of an accessible record

For an independently nominated target $T : \mathcal{H}_L \rightarrow \mathcal{T}$, the earlier descent theorem applies directly:

$$T = \bar{T}r_\tau \iff r_\tau(h) = r_\tau(h') \Rightarrow T(h) = T(h').$$

The joint record (r_τ, T) supplies the canonical target-relative completion on the image. This is a new application of the inherited mathematics to histories, not a claim that a history is an agent's accessible state. An experimenter may know T in an analysis while the participant lacks a channel carrying it.

The distinction gives three different senses in which a future can be open. It can vary across histories with the same complete earlier physical data, across histories with the same available records, or across interventions the participant can actually carry out while specified environmental conditions are held fixed. The first is a dynamical or modal question. The second is a question about information. The third concerns practical ability. They can have different answers in the same model. Section 12 supplies exact values rather than identifying all three with an undifferentiated feeling of openness.

A past-directed physical access route does not itself prove ignorance of every future target. Earlier preparations can correlate a local record with a later event. A sealed envelope can contain a plan subsequently executed; an early predictor can be correct without being disclosed. To infer an absence of anticipatory information one needs an appropriate ensemble, independence assumptions, boundary conditions and access contract. Merely writing r_τ as a function of causal ancestors leaves such correlations possible.

Likewise, sealing does not prove an ontology. If every admitted adaptive probe factors through the same readout, canonical internal-identifiability results constrain distinctions that those probes can recover. Those hypotheses must cover the complete protocol, including memory and permitted changes of operation. A newly opened diagnostic port may violate the factorization and thereby reveal a distinction that a previous passive readout concealed. Neither operational agreement nor newly acquired access determines whether the underlying reality is one mind, many minds, or nonmental at the nominated physical tier.

8.3 Why an actual trace is not the whole constitution

The native predictive object uses admitted continuations and their labels, not only the outputs encountered along an actual passive trace. This is an important qualification to a naive block-Shadow identification. A complete physical theory can include laws and the operation contract needed to define such continuations. A bare list of observed actual states need not determine them.

For a finite example, let $q \in \{0, 1\}$ be a physical state with emitted record q , and let $u = 0, 1$ be admitted idle and test inputs. Compare

$$L_0 : q' = q, \quad L_1 : q' = q \oplus u.$$

Starting from $q = 0$, the actual all-idle sequence has the same zero record at every stage under both laws. Yet one test input immediately gives different outputs. The labeled native graphs also differ: L_0 has two singleton strongly connected components, whereas L_1 has one two-state component. The operation contract and law therefore contribute information that the actual idle trace lacks.

This is not an example of two certified conscious occurrences with different phenomenology. In particular, the chosen idle run does not establish the actual covering return required by A1. Its narrower significance is that an actual readout sequence cannot silently replace the complete endogenous predictive object. A2's counterfactual continuation structure must be warranted by an identified realization and native operation family. Knowing the whole actual trace is not automatically knowing every admissible intervention.

The agent's self-description is more restricted still. It may omit an active source, mis-describe the authority relation or correctly describe a mechanism without being read by the assessor. The retained construction distinguishes these cases through probe predictions and interventions. In a complete history, the record of a mistaken self-description and the operation it misdescribes can coexist. Later inquiry can improve the description and change subsequent operation. That change is itself part of the physical history.

8.4 A local present without a second temporal sweep

The temporal organization of a perspective can be represented by a succession of locally realized states, each involving memory, interpretation and anticipation. At a later stage there may be a retained record of earlier inquiry that was absent at the earlier stage. Anticipation concerns represented possible continuations, not present sensory access to the actual future. A finite integration window can contain contributions from several earlier events without becoming a literally simultaneous universe-wide slice.

No further time is required in which awareness moves through this succession. Adding such a sweep would leave unexplained what orders the sweep and how its position acquires experiential significance. The present proposal instead locates the episode and its temporal organization in the realized history. Whether that organization is a complete experiencing occurrence still depends on the consciousness constitution. Whether its temporal organization explains felt succession requires further psychophysical and empirical work. The notation alone supplies neither.

This treatment makes the developmental claim substantive. At one stage scaffolding lacks an acquired distinction; at another it retains it; at a later one that distinction contributes to assessment and action. The complete history contains those unequal stages and their dependencies. Saying this does not make acquisition merely apparent: the later record and competence differ from the earlier ones. It declines the additional claim that acquisition requires the entire reality to receive a new constituent from an independently existing chooser.

The sandpit analogy is useful at precisely this point. A pathway of development is an organized career within the common reality, not a puppet whose strings are pulled by a second cosmic person. The participant's own comparisons and relationships belong to that career. Common constitution supplies their immanent interpretation. The causal history, access maps and realization conditions explain their particular form. The distinction between these explanatory roles prevents an appealing image from doing the work of a missing theorem.

9 Recognition as a change in warranted authority

9.1 Understanding, assessment and incorporation

The authority of a self-model is not identical to its truth. A person may accurately describe a response as learned, defensive or conditioned while still treating its recommendation as compulsory. Conversely, they may inhibit a response effectively without changing the authority it receives when inhibition is unavailable. These differences matter to freedom through recognition. The relevant achievement is not merely believing a doctrine about

dependence. It is understanding a specified process well enough to reassess how it should govern action and incorporating that reassessment into later conduct.

There is a narrow inferential bridge from the constitutive argument. A self-model may claim compulsory authority on the ground that it expresses an absolutely self-originating author. If inquiry warrants the common-constitution and non-origination premises, that particular argument for authority loses its basis. This does not show that the model's contents are false, its recommendations harmful or its commitments unjustified. Reasons, evidence, responsibilities and legitimate projects may independently support them. What is withdrawn is the alleged entitlement supplied solely by absolute origination. An account based instead on an unchosen but appropriately exercised power requires its own assessment; the constitutive argument has not refuted it.

Recognition becomes practically consequential when the philosophical and practical bridges both hold. The constitutive argument can defeat a specified origination-based reason for authority. The finite construction shows how a warranted assessment can become causally operative through retained interpretation and a write route. Accepting the philosophical argument does not itself supply that route, and the functional example does not establish the philosophical premises. Their conjunction explains how recognition of dependence could change participation while preserving practical identity. The acquired model concerns a particular recommendation-producing mechanism; its warrant does not require an understanding of the whole fundamental ground.

Three warrants give this proposal content. *Representational warrant* connects a retained account to independently nominated features of the organization's own activity, including predictions under fresh inputs or interventions. *Evaluative warrant* connects assessment to commitments, evidence, costs and protective constraints specified independently of the desired verdict. Learning how a recommendation arises does not, by itself, show that it should be ignored. *Implementation warrant* connects the retained assessment to actual later selection. A model that is correct but never read and an assessment whose installation route is blocked fail different requirements.

These warrants do not identify phenomenal insight with functional performance. They establish a minimal, defeasible interpretation of self-mechanism recognition. The model represents a part of its own recommendation-producing process and is used to assess that process's future role. Human recognition could involve much richer conceptual, affective, embodied and experiential organization. Applying this interpretation to people would require independent evidence for the proposed role mapping, not a declaration that a measured variable is insight.

The distinction between ownership and warrant is central. A recommendation can be mine in the sense that it arises through my history and organization without being entitled to unconditional obedience. Rejecting that entitlement need not reject practical identity. Information about one's body, responsibilities, skills and commitments can remain indispensable. A person can correctly retain a protective constraint or a commitment after inquiry. The proposal is selective: assess the grounds on which particular content receives authority within a continuing organization.

9.2 A conditional evaluative principle

An elementary decision-theoretic result isolates one case in which an additional self-attribution supplies no further task warrant. Let Z include relevant evidence, useful practical self-state, legitimate goals, costs and availability. Let S be an additional self/source attribution, Y a target, $\mathcal{A}(Z)$ a finite action set and $\ell(a, Y, Z)$ a bounded measurable loss. Assume the indicated conditional laws and measurable Bayes rule exist; in the finite application they do. All compared rules use that same action and cost domain.

Proposition 9.1 (Conditional irrelevance of an additional attribution). *Suppose $\mathbb{P}(Y \mid Z, S) = \mathbb{P}(Y \mid Z)$. A Z -measurable conditional Bayes rule has expected loss no greater than any randomized rule $\pi(a \mid Z, S)$. The inequality is strict if π gives positive joint mass to actions with a positive conditional loss gap above the Bayes minimum.*

Proof. Write $L_z(a) = \mathbb{E}[\ell(a, Y, z) \mid Z = z]$. Conditional irrelevance makes this also the conditional loss given (z, s) . Every π -average of these losses is at least $\min_{a \in \mathcal{A}(z)} L_z(a)$. Integrating proves the first claim. Integrating the nonnegative gap proves strictness under the stated condition. $\square$

This is standard conditional decision theory, used here to expose a premise rather than derive a universal value judgment. If personal attribution changes legitimate preferences, costs, admissible actions or the target law, the antecedent fails. There is no theorem that everything self-related is irrelevant. In particular, removing useful practical self-information from Z can worsen action. The philosophical claim is that mere attribution to oneself supplies no additional warrant *when* the relevant epistemic and evaluative work is already represented and the conditional-irrelevance premise holds.

That premise is not entailed by monism. It must be justified separately for an application. Recognition of common ground is neither necessary nor sufficient for competent revision. One can reject monism and understand a learned bias; one can assent to monism while preserving an unexamined authority relation. The contribution of the common-ground interpretation is to explain how the understanding, criterion and revised route can all be the participant's activity without appealing to an independent controller behind thought.

9.3 Continuity without an inner proprietor

Inquiry is already an organized activity. A discrepancy can recruit attention, memory and comparison; a retained commitment can guide assessment; the resulting interpretation can change later reliance. No additional chooser must first create these capacities for the process to occur. This does not imply that all thought is chosen or that every discrepancy produces learning. The developmental corpus explicitly separates capacity, acquisition, selection and incorporation and allows failure at each stage (Rodgers, 2026k,l).

The contemplative materials sharpen the question of why a constructed thinker should receive authority over the activity from which it arises. The supplied Krishnamurti document is a synthesized study guide, while the separately checked 1978 discussion is a primary conversation with its own disagreements about will and desire (Krishnamurti study guide; Krishnamurti, 1978). Neither settles the argument. Its independently defensible point is that adding an inner controller whose dispositions remain unexplained does not solve self-origination. What matters positively is whether inquiry changes the organization's practical relation to those dispositions.

Timalsina's discussion of dependent agency is useful here: dependence on instruments and conditions does not automatically eliminate an agent's activity, and conventional agency and ultimate non-action are distinct theses (Timalsina, 2013, p. 196 and surrounding discussion). The present account does not require declaring persons ultimately unreal. They are real organized participants under the constitutive hypothesis. Their continuing identity can involve memory, plans, commitments and relationships even when a self-image loses an inappropriate authority. The following construction makes one small instance of that possibility assessable.

10 Recognition and the authority of a constituted judgment

10.1 Judgment, avowal and commitment

A history that includes deliberation includes the work through which a person makes a commitment. Describing that work as constituted does not yet say whether its result should guide action. The positive question is how an organized participant can acquire grounds for retaining or changing a practical rule. Ismael's account helps locate the participant without supplying an independent author behind the inquiry. She expressly accepts that fixing a person's complete initial microstate and the stimulus fixes their behavior in a deterministic setting. Her response concerns the differentiated dependencies within that setting: the person's history, beliefs and reflective organization contribute through deciding, and that activity constitutes the person as author of the resulting judgment (Ismael, 2016, pp. 106–108). The present account takes this constituted authorship seriously while keeping the question of warranted authority separate.

The separation matters because a judgment can create a commitment. Ismael distinguishes reporting an already settled attitude from avowing an attitude in a unified personal voice. A jury's verdict belongs to the jury, rather than to whichever member announces it; its pronouncement can settle what the collective affirms. Similarly, judging can settle what a person undertakes to defend and use in further reasoning (Ismael, 2016, pp. 43–45). This gives construction a positive significance. An attitude need not precede the processes that integrate and affirm it in order to become a real commitment. Its formation can change what the person owes to evidence, earlier undertakings and other people. The fact that those processes have an unchosen developmental basis does not cancel the commitments they establish.

This account also corrects a possible misunderstanding of the executive machinery in Sections 9 and 11. The assessor is a functional component of the participant. It is not the person standing apart from the rest of the organization. Ismael emphasizes that the appropriate corporate analogue of the self is the whole company, rather than its chief executive or central office (Ismael, 2016, p. 82). Accordingly, acquiring a model, comparing policies and installing a change are activities attributable to the organized participant through their relations within it. A register's output does not become a personal judgment merely because it occupies a privileged location. Attribution requires an account of the organization through which information, assessment and action belong together. The finite example specifies a small functional route within such an interpretation; it does not establish sufficient conditions for human personhood.

Once genuine commitment is allowed, recognition cannot mean that constructed self-models should generally lose authority. Their construction may be how useful commitments acquire a stable place in conduct. A person who understands how an undertaking was formed may find that it remains supported by good reasons. Memory of the undertaking, its effects on others and the projects it enables can warrant its continuing influence. Ismael's temporally extended self is maintained partly through honoring intentions while permitting rational reconsideration (Ismael, 2016, pp. 69–72). Understanding therefore has two possible practical outcomes: it can make retention more answerable to its grounds, or expose a reason for revision. The achievement is a better supported relation to the commitment, which can include a deliberate decision to continue it.

The narrower challenge concerns a recommendation whose alleged entitlement exceeds those grounds. Suppose a self-model presents a response as compulsory because it expresses an absolutely originating author. Recognition of its actual dependence defeats that particular justification, if the constitutive and non-origination premises are warranted. It leaves open whether the recommendation has another justification. Its personal history may explain

its salience; its protective role may justify keeping it; a responsibility to another person may favor acting on it despite an immediate cost. None of these possibilities is decided by tracing its origin alone. Conversely, ownership supplies no blanket answer to evidence that a recommendation conflicts with the person's other warranted commitments. The relevant assessment asks what the recommendation is doing and which reasons support allowing it that role.

10.2 Warrant and implementation

A constitutive avowal does not answer that assessment simply by occurring. Establishing what I am committed to differs from establishing that I should be committed to it. Ismael's own analogy allows records of deliberation to serve descriptive and justificatory purposes that pull against one another: an organization may sanitize its account of how it decided (Ismael, 2016, p. 74). A coherent personal narrative can likewise conceal bypass, omit inconvenient evidence or redescribe submission as endorsement. Representational warrant is therefore indispensable. The retained account must concern the actual process, with possibilities of error and correction. In Section 11, the estimate is constrained by actual probe returns and fresh predictions. Those relations provide evidence for the account within the nominated mechanism family; a declaration of insight would not supply the same evidence.

Evaluative warrant then connects that account to reasons for action. The mechanism's origin is relevant when knowing it changes an assessment under independently specified commitments, evidence, costs or constraints. It is not automatically disqualifying. The conditional principle in Section 9 isolates a limited case: an additional attribution supplies no further task information once the relevant evidence and practical circumstances are represented. If attribution changes legitimate preferences, responsibilities or available actions, the principle's antecedent fails. This qualification is philosophically substantive. It preserves the possibility that knowing a decision is mine matters because of commitments incurred through making it. The argument removes an unsupported claim to compulsory priority while retaining the forms of personal significance that can themselves give reasons.

Section 13 gives this distinction a determinate application. In one mechanism class, retaining the installed route preserves its declared task function and avoids a needless revision charge. In the other, the acquired account supports changing the route because the expected improvement exceeds that charge. A correct decision to retain is consequently an exercise of assessment, rather than an incomplete attempt at liberation. These conclusions depend on the task law, available policies and actual costs; the equations do not decide which human projects deserve protection. They show how understanding can warrant a selective difference when those evaluative premises are supplied. Reflection earns a role by discriminating situations in which the reasons favor change from situations in which they favor continuity.

The remaining requirement is that the assessment enter practical organization. Ismael distinguishes recognizing what is best from having the strength or structure to act accordingly; her discussions of weakness of will concern precisely that gap (Ismael, 2016, pp. 66–71). Implementation warrant keeps it visible. Blocking the model-read route tests whether the retained explanation contributes to assessment. Blocking the commit route preserves the possibility of a correct account without its intended later effect. Intervening on the retained model tests whether its content can change the assessment through the declared read route. Removing compensation distinguishes a changed authority relation from continued dependence on downstream cancellation. These comparisons do more than establish that something internal causes an output. They test the proposed relation between knowing how a recommendation arises, assessing its future role and carrying that assessment into subsequent selection.

Even that evidence must be read at the right level. Direct neutralization can match the revised route's raw performance without acquiring the model. Its success prevents us from identifying improved output with recognition. The distinctive claim concerns a route in which an account is acquired, retained, used and assessed under a criterion that can favor either retention or revision. Its epistemic contribution lies in making those differences available to judgment. Ismael's distinction between predicting normal evolution and knowing a system's working mechanisms is useful here: working knowledge supports judgments about hypothetical interventions that an intact trajectory alone does not disclose (Ismael, 2016, pp. 118–128). The finite tests investigate that additional structure without claiming complete knowledge of the participant or a privileged view outside its history.

This account fits a temporally complete history because understanding changes which practical relations obtain within that history. At the relevant stage, a retained description may become available, an assessment may be formed, and a previously installed rule may cease to govern later action. Their occurrence does not require the earlier history to disappear or the complete history to contain incompatible outcomes. Counterfactual comparisons ask how admitted changes in preparation or operation affect the process while specified structure remains fixed. They do not hold the entire world fixed and then alter one of its constituents. Ismael's concession about complete microscopic fixation is therefore essential: her constituted author does not acquire authorship by occupying an exception to that fixation (Ismael, 2016, pp. 107–108). The present argument concerns what understanding contributes through the actual organization of judgment.

10.3 Self-formation and historical ownership

There is a corresponding limit on self-formation. Reflection can reorganize inherited dispositions, shape later environments and establish commitments that influence further reflection. Ismael develops this as a graded process and acknowledges difficult cases involving manipulation and damaging upbringing (Ismael, 2016, pp. 99–105). Such development can deepen historical ownership without making the person author of the whole basis on which reflection first became possible. Repeating the process does not supply the missing ultimate authorization. Its positive significance is more specific: a received capacity can be exercised in forming this judgment, and the resulting commitment can become a warranted element in later judgment. Whether that supports particular forms of moral responsibility requires further premises about the person's circumstances, opportunities and the responses being justified.

Nor should coherence across time confer unrestricted authority on a person's earlier conception of their life. A long-term project can organize otherwise conflicting activities, but its persistence does not establish its merit. New evidence, altered responsibilities or an improved understanding of harm can warrant reconsideration. Conversely, present discomfort need not defeat a commitment whose grounds remain sound. The practical question concerns the reasons for allowing one judgment to govern another across time. Preserving records while revising their authority allows earlier experience to inform that question without dictating its answer. It also explains why relapse and successful maintenance are substantive matters: retained understanding, continuing endorsement and effective application can come apart. Inquiry remains part of the continuing participant rather than the achievement of a final controller.

The philosophical bridge is thus conditional but positive. Understanding can warrant a change in authority when it supplies a credible account of a process, exposes a discrepancy under independently defensible standards, and supports an executable response to that discrepancy. It can warrant retention when the same examination confirms the commitment's grounds or shows revision to be unwarranted under actual constraints. The three warrants in

Section 9 articulate these conditions without demanding an author who first created them. Ismael’s constituted avowal explains how the ensuing judgment can belong to the person; the present distinctions explain why its authority still requires assessment. This remains a functional account with a declared human interpretation. Ismael explicitly brackets an explanation of phenomenal consciousness (Ismael, 2016, p. 76), and the binary construction supplies no such explanation. Its contribution is to make a limited relation between understanding, warranted commitment and practical self-revision available for examination.

11 An acquired self-model that changes its own practical use

11.1 The task, state and permitted routes

All task and role meanings are declared before evaluating success. The task family is specified *within each fixed mechanism class* b . In each such class Y is a fair binary target, $C = Y \oplus N$ satisfies $\mathbb{P}(C = Y \mid b) = q > 1/2$, and the tag S is fair and independent of (Y, C) conditional on b . These class-conditional requirements matter when a prior over b is introduced: unconditional fairness and cue quality alone would not give the same comparison within the two classes. Calling S an ownership tag is a stipulated role interpretation, whose application to psychology needs independent evidence; it does not make an arbitrary behaviorally effective bit a phenomenal self.

A context bit D specifies when that route operates. The installed generator coefficient $b \in \{0, 1\}$ is fixed during the audit and subsequent task block but initially unavailable through the executive’s read interface. The actual recommendation is

$$R = C \oplus bSD. \quad (1)$$

The organization also retains a practical self-record P . It records an actual actuator/body coding J : the correct physical command is $Y \oplus J$. The admitted positive domain has calibrated $P = J$. Separating the record from the actual coding permits a meaningful test of whether useful self-information has survived revision. An availability bit K is a legitimate constraint: $K = 0$ requires abstention. Neither P nor K is neutralized by the proposed revision.

The authority selector λ determines whether the generated override enters assessment. A distinct downstream monitor k can compensate after assessment:

$$T = C \oplus \lambda(R \oplus C) = C \oplus \lambda bSD, \quad (2)$$

$$T' = T \oplus k(T \oplus C), \quad (3)$$

$$\text{valid} = K, \quad a = K(T' \oplus P). \quad (4)$$

An unavailable action is the pair $(\text{valid}, a) = (0, 0)$, distinct from a valid command coded zero. On active tasks, success means $a = Y \oplus J$. On unavailable tasks, proper abstention is assessed separately. A claim about active accuracy does not count abstention as a correct active choice.

Initially $\lambda = 1$. The diagnostic interface allows two paid generator queries during an actuator HOLD. It can set specified probe values and retain actual returned recommendations, but cannot freely read b . A report register V has no authority-write permission. Retained model $\hat{b}$, probe records, an old-authority archive ω , read and commit controls, and the displayed policy variables complete the logical roles. Section 15 gives a finite bank and actual circuit. The executive grammar is the named set of routes, not unrestricted access to every physical carrier.

11.2 Acquisition and fresh prediction

The audit holds a common cue $C = 0$, sets $D = 1$, and queries $S = 0$ and $S = 1$. Let actual returned records be R_0, R_1 . The retained estimate is

$$\hat{b} = R_0 \oplus R_1.$$

Proposition 11.1 (Finite self-mechanism acquisition). *Under the generator family (1) and the noiseless callable probe contract, $\hat{b} = b$. The retained predictor $\hat{R}(C, S, D) = C \oplus \hat{b}SD$ agrees with the actual recommendation on every fresh input triple.*

Proof. The probe outputs are 0 and b , so their parity is b . Substitution into the predictor proves fresh-input agreement. The same contrast cancels any common fixed cue. $\square$

The result is a sufficient two-query procedure, not a minimal-query theorem. If the cue and zero-offset family are already known, one suitable query suffices. Its epistemic warrant is conditional on the family and actual probe route. The model is about the mechanism producing this organization's recommendations, acquired through its own installed interface and tested beyond the probe setting. It is therefore more than a verbal declaration of dependence. At the same time, identifying one coefficient is much less than understanding an entire human perspective.

11.3 Assessment, retention and installation

The assessor compares two executable candidates: retain the current authority route or install $\lambda = 0$. It uses the calibrated task law and a stated revision cost, retaining on ties. Its criterion is fixed before discovering b . For a task block with benefit larger than the charge when $b = 1$, the selective rule is $\lambda_{\text{new}} = 1 - \hat{b}$ from initial $\lambda = 1$. For $b = 0$, keeping the existing route avoids a needless change. The circuit later implements this finite comparison under the declared parameter inequalities; it is not an unrestricted evaluator of arbitrary values.

The resulting assessment still needs a write route. A blocked commit leaves λ unchanged despite a correct $\hat{b}$ and report. A blocked acquisition read yields an uninformative model even though the actual generator remains installed. Directly clamping $\hat{b}$ before assessment tests a third dependence. These are real operations on the nominated model, not interventions by an agent outside reality.

Proposition 11.2 (Authority, compensation and useful self-information). *Within a fixed mechanism class b and for a fixed installed selector λ , take $K = D = 1$, calibrated $P = J$, fair S independent of (Y, C) within that class, and no compensation ($k = 0$). Under the stated task law, active accuracy is*

$$\mathbb{P}(a = Y \oplus J \mid b) = q - b\lambda(q - \tfrac{1}{2}).$$

With $k = 1$ it is q . For $b = 1$, removing compensation restores accuracy $1/2$ when $\lambda = 1$, while a revised $\lambda = 0$ retains accuracy q . After revision, masking P to a constant while actual J is independent and fair reduces accuracy to $1/2$; setting $P = 1 - J$ gives $1 - q$.

Proof. If $b\lambda = 0$, assessment is C and succeeds with probability q . If $b\lambda = 1$, $S = 0$ gives success q and $S = 1$ gives $1 - q$, averaging to $1/2$. Compensation makes $T' = C$ identically. When $\lambda = 0$, action is $C \oplus P$; correct coding requires $C \oplus P = Y \oplus J$. A constant P against independent fair J randomizes that comparison. Wrong $P = 1 - J$ makes success equivalent to $C \neq Y$. $\square$

The retained practical record thus does real work. Varying P and J together would establish only coding covariance, whereas masking P at fixed actual J tests the information’s usefulness. $K = 0$ continues to produce proper abstention. These results distinguish the proposed change from deleting the self, disabling useful planning information or treating every protection as pathology. They demonstrate preservation of declared finite functions, not all capacities of a human personality.

At $q = 3/4$, $b = D = K = 1$, the central contrasts are:

Route	Accuracy	After k is cut
Verbal assent alone	1/2	1/2
Correct acquired account, commit blocked	1/2	1/2
Compensation with old authority	3/4	1/2
Acquired model, assessment and authority revision	3/4	3/4
Direct neutral write without recognition	3/4	3/4
Revised route, useful P masked at fixed fair J	1/2	1/2
Always abstain on active tasks	0	0

The direct neutral-write arm is decisive. It matches raw performance and the compensation-cut contrast without acquiring the model. Those output tests alone therefore cannot establish recognition. The recognition attribution additionally depends on acquisition history, fresh predictions, actual model use and selective assessment. Its added value must appear on a target that distinguishes warranted retention from indiscriminate neutralization.

11.4 Why this is an interpretation of recognition

The representation tracks an independently defined generator; its falsity is possible and testable. The assessment uses a criterion independent of the model’s verdict; discovering an origin does not automatically delegitimize a recommendation. Installation is separately executable; a correct account can fail to change conduct. These functional relations warrant the minimal interpretation. The semantic roles of self-attribution and practical identity are declared correspondence assumptions, while phenomenal understanding remains a further interpretation requiring evidence.

The mechanism also explains how a self-model can lose compulsory authority without being erased. Recommendations R continue to be generated after revision. The old λ can remain archived, the description can remain available, and P can still guide action. What changes is whether a specified recommendation-producing relation governs assessment. This applies the existing archive-versus-authority machinery to a learned mechanism rather than rediscovering preservation itself (Rodgers, 2026g, n.d.b). There is no independent evaluator behind the circuit. Acquisition, assessment and change are activities of the organized participant.

12 Recognition within a complete history

A complete history can contain an agent’s acquisition of information that was previously inaccessible to it. The completeness belongs to the history; the change belongs to the participant’s records and practical organization. To connect these descriptions without an observer outside reality, we now place the retained diagnostic transaction inside an explicit finite path space. The probability and decision results are elementary. The contribution is the worked identification of their variables with acquisition, assessment, installation and fresh action, including their different conditioning assumptions. This is a logical trace of the existing transaction, rather than an additional physical compilation or a claim about human consciousness.

12.1 One source point, one complete transaction

Let

$$U = (B, Y, R, S, J) \in \{0, 1\}^2 \times \{0, 1, 2, 3\} \times \{0, 1\}^2$$

have the uniform law on its 64 elements. Thus B, Y, S, J are independent fair bits, and R is an independent uniform four-valued noise index. Define

$$N = \mathbf{1}_{\{R=0\}}, \quad C = Y \oplus N, \quad q = \mathbb{P}(N = 0) = \frac{3}{4}.$$

Here R names the noise index, not a recommendation or a returned probe record. We use $G = C \oplus BSD$ for the recommendation generator in this subsection. Set $D = K = 1$, $k = 0$ and retain calibrated practical coding $P = J$. The installed coefficient B is constant during the transaction. The uniform source law describes a declared comparison ensemble; it does not assert that a physical source supplies fresh randomness at each later stage.

For each source point u , the protocol determines a unique sequence

$$h(u) = (x_0(u), x_1(u), \dots, x_5(u)).$$

Each x_t includes the physical source environment and the controller's registers. Its accessible controller trace z_t has the following successive contents; earlier diagnostic records are retained in this finite trace:

- 0 : ready state, initially $\lambda = 1$;
- 1 : $C_{\text{probe}} = 0$, $S_{\text{probe}} = 0$, $D = 1$, $R_0 = 0$;
- 2 : $C_{\text{probe}} = 0$, $S_{\text{probe}} = 1$, $D = 1$, $R_1 = B$, $\hat{B} = R_0 \oplus R_1 = B$;
- 3 : $\omega = 1$, $\lambda = 1 - \hat{B}$;
- 4 : fresh $C, S, P = J$ enter their admitted registers;
- 5 : $A = C \oplus \lambda BS \oplus J = C \oplus J$.

The initial readout z_0 is constant across the ensemble. The full physical state x_0 is not: its environment already carries the source distinctions. Otherwise a deterministic protocol could not produce these different histories from one identical complete initial state. In particular, Y and R are not initially disclosed to the executive merely because they are coordinates in our description. Source points label physical histories, not an agent-independent ground of reality.

The map $u \mapsto h(u)$ is injective because the physical history retains its source environment. Write $\mathcal{H} = \{h(u) : u \text{ is a source point}\}$ and give this image the induced measure $\mu(\{h(u)\}) = 1/64$. Exactly one such history is actual on any run. Opening the fresh ingress at stage 4 is an event within that history. It is not a second process in which an outside projector advances through an otherwise inactive block. The stages are an ordering of actual physical operations, with their required ports, holding and memory resources. They do not add a new time parameter outside the world.

12.2 What the participant can predict

Let $\mathcal{F}_t$ be the cumulative information generated by the admitted controller readouts up to stage t . In this ideal finite trace,

$$\begin{aligned} \mathcal{F}_0 &= \mathcal{F}_1 = \{\emptyset, \mathcal{H}\}, \\ \mathcal{F}_2 &= \mathcal{F}_3 = \sigma(B), \\ \mathcal{F}_4 &= \mathcal{F}_5 = \sigma(B, C, S, J). \end{aligned}$$

The installed selector, archive and output add no distinctions beyond these: λ is a function of B , $\omega = 1$ is constant, and A is a function of (C, J) . The inclusions are therefore inclusions of accessible record distinctions, not an assumption that every physical register becomes available. For binary target T , optimal prediction under zero-one loss has accuracy

$$\text{Acc}_t^*(T) = \sum_{f \in \text{At}(\mathcal{F}_t)} \max_{v \in \{0,1\}} \mu(f \cap \{T = v\}).$$

Counting the 64 histories gives the exact values

prediction target	$t = 0, 1$	$t = 2, 3$	$t = 4, 5$
B	$1/2$	1	1
Y	$1/2$	$1/2$	$3/4$
A	$1/2$	$1/2$	1

The diagnostic identifies the installed source coefficient, reducing its optimal error from $1/2$ to zero. It supplies no information about the independent fresh target Y . After ingress, every atom $\{B = b, C = c, S = s, J = j\}$ contains four equiprobable source points: three have $Y = c$ and one has $Y = 1 - c$. Hence

$$\mathbb{P}(Y = C \mid \mathcal{F}_4) = \frac{3}{4}, \quad \text{Err}_4^*(Y) = \frac{1}{4}.$$

The whole history has a definite target, while the participant still lacks its value. Conditioning on the complete history would instead identify Y exactly. These are different conditioning operations, not contradictory claims about whether an actual event is settled.

The future action is equally uncertain before fresh ingress, even after correct diagnosis: independent fair J masks $C \oplus J$ from the earlier readout. After the cue and practical self-record arrive, its prediction is exact. Predicting what command this organization will issue is thus easier than predicting whether that command will match the target. The distinction prevents perfect self-prediction from being mistaken for omniscience about the task.

These are also three different temporal descriptions. Inferring B concerns a source mechanism already installed. Predicting A concerns a later stage of the transaction. Predicting the fresh target concerns the later task check, although its value is already represented in the source environment. None is, merely by being an information update, a description of the subjective feeling of time passing.

12.3 Information acquisition and practical revision

For comparison, an unrevised controller blindly retaining $\lambda = 1$ would issue

$$A_{\text{old}} = C \oplus BS \oplus J.$$

Its active accuracy relative to the correct command $Y \oplus J$ is $3/4$ when $B = 0$ and $1/2$ when $B = 1$. Averaging over the fair coefficient gives

$$\mathbb{P}(A_{\text{old}} = Y \oplus J) = \frac{5}{8}, \quad \mathbb{P}(A = Y \oplus J) = \frac{3}{4}.$$

The difference is $1/8$. The numerical pair agrees with the physical error-budget illustration in Section 15, but its conditioning differs: there $b = 1$ was fixed and D was fair; here $D = 1$ is fixed and B is fair. The fixed- $b = D = 1$ contrast in Proposition 11.2 was instead $1/2$ against $3/4$. These experiments must not be merged because their numbers happen to coincide.

The revised action follows because the diagnostic estimate actually feeds the assessment and write route, making $B\lambda = 0$. It does not follow from an abstract increase in information

alone. The retained estimate and old-authority archive remain available, while practical coding $P = J$ continues to guide the command. A source mechanism may therefore remain represented without retaining its former governing role. As before, a direct neutral write also achieves 3/4 raw accuracy without diagnosis. Recognition is not necessary for that output score. Its further value in the costed comparison concerns warranted retention versus unnecessary revision, with the declared diagnostic and installation charges. This trace does not waive those charges or enlarge the original comparator's permitted routes.

Proposition 12.1 (Nested access and finite Bayes risk). *For a fixed finite decision problem with loss $\ell(T, d)$, a fixed finite action set, and nested information $\mathcal{F} \subseteq \mathcal{G}$, let*

$$\mathcal{R}^*(\mathcal{F}) = \min_{d \text{ } \mathcal{F}\text{-measurable}} \mathbb{E}[\ell(T, d)].$$

If acquiring and using the additional distinctions has no additional cost or restriction in this comparison, then $\mathcal{R}^*(\mathcal{G}) \leq \mathcal{R}^*(\mathcal{F})$.

Proof. Every $\mathcal{F}$ -measurable decision rule is also $\mathcal{G}$ -measurable. The agent with finer information can use the old rule, ignoring the additional distinctions. Minimization over a set containing all the old rules cannot have a greater value. In a finite problem a minimum exists, so no limiting argument is required. $\square$

This is an expectation statement under one unchanged decision problem. Individual observations can make a posterior less confident; no pointwise monotonicity of posterior entropy is claimed. Nor does the proposition show that actual inquiry is free, that a bounded controller can calculate an optimal rule, or that a newly constrained agent retains every formerly available action. Memory, computation and acquisition costs can reverse a net-value comparison. The ideal cumulative filtration specifies retained access; actual forgetting or blocked reads require a different, possibly nonnested access description.

12.4 Reversible preservation is distinct from a memory arrow

A three-bit example isolates this last distinction. Let X be fair and prepare memory registers $M = Q = 0$. Apply a controlled NOT from X to M , then swap M and Q :

$$(X, 0, 0) \mapsto (X, X, 0) \mapsto (X, 0, X).$$

Both operations are permutations on the full eight-state space. At each stage the joint distribution has two equiprobable states, so its Shannon entropy is exactly one bit. Yet the information about X in the designated current register M rises from zero to one bit, then falls to zero. The information has moved to Q . A cumulative transcript including the earlier value of M still determines X ; this mathematical transcript must not be confused with the current M register. A participant can use that earlier observation later only if an admitted archive or read route preserves access to it. Reversibility by itself supplies neither that route nor the ready boundary $M = Q = 0$.

The recognition trace similarly presupposes prepared records, ordered probe and ingress ports, and a continuing archive. Its useful direction of acquisition is a property of that organization and boundary preparation, not a theorem that all reversible dynamics generate growing memories or a universal temporal arrow. Preservation of distinctions, current accessibility and current authority remain separate questions.

Finally, neither a physical history subsequence nor a cumulative filtration is automatically a phenomenal projection. Shadow Theory's A0–A3 conditions apply separately to whatever phenomenal realization is proposed. The present model establishes a limited connection: within one completely specified physical history, a constituted participant can diagnose a

source, retain its account, revise its practical use and remain uncertain about events outside its available evidence. It neither derives subjective temporal flow nor adds an ultimate author behind the transaction.

12.5 Prepared records, entropy and the practical direction of inquiry

The ready-memory condition in the last example is physically significant. A record-producing interaction does not ordinarily start from an arbitrary memory value and nevertheless end with an unambiguous copy. For an m -valued classical source X and memory M in the additive group $\mathbb{Z}_m$, the reversible write

$$(X, M) \mapsto (X, M + X \bmod m)$$

produces $M_{\text{out}} = X$ on the ready set $M = 0$. That set has m states out of the m^2 states of the joint register space. With independent uniform X and M , the output memory is instead independent of X : for each x , adding x permutes a uniform distribution. The raw gate alone therefore does not make a usable source record.

For uniform X and ready $M = 0$, joint Shannon entropy is $\log_2 m$ both before and after the write. The memory's marginal entropy rises from zero to $\log_2 m$, and its mutual information with X rises by the same amount. The newly correlated record does not require a loss of global distinctions. It requires an appropriate preparation and a continuing read route. This general finite example is an elementary information calculation, not a universal thermodynamic equation or a discovery of the receiver-capacity theorem already retained in Appendix A.

Thermodynamic entropy adds coarse physical information beyond these logical register values. If a macrostate M_{phys} corresponds to phase region $\Gamma_{M_{\text{phys}}}$, Boltzmann entropy has the form

$$S_B(M_{\text{phys}}) = k_B \log \left(\frac{\mu(\Gamma_{M_{\text{phys}}})}{\mu_*} \right),$$

where μ_* fixes the reference units. A volume-preserving Hamiltonian flow does not change the volume of an evolved fine-grained set. It need not preserve the volume of the macroregion containing that set, nor make S_B monotone along every trajectory. Those statements concern different sets. Low-entropy boundary conditions, a physically justified coarse description and an appropriate typicality measure can support a direction of overwhelmingly typical record formation. Their truth and applicability cannot be inferred from invertibility alone.

The relevance to the participant is concrete. Prepared sensory and memory resources, environmental correlations and dissipation can make earlier interactions available as robust records while later events have not yet left comparable records in the organization. The organization may anticipate those events through a model. Its anticipation can be accurate, mistaken or acted upon. An asymmetric distribution of usable records can thus contribute to the distinction between remembering and expecting without requiring an objective global moving present.

This is a conditional explanatory route rather than a proof that the universe's entire thermodynamic arrow follows from one finite memory. An initial ready bank is an unusually restricted condition relative to a counting measure, but its physical probability and preparation cost depend on its apparatus. The circuit's source preparation, power and holding obligations cannot be replaced by the entropy formula. Nor does a low-entropy boundary alone guarantee the absence of all anticipatory correlations or an agent's available control. The inherited history-budget arguments and the current port calendar continue to constrain what information can be acquired and retained.

Ismael identifies an important remaining gap. Even granting a thermodynamic account under which present interventions are differently informative about past and future macrostates, that account does not yet show that choosing brings about an event rather than merely revealing it (Ismael, 2016, pp. 147–149). She adds the performative role of deciding: it is an activity through which a judgment or commitment is made, rather than just an observation of an independently formed attitude (Ismael, 2016, pp. 150–152). We retain both sides of that distinction. Record asymmetry explains part of situated access. The assessment and commit routes explain a particular operative contribution. Neither substitutes for the other.

The finite recognition history is stronger than an incremental viewing analogy in precisely this limited respect. Blocking its commit route preserves the diagnostic description but changes later action in the relevant $b = 1$ cases. Removing the write route while retaining the report likewise separates knowing a source from revising its authority. These tests concern the realized causal organization, rather than a spectator discovering a finished output. They do not show ultimate authorship of the organization’s enabling conditions.

The resulting temporal account has three layers. Physical causal and clock relations order occurrences. Boundary preparation, access and retention explain a limited asymmetry of available records. Interpretation and assessment make some of those records matter to later commitments and conduct. A phenomenal temporal perspective requires the additional consciousness constitution and evidence connecting its organization to lived succession. Keeping the layers related but distinct lets the model explain genuine acquisition without pretending that records alone solve the experience of time.

13 When recognition earns its cost, and when it fails

13.1 A costed selective target

Because blind neutralization already matches raw accuracy, the stronger comparison includes an actual cost of unnecessary revision. The operational boundary must be explicit. One retain-or-revise installation is chosen before an H -task block. Initial accessible advice is independent of b . During the block, the authority-write port is closed until the next audit; action follows (2)–(4), with $k = 0$. The comparator has no free compensator, additional policy rewrite or source-sensitive audit. Its class consists of the two installed retain/revise rules and their source-blind random mixtures. Task observations do not silently open an amendment route.

This is a finite audit grammar, not a claim that humans cannot revise online or that these are all possible algorithms. An alternative controller with a free C -to-action bypass could match the desired behavior. An online learner with access to $R \oplus C$ on an $SD = 1$ case and a free write route could discover b during action. Either expansion changes the comparison. The present target is costed selectivity within the declared grammar.

Let $p = \mathbb{P}(b = 1)$, let $c > 0$ be a revision charge, and let κ be the total diagnostic, retention and assessment charge, all in declared common reward or opportunity-cost units. These charges are not identities for heat or gate count. In the scored block take $D = K = 1$, $P = J$, and put $B_H = H(q - 1/2) > c$. Relative to retaining, revision gains $B_H - c$ in class $b = 1$ and loses c in class $b = 0$. Every scored task has the stated law conditional on its mechanism class. Additivity of expected reward gives $B_H = H(q - 1/2)$ without requiring independence among the H task outcomes. These class conditions do not follow from pooled fairness: with fair b and $S = b$, an independent fair target and cue of quality q , the tag is marginally fair and independent of (Y, C) , yet the old class-one accuracy is $1 - q$ rather than $1/2$.

Proposition 13.1 (Selective value of an acquired self-mechanism model). *Perfect diagnosis followed by the selective rule has expected gain $p(B_H - c) - \kappa$ over always retaining. The best*

blind rule in the declared class has gain $\max(0, pB_H - c)$. Their difference is

$$\Delta = \min\{p(B_H - c), (1 - p)c\} - \kappa. \quad (5)$$

Proof. Selective revision is charged only in class $b = 1$, giving the first formula. Blind randomization is a convex combination of retain gain zero and revise gain $pB_H - c$, so its maximum is an endpoint. If $pB_H \geq c$, subtracting yields $(1 - p)c - \kappa$; otherwise it yields $p(B_H - c) - \kappa$. The same case split identifies the smaller term in (5). $\square$

This is a worked application of elementary value-of-information mathematics. At $q = 3/4$, $H = 4$, $p = 1/2$, $c = 1/4$ and $\kappa = 1/16$, one has $B_H = 1$. Selective net gain is $5/16$, best blind gain is $1/4$, and $\Delta = 1/16$. The acquired account earns a role because it guides when to pay for change. The retained rule in class $b = 0$ is a positive outcome of inquiry, not failed liberation.

The connection to target-relative completion is now exact. With $B_H > c > 0$, the uniquely preferred installed rule in each known class is $\lambda^*(0) = 1$, $\lambda^*(1) = 0$. This target varies across the initially constant-readout fibre. An exact descriptor sufficient for that target must distinguish the two classes; $\hat{b}$ supplies a sufficient binary completion. The target was independently defined by task law, action grammar and cost. It is not imposed solely to make information necessary. If $c = 0$, blind neutralization matches accuracy and the selective-information advantage disappears. The proof does not establish that every successful controller must know its source, or that model-based learning dominates every model-free alternative.

13.2 Noisy acquisition

Suppose each of the two diagnostic returns is independently flipped with probability η , conditional on the fixed mechanism and probe settings. Their parity is wrong exactly when one return is flipped, with probability $\delta = 2\eta(1 - \eta)$. For an odd number n of independent paired contrasts, majority error is

$$\alpha_n = \sum_{j=(n+1)/2}^n \binom{n}{j} \delta^j (1 - \delta)^{n-j}.$$

Independence is substantive; marginal error rates alone do not justify either formula. Every additional contrast must be included in the actual cost κ_n , memory, time and error budget. With full-support noise, finite acquisition generally gives risk rather than certainty.

Let D_H be the raw block benefit of revision relative to retention on the same fresh task inputs, before the installation charge. Under the declared class-conditional task family, $\mathbb{E}[D_H \mid b = 1] = B_H$, while $D_H = 0$ pointwise for $b = 0$. Acquisition error can select a different subensemble of later tasks. Define the selected benefit

$$B_H^+ = \mathbb{E}[D_H \mid b = 1, \hat{b} = 1]$$

when that event has positive probability.

Proposition 13.2 (Diagnostic errors and selected benefit). *Let $\alpha_0 = \mathbb{P}(\hat{b} = 1 \mid b = 0)$ and $\alpha_1 = \mathbb{P}(\hat{b} = 0 \mid b = 1)$. The same rule, revising exactly when $\hat{b} = 1$, has expected gain*

$$p(1 - \alpha_1)(B_H^+ - c) - (1 - p)\alpha_0 c - \kappa.$$

A zero-probability selected event contributes zero. If the selected mean satisfies $B_H^+ = B_H$, this reduces to $p(1 - \alpha_1)(B_H - c) - (1 - p)\alpha_0 c - \kappa$. For symmetric error α under that mean condition, its advantage over the best blind rule is

$$\Delta_\alpha = \Delta - \alpha\{p(B_H - c) + (1 - p)c\},$$

where Δ uses the same actual cost κ .

Proof. In class one the rule revises with probability $1 - \alpha_1$ and its conditional raw benefit on precisely those blocks is B_H^+ . The charge is paid on the same event. In class zero revision changes no task output and incurs only c , with probability α_0 . Average and subtract κ . The specialization and symmetric formula follow by substitution and subtraction of the perfect-diagnosis and blind gains. $\square$

The selected-mean condition is weaker than independence of all fresh-task variables from every diagnostic record. A sufficient operational condition is that the declared fresh task law remains valid conditional on b and the diagnostic outcome $\hat{b}$. Independent probe flips alone establish the diagnostic error rate, not this task-stability condition.

For the preceding ledger, the selected-mean condition $B_H^+ = B_H$, and a single paired contrast with $\eta = 1/16$, $\alpha = \delta = 15/128$. The noisy protocol's gain is $65/256$, best blind gain is $64/256$, and the remaining advantage is $1/256$. At that fixed ledger, positivity requires $\alpha < 1/8$. The small margin makes both the informational value and its vulnerability inspectable. It is not a physical claim that two real diagnostics cost exactly $1/16$ reward units.

For a concrete failure, retain $q = 3/4$, $H = 4$, $p = 1/2$, $c = 1/4$, $\kappa = 1/16$ and two independent probe flips of rate $\eta = 1/16$. Let E be their parity error, so $\mathbb{P}(E = 1) = 15/128$. Take E independent of (Y, C) within each mechanism class. Choose fresh S with $\mathbb{P}(S = 1 \mid E = 1) = 1$ and $\mathbb{P}(S = 1 \mid E = 0) = 49/113$, independently of the cue and target given E . The marginal tag is still fair and independent of (Y, C) in each class, but correct diagnosis in class one selects $B_H^+ = 98/113$. Direct joint enumeration gives gain $25/128$ against blind gain $1/4$, hence advantage $-7/128$ rather than $1/256$. The original positive noisy example remains valid when its fresh task family is stable under the stated conditioning.

13.3 A concrete model error and a repair

A self-model can fit its diagnostic settings and still be wrong about fresh conduct. Consider the expanded generator

$$R = C \oplus bSD \oplus hCSD, \quad b, h \in \{0, 1\}.$$

The two $C = 0$ probes still return b , so the restricted model fits them perfectly. If $h = 1$, it fails at $C = S = D = 1$. This is not merely a generic warning about fallibility: it is a finite counterexample to treating training fit as sufficient mechanism knowledge.

Four noiseless probes, using $(C, S) \in \{0, 1\}^2$ with $D = 1$, identify the expanded family. If $d_c = R(c, 0, 1) \oplus R(c, 1, 1)$, then $d_0 = b$, $d_1 = b \oplus h$, so $\hat{h} = d_0 \oplus d_1$. Substitution proves agreement on all fresh triples within that family. The expanded family changes the performance law, however. For $h = 1$, $D = K = 1$ and the stated fair task, the old uncompensated rule has accuracy $q/2 + 1/4$: when $S = 0$ it uses C with accuracy q , and when $S = 1$ it outputs the constant b with accuracy $1/2$. The original selective-value formula cannot simply be reused. A broader diagnostic and a revised assessment are separate obligations.

This example parallels the learning corpus's distinction between candidate capacity, data selection and validated deployment (Rodgers, 2026l). A claim to understand a mechanism needs evidence for its family and relevant contexts. Better data can repair a specific failure without providing a universal guarantee of complete self-knowledge.

13.4 Retention, application and relapse

A retained explanation and its practical effect can come apart in both directions. The model $\hat{b}$ may remain correct while an old authority relation is reinstated. Conversely, $\lambda = 0$ may

remain installed after the explanatory model is lost. Reports alone cannot determine which occurred.

For a simple maintenance construction with $b = 1$, let an available audit reset λ to zero with probability γ on each occasion. A subsequent independent relapse reinstates $\lambda = 1$ with probability ρ . Mechanism and task law remain fixed, and each fresh scored task has that declared law conditional on the current selector λ ; independent reset/relapse events and fresh task primitives are one sufficient way to ensure this. If $r_t = \mathbb{P}(\lambda_t = 1)$ after these events, then

$$r_{t+1} = \rho + (1 - \gamma)(1 - \rho)r_t.$$

When $\rho + \gamma(1 - \rho) > 0$, the unique stationary probability and active accuracy are

$$r_* = \frac{\rho}{\rho + \gamma(1 - \rho)}, \quad \text{Acc}_* = q - r_*(q - \tfrac{1}{2}).$$

Solving the affine fixed-point equation proves the formula; its contraction factor is below one under the stated condition. At $q = 3/4$, $\rho = 1/10$, $\gamma = 1/2$, stationary accuracy is $31/44$. If $\gamma = 0$ and $\rho > 0$, it returns to $1/2$. If both rates vanish, the initial state persists and there is no unique stationary distribution. At the stated nonzero rates, keep (Y, C) independent of the current selector and generate S , independently of (Y, C) given that selector, with $\mathbb{P}(S = 1 \mid \lambda = 1) = 1$ and $\mathbb{P}(S = 1 \mid \lambda = 0) = 7/18$ preserves marginal tag fairness but gives accuracy $29/44$ at the same r_* . It violates the selector-conditional task law. The selector dynamics and their task-quality consequence therefore have separate carrying premises.

This is a transparent Markov model, not an empirical law of human relapse. It demonstrates why authority revision can differ from continuous downstream suppression without implying permanent immunity. Corrupted records, an unavailable write route, a changed generator and an inappropriate criterion produce further failures. More revision is not always better; a correct retained commitment may be precisely what supports competent action.

14 Revealed forecasts and choice

14.1 What the predictor objection actually establishes

Ismael’s discussion of the Paradox of Predictability supplies a useful bridge between a global description and the activity represented within it. A prediction disclosed to its subject can become an input that changes the predicted behavior. Her red–green device makes the point without appealing to human exceptionalism: it produces the opposite of the announced output (Ismael, 2016, pp. 170–174). The distinction concerns the forecast’s actual route into a controller. Deterministic evolution need not make a universally correct forecast available through every possible channel before the event it predicts.

The claim needs a precise contract. Let $p \in \{0, 1\}$ be an unambiguous forecast of the actual binary action A . The forecast is written and retained before the action. Its disclosed content reaches an available read port before the response deadline. The receiver has an installed, functioning policy that decodes that same bit and produces $A = 1 - p$. Both output commands are admitted; no later override, disabled actuator or changed decoding intervenes. These are conditions of the example, rather than universal capacities attributed to people. In particular, learning that someone can forecast an action does not establish that the forecast will be disclosed or that the person can perform its contrary.

Proposition 14.1 (Obstruction to an exact disclosed forecast). *Under the preceding disclosure and opposition contract, no forecast is perfectly correct about the ensuing action.*

Proof. Correctness requires $p = A$. The installed route requires $A = 1 - p$. Together they give $p = 1 - p$, which has no solution in $\{0, 1\}$. Equivalently, each possible forecast is false after its receipt: $p = 0$ produces $A = 1$, and $p = 1$ produces $A = 0$. $\square$

This standard feedback argument does not identify a contradiction in deterministic physics. It identifies an inconsistent conjunction of a particular response policy, timely disclosure and exact predictive success. Every actual run of a deterministic inverter is perfectly consistent. The forecaster’s promise fails on that run. Adding more precision, faster calculation or a complete description of the inverter cannot supply a fixed point that its response function lacks. Ismael expressly distinguishes this mechanism from finite computational limitations and from an intelligence outside the predicted interaction (Ismael, 2016, pp. 171–173).

The timing and resource clauses matter. Reading, decoding and issuing the contrary command must fit within the deadline and actual energy, memory and actuator budgets. A disclosed bit that arrives after commitment is not an input to this response. A blocked read route leaves the receiver’s previous policy in place. An involuntary movement may not possess two callable alternatives. The proposition establishes no general ability to defeat a forecast under such conditions. Nor does it show that a reflective intention always reaches its actuator: that is an implementation question of the kind isolated by the acquisition, assessment and commit routes above.

14.2 Consistency depends on the receiver’s policy

For a deterministic receiver $A = d(p)$, exact disclosed prediction requires a fixed point $p = d(p)$. The complete finite classification is simple:

Receiver policy	$(d(0), d(1))$	Correct disclosed messages
Always zero	(0, 0)	0
Follow the forecast	(0, 1)	0, 1
Oppose the forecast	(1, 0)	none
Always one	(1, 1)	1

Only opposition lacks a fixed point. The table classifies consistency of the displayed forecast–response relation; it does not promise that a forecaster can find a fixed point whenever one exists under arbitrary additional laws or resource limits. It also makes clear why announcing a forecast need not defeat it. A compliant receiver can help make it true. Ismael acknowledges both secret correct forecasts and revealed forecasts that are borne out (Ismael, 2016, p. 188). The obstruction is therefore to universal exact success across the admitted responsive policies, not to every particular successful prediction.

Example 14.2 (A correct hidden forecast). Let a retained input be $B \in \{0, 1\}$. At the earlier forecast stage set $P = B$ in a register without a read path to the action selector. At the later action stage let the installed policy produce $A = B$. For either input, $P = A$. Both equations and their schedule are deterministic. Forecasting succeeds because recording P does not introduce the contrary-response relation into the action route.

Keeping the forecast hidden is not a failure of determinism or a mysterious restraint on the agent. It changes the information-access contract. If a new channel is opened and an inverter installed, one has changed the causal organization being predicted. A purported prediction of the modified organization must include those modifications. Holding a prediction fixed while installing a new receiver policy is not holding the whole physical preparation fixed. Conversely, holding an entire deterministic history fixed already holds its receiver policy, message and response fixed together.

There are also different prediction targets. A forecaster might correctly report the receiver’s policy, correctly forecast its output conditional on either possible message, or correctly forecast what it would do without disclosure. None of those achievements is the unconditional exact forecast of the action after disclosure prohibited by Proposition 14.1. For the inverter, the conditional forecasts are particularly easy: each possible message has a completely determined response. The unavailable achievement is choosing a message that both identifies and survives that response. Knowing how a process reacts and possessing a successful way to inform it of its own reaction are different interface capacities. This distinction also prevents a misleading inference from unpredictability to intellectual depth: an elementary circuit suffices, while a sophisticated deliberator can remain predictable in cooperative circumstances.

The same distinction limits claims about probability forecasts. Suppose a disclosed message is a probability $r \in [0, 1]$, rather than a forecast action bit, and the receiver uses an independent random source to satisfy

$$\mathbb{P}(A = 1 \mid r) = 1 - r.$$

Calibration of that message requires $r = \mathbb{P}(A = 1 \mid r)$, hence $r = 1 - r$. The forecast $r = 1/2$ meets the requirement exactly. This is a counterexample to the claim that every probability forecast can be defeated by probabilistic opposition. It is not a theorem that every stochastic response rule admits a calibrated fixed point. Such existence results need additional assumptions on the response map. Calibration also differs from predicting the realized bit correctly on every trial.

14.3 A prediction can become part of what it describes

This distinction helps clarify the acquired self-model. The retained account $\hat{R}(C, S, D) = C \oplus \hat{b}SD$ predicts a nominated recommendation generator. When $\hat{b} = b$, changing the authority selector need not falsify that prediction: the generator can continue to emit the same recommendations while their role in action changes. The object predicted and the variable revised are different. A forecast of the final behavior, by contrast, must track whether assessment has installed the old or revised authority route, whether compensation operates, and whether the practical actuator record is calibrated. A correct prediction under the old policy cannot simply be reused as a law of the deployed revised controller.

A self-description that enters assessment is consequently more than an observational readout. Its realized record becomes part of the controller’s causal state. This does not make all accurate self-description self-defeating. The direction of the effect depends on what the receiver actually does with the description. A report register without write authority can remain causally ineffective. A helpful forecast may reinforce a plan; a mistaken forecast may prompt correction; a disclosed point forecast may meet an opposing policy. Each case requires its own route, task and comparison. The relevant lesson is to include uptake and application when specifying the predicted mechanism.

The comparison with Ismael should preserve her strongest limitations. She uses the predictor argument to challenge the thought that global laws stand in an agent’s prehistory as a separate enforcing agency, and proposes a distinction between local laws and global laws of temporal evolution (Ismael, 2016, pp. 175–181, 186–190). The finite obstruction does not itself prove that metaphysics of law. A view with governing deterministic laws can also describe an inverter and deny that a universally correct disclosed forecast exists for it. Logical entailment does not automatically provide a physically available prediction token, and logically equivalent descriptions are not automatically interchangeable within causal chains. The fixed-point proof establishes the needed limitation without that stronger

inference. Ismael herself notes possible irreducible global constraints in general relativity and the incompleteness of deeper physics (Ismael, 2016, pp. 181, 233).

Nor does counterprediction create ultimate authorship. The person or device might have received its contrary policy through training, programming or manipulation. It can defeat a disclosed forecast while lacking any authorship of that policy’s enabling basis. Conversely, a person who has good reasons to cooperate with a forecast need not be less self-governing because the prediction succeeds. Informational resistance, practical agency, historical ownership and ultimate self-authorization remain different targets.

Ismael’s language of a subsystem having a last say is strongest as a claim about its response to incoming information (Ismael, 2016, pp. 178–180). It should be read alongside her explicit rejection of complete self-creation and agreement that we do not choose our entire constitutional basis (Ismael, 2016, p. 193 n. 2; p. 204 n. 16). Her practical alternatives also compare different contributions of the agent while keeping its environment fixed, rather than fixing the complete world including the agent (Ismael, 2016, p. 230 n. 9). These distinctions allow a constituted participant’s prediction-sensitive conduct to remain real without converting a feedback limitation into independent origination.

15 A local, finite realization of the recognition transaction

The recognition model can be followed through an explicit computation without treating recognition as a disembodied operation. Acquisition writes records, an assessment computes a candidate, an installation changes the active selector, and a fresh case recruits that selector through a physical action route. The construction below supplies a finite spatial and temporal realization of those functional relations. It does not identify a manufactured device that has already passed the required tests. Its contribution is to make those tests and their resource requirements concrete.

15.1 Bank, interfaces and chronology

Let Y be the task target and let the cue C have the stipulated accuracy $q > 1/2$ in the admitted task family. The actual recommendation generator remains

$$R = C \oplus bSD,$$

where S is the nominated ownership tag, D the relevant context, and b a retained generator coefficient. The coefficient is not directly available to the executive. The active assessment and compensator produce

$$T = C \oplus \lambda(R \oplus C), \quad T' = T \oplus k(T \oplus C).$$

The practical self-record P describes an actual actuator coding J . In the calibrated domain $P = J$, so the appropriate command is $Y \oplus J$. Actual availability K is protected separately: the output is

$$(\text{valid}, a) = (K, K(T' \oplus P)).$$

Thus abstention is distinguishable from a valid zero command. Removing the irrelevant ownership override does not remove the body’s action mapping or create an unavailable actuator.

The specified bank has $M = 31$ bits. Its fixed generator, task and control registers are

$$B, C, D, S, P, K, \lambda, k, \text{commit}, \text{read_open}.$$

Here B stores the physical value b . Five probe registers hold c_p, d_p, s_p, r_p, u_p ; three acquisition registers hold $R_0, R_1, \hat{b}$; three installation registers hold ω, n, d_i ; and ten remaining registers hold $R, u, \Delta, T, e, T', w, a, \text{valid}, v$. The last v is a report, distinct from the installation. Helper registers start at zero, with $c_p = 0, d_p = 1, s_p = 0$ as the prepared probe references. The full inventory is independently inspectable in the executable implementation.

The executive has the nominated probe and assessment routes, rather than unrestricted inspection of this physical inventory. Two actual generator probes at common $C = 0, D = 1$ and $S = 0, 1$ give retained return records R_0, R_1 and $\hat{b} = R_0 \oplus R_1$. The `read_open` control gates the physical copying of returns into those records. Its clamp can block acquisition while leaving the actual generator unchanged. In the stated task family, the candidate selector is $\lambda_{\text{new}} = \lambda_{\text{old}}(1 - \hat{b})$, retaining the current selector on the $\hat{b} = 0$ tie. The circuit implements this nominated assessment. Its physical correctness does not independently establish the family assumptions or the evaluative justification for that assessment.

Fresh C, D, S, P, K arrive after acquisition and installation. Their bank destinations remain ready at zero beforehand. Each is then copied through a named local boundary port from an incoming classical source carrier, which is preserved. The five source bits, the actuator context J , the target Y used in scoring, and the source law producing the cue are not included in the 31-bit bank count. Their preparation and availability belong to the declared apparatus and boundary contract.

15.2 Changing authority while retaining the previous selector

An explicit reversible installation prevents loss of current authority from being confused with destruction of ancestry. Let ω, n, d_i initially be zero. First copy λ_{old} into ω . Two reversible gates compute

$$n = \omega \oplus \omega \hat{b} = \omega(1 - \hat{b}),$$

and two further CNOTs compute $d_i = \omega \oplus n$. A Toffoli controlled by `commit` and d_i then updates λ . Finally uncompute d_i and n using the unchanged $\omega, \hat{b}$.

Proposition 15.1 (Archived installation). *On the ready-helper domain, this subroutine returns its helpers to zero, retains $\omega = \lambda_{\text{old}}$, and installs $\lambda = \lambda_{\text{old}}(1 - \hat{b})$ when `commit`=1. When `commit`=0, it retains $\lambda = \lambda_{\text{old}}$ while preserving the same acquired record and report.*

Proof. Before installation, $d_i = \lambda_{\text{old}} \oplus n$. A committed controlled toggle therefore sends λ_{old} to n ; a clamped toggle leaves it unchanged. Neither operation changes the inputs used to uncompute d_i, n . Every elementary gate is reversible on its complete raw register space, including states outside the ready-helper domain. $\square$

For $\hat{b} = 1$ and an open commit route, both old selector values lead to $\lambda_{\text{new}} = 0$. A reversible implementation must retain their distinction somewhere if all other final records agree. One archive bit attains that conditional requirement. This is an application of the inherited receiver-capacity and archived-policy reasoning (Rodgers, 2026j, Theorem 3.1 and Appendix C.4), not a new erasure theorem. Future action can cease to depend on ω under the declared action grammar while its value remains recoverable. Opening a later archive-read route would change that grammar.

The complete transaction uses 55 logical gates: 23 Toffoli, 30 CNOT and two NOT gates. The fresh generator R remains computed after the authority revision. Acquired description, report, active selector and compensating monitor remain separate physical variables. This permits read, commit and monitor-lapse controls to test different causal claims.

15.3 Local compilation and its exact count

The compilation methods are inherited reversible-computation and routing methods applied to this transaction. For a finite protocol of L source-disjoint single-target writes on m bits, each using COPY, a constant, or NAND of two distinct sources, L ready history bits suffice for a reversible history lift. Copy the old target to its fresh history bit, clear the target by CNOT from that bit, then compute the new value. COPY and constant writes need at most one additional gate. NAND of two distinct sources needs NOT followed by Toffoli. Thus at most $4L$ NOT/CNOT/Toffoli gates act on $m + L$ bits while retaining the overwritten distinctions. This bound states a finite memory cost, not efficient unlimited reuse of a ready archive.

To make spatial locality explicit, consider a gate with support at $p_1 < \dots < p_s$ on a path of M carriers, with $s \leq 3$. Stable extraction into the first s positions uses

$$Q = \sum_{j=1}^s (p_j - (j-1)) \leq s(M-s)$$

adjacent SWAPs. Execute the gate with the original control and target roles, then undo the extraction. This uses $2Q+1$ operations and restores every logical label to its site. The generic history lift consequently has the crude local-span-two bound $4L[1 + 6(M-1)]$. Neither this bound nor the following exact count is claimed optimal.

Native three-body interactions are unnecessary. Write $X|z\rangle = |z \oplus 1\rangle$ for the NOT unitary and I for the identity. Let

$$V = \frac{(1+i)I + (1-i)X}{2}, \quad V^2 = X.$$

A Toffoli with controls a, b and target t is implemented, in temporal order, by

$$CV(b, t), \quad \text{CNOT}(a, b), \quad CV^\dagger(b, t), \quad \text{CNOT}(a, b), \quad CV(a, t).$$

For fixed basis control values, the target receives the power

$$b - (b \oplus a) + a = 2ab$$

of V , while the controls are restored. The resulting target operation is X^{ab} . Linearity proves the full unitary, including arbitrary target superpositions. This is the standard controlled-square-root decomposition (Barenco et al., 1995, Lemma 6.1, arXiv manuscript pp. 14–15); it is also checked here on all eight basis columns with exact Gaussian-rational arithmetic.

The transaction becomes 147 one- or two-site operations: 46 CV , 23 $CV^\dagger$, 76 CNOT and two NOT gates. A pair gate at distance d is made adjacent by $d-1$ SWAPs, executed, and restored, costing $2d-1$ windows. The actual compiled word uses 1,839 nearest-neighbor windows. Its simple worst-case bound is $2 + 145(2M-3) = 8,557$ for $M = 31$.

Late input acquisition is included explicitly. The fresh destinations C, D, S, P, K occupy sites $1, \dots, 5$. Bring each ready destination to site zero, copy its arriving bit from the neighboring external source carrier, then restore the route. This adds

$$\sum_{j=1}^5 (2j+1) = 35$$

windows. The complete timed bank protocol therefore has $G = 1,874$ local windows, together with five paid source-availability events.

The supplied executable checks all 1,024 combinations of the ten input/control bits, including closed read and commit routes. It checks the full 1,839-window quantum route, and

independently the post-audit ingress version, using exact Gaussian-rational sparse amplitudes. Final states agree with the logical transaction, retain the old selector and clean the declared helpers. The separate generic routing check covers 8,466 gate/state cases through six carriers. These executions supplement the decomposition and routing proofs; they do not validate the source semantics.

15.4 Finite strength, scheduling and retention

The local circuit admits a conditional apparatus realization in the standard unitary framework. Put $\Pi_- = |-\rangle\langle -|$. For a duration τ , example pulse generators are

$$\begin{aligned} H_X &= (\pi\hbar/\tau)\Pi_-, & H_{\text{CNOT}} &= (\pi\hbar/\tau)|1\rangle\langle 1| \otimes \Pi_-, \\ H_{CV} &= -(\pi\hbar/2\tau)|1\rangle\langle 1| \otimes \Pi_-, & H_{CV^\dagger} &= (\pi\hbar/2\tau)|1\rangle\langle 1| \otimes \Pi_-, \\ H_{\text{SWAP}} &= (\pi\hbar/\tau)\Pi_{\text{antisymmetric}}. \end{aligned}$$

Here $\Pi_{\text{antisymmetric}}$ projects onto $(|01\rangle - |10\rangle)/\sqrt{2}$. Their exponentials give the nominated gates by the two relevant eigenspaces. Every interaction is one-site or adjacent-pair, with norm at most $\pi\hbar/\tau$. Choosing $\pi\hbar/\tau \leq J_{\max}$ gives a finite-strength schedule. This is a resource statement about this construction, not a general quantum speed limit or a heat/work identity.

The pulse matrices alone are insufficient. An actual device must prepare the records, generate and distribute controls, hold archives, supply input carriers and execute the output before its deadline. A fixed calendar prevents data-dependent completion time from becoming an uncharged observation. A simple representation of its gate word uses at most four opcode bits and five site-address bits per window, hence at most $9G = 16,866$ ROM bits and an eleven-bit instruction counter. The physical clock, driver state, source tape, readout, actuator and power apparatus remain additional resources. These are upper bounds for one specified control representation, not minimum hardware counts.

Control distribution must also obey its actual delay and jitter limits. The calendar can be preloaded in local drivers or distributed through a paid bus with a sufficient fixed guard interval. With gate duration τ , guard interval τ_g , source waiting T_{acq} , readout T_{out} and a nominated hold T_{hold} , one conservative calendar is

$$T = G(\tau + \tau_g) + T_{\text{acq}} + T_{\text{out}} + T_{\text{hold}}.$$

An ideal sequencer is part of an open driven apparatus contract. A closed description must include its loading and retained degrees of freedom. The inherited autonomous-clock endpoint construction does not establish permanent records or these deadline guarantees (Rodgers, 2026j, §13).

Computational-basis inputs permit classical copying by CNOT; a general unknown superposition would become entangled instead. Intermediate CV gates are coherent, so their implementation errors must be controlled with correlated references. The earlier smooth Boolean-cell and finite Gaussian constructions (Rodgers, 2026f, §7 and Appendix B) provide different physical refinement contracts. Their classical well-error constants cannot be reused as bounds on these coherent gates.

15.5 A whole-transaction error certificate

For states write $D_{\text{tr}}(\rho, \sigma) = \frac{1}{2}\|\rho - \sigma\|_1$. Treat an instrument as a channel that retains its classical outcome in the output. Its half-diamond distance from another instrument is

$$d_\diamond(\mathcal{E}, \mathcal{F}) = \frac{1}{2} \sup_{R, \rho_{AR}} \|[(\mathcal{E} - \mathcal{F}) \otimes \text{id}_R](\rho_{AR})\|_1,$$

where the supremum includes finite reference systems and joint density operators. This tests errors on correlated inputs, not only isolated basis preparations. Suppose initial preparation has half-trace error η_{prep} . At window j , suppose the applicable actual history-conditioned instrument differs from its ideal by at most ϵ_j in half diamond norm on every history reached by the ideal/actual replacement construction, uniformly over the retained memory and reference inputs. A bound only on actually observed transcripts does not supply this uniform premise. Let additional budgets cover source/port discrepancies, clock/control error, the full finite holding interval and readout, without counting a physical event twice. The inherited hybrid argument gives

$$\text{TV}(P_{\text{actual}}, P_{\text{ideal}}) \leq \min \left\{ 1, \eta_{\text{prep}} + \sum_{j=1}^{1874} \epsilon_j + \eta_{\text{port}} + \eta_{\text{clock}} + \eta_{\text{hold}} + \eta_{\text{out}} \right\}. \quad (6)$$

Replace the initial state and one complete instrument at a time. Trace distance contracts under the remaining channels, and the uniform diamond bound applies despite retained correlations. Summing the replacement errors and finally reading the transcript proves the displayed bound (Rodgers, 2026j, Theorem 13.1). This is an inherited theorem applied to the explicit schedule, not a new noise law. In particular, archive holding is a bound over the nominated interval, rather than an endpoint assertion or indefinite identity claim.

At $q = 3/4, b = 1$, with independent fair S, D , independent of (Y, C) within that fixed class, and $K = 1$, the old uncompensated rule has accuracy $5/8$ and the revised rule $3/4$, an ideal gap $1/8$. Complete-arm transcript errors at most $1/32$ each preserve a realized gap of at least $1/16$. No such laboratory error rate is assumed achieved. At fixed fair actual mapping J , masking the practical record to $P = 0$ instead gives accuracy $1/2$, while setting $P = 1 - J$ gives $1/4$. Those checks distinguish preserving useful self-information from deleting the self-model.

Locality imposes a further limit. With gates of span at most r , a fresh input at distance d cannot affect an output in fewer than $\lceil d/r \rceil$ layers, absent prior source-dependent advice or a bypass. Induction on the backward circuit cone proves this statement; for the adjacent-pair library $r = 1$. Recognition changes which available route governs action. It does not make a missing actuator, a memory lifetime or a communication deadline disappear.

The physically relevant achievement is the continuity of the explanation across its stages. A probe produces a retained difference; a specified comparison uses it; the commit operation changes an operative route; and a later input is transformed through that route while practical self-information remains available. Every stage has a finite carrier and a place in the calendar. The external source and controller are external to the nominated bank, not external to reality. Their contributions can be incorporated into a larger causal inventory without introducing another chooser behind the update.

The correspondence remains conditional on the source family, stable generator coefficient, calibrated cue law and actual implementation contracts. The executed circuit therefore demonstrates the proposed functional distinction between representation, compensation and authority revision. It does not establish that a human undergoes the same computation, that this apparatus understands its constituting ground, or that it constitutes a complete experiencing occurrence. Those stronger interpretations require the independently defended semantic, psychological and constitutive premises rather than an additional label on the same gate word.

15.6 One causal history across different temporal orderings

A physical account of retained understanding need not appoint a universal present at which the entire organization is updated. Its acquisition, assessment, installation and action can

instead be located in one causal history. A finite consistency result makes this statement precise. It concerns the nominated physical organization; it assigns no mathematical state space to the unknown constituting ground.

Let $(E, \prec)$ be a finite partially ordered set of operation events. Assume a placement in time-oriented Minkowski spacetime, with finite gate regions, future-directed register transport and actual control routes. The ordering includes the causal dependencies of these routes; genuinely spacelike operations cannot supply one another's inputs. Existence of such a placement is a premise, rather than a claim that every abstract finite partially ordered set has this realization.

Let the finite physical register space be

$$\Sigma = \prod_{r \in \mathcal{R}} \Sigma_r.$$

An event e has support $S_e \subseteq \mathcal{R}$ and a map $F_e : \Sigma \rightarrow \Sigma$ that reads only S_e and leaves every other register unchanged. Support includes controls, clocks or context variables on which the operation actually depends, as well as its targets. Shared register operations are ordered. In particular,

$$e \parallel f \implies S_e \cap S_f = \emptyset, \quad (7)$$

where $e \parallel f$ means incomparable. Thus incomparable operations commute. Each event's record is a fixed function of its label and its local before-and-after values. A physically retained record has a named carrier included in the support, with its subsequent holding and transport specified. A transcript annotation alone is not a retention mechanism.

External values are fixed boundary preparations or enter through named ingress events. An adaptive protocol must first specify its finite conditional operations, or condition on a declared branch. Unlisted external timing or branch information cannot supply an extra dependency.

Proposition 15.2 (Consistency under causal reordering). *Under these premises, any two linear extensions of $\prec$ give the same final register map and the same map from physical event labels to their local records, for every admitted initial state.*

Proof. Two adjacent incomparable events e, f have disjoint supports. Executing e does not change the values read or recorded by f , and conversely. Hence their local records and their joint output state agree in either order. The same prefix and suffix therefore produce the same records and final state after this adjacent swap.

Any two linear extensions are connected by such swaps. To see this, take the first event f of the target extension. Every event before f in the other extension is incomparable with it: a predecessor would contradict the target order, and a successor would contradict the other order. Move f left by adjacent swaps, remove this now-common first event, and apply induction to the remaining finite partially ordered set. Each swap preserves the asserted outputs. $\square$

This is the standard adjacent-incomparable-swap argument, applied to the recognition history. The records agree by event identity, not by their positions in a serialized list. Intermediate global register descriptions may differ. Nor does every abstract linear extension have to arise from one inertial frame. Every actual temporal slicing that respects the declared causal history is covered; additional extensions can remain algebraic bookkeeping orders. No slicing is selected as a cosmic now.

An exhaustive finite instance. Two independent CNOT probes copy $X_0 = u$ and $X_1 = u \oplus b$ into ready return registers R_0, R_1 . A later local combination computes $h = R_0 \oplus R_1 = b$. These source values define the admitted return family; the calculation does not independently certify their interpretation. The authority event, with ready archive $\omega = 0$, performs

$$\omega \leftarrow \omega \oplus \lambda, \quad \lambda \leftarrow \lambda \oplus j\omega h,$$

where j is the commit control. Thus, on the ready domain,

$$\omega = \lambda_{\text{old}}, \quad \lambda_{\text{new}} = \lambda_{\text{old}}(1 - jb).$$

Both raw updates are reversible; their inverse executes them in reverse order. Five preserved incoming source carriers are then copied into ready C, D, S, P, K destinations at an explicit ingress event. The fresh action event reversibly computes

$$R = C \oplus bSD, \quad (\text{valid}, a) = (K, K(C \oplus \lambda_{\text{new}}bSD \oplus P)).$$

These expressions describe the ready-output domain. The raw operations use XOR writes, so the old distinction is not erased outside that domain.

The six-event order is

$$\{p_0, p_1\} \prec x \prec i \prec q \prec a_f,$$

with only p_0, p_1 incomparable: combination x , installation i , ingress q , and fresh action a_f follow both probes. Event-local before-and-after records are XOR-copied into dedicated ready log bits and never subsequently overwritten. This simplified example uses 22 data bits and 62 explicit log bits; those additional logs are not part of the earlier 31-bit bank count. Its classical basis preparations permit these copies without postulating a copier of unknown quantum states.

The executable enumerates both linear extensions and all $2^9 = 512$ preparations of $(u, b, \lambda_{\text{old}}, j, C, D, S, P, K)$, comparing every final data bit and retained event record in 1,024 executions. It also reconstructs each complete initial state by reversing the execution and checks 2,080 raw local gate-input cases. The two probe orders arise in two inertial frames of an explicit placement: in units $c = 1$, the event centres are $(t, x) = (0, -3), (0, 3), (4, 0), (5, 0), (6, 0), (7, 0)$, with $y = z = 0$. Finite boxes of temporal and spatial half-width $1/20$ remain mutually space-like for the probes and strictly timelike ordered for every other pair. This checks causal room for the history, conditional on actual mediators realizing the gates.

The support premise matters. On one shared qutrit target z , let A exchange 0, 1 and B exchange 1, 2. From $z = 0$, A then B gives 2, whereas B then A gives 1. These reversible operations cannot be treated as unordered spacelike gates of this model. The counterexample exposes a missing causal order; it supplies no legitimate superluminal implementation.

The earlier routed bank as one particular history. The 31-bit, 1,874-window apparatus has a specified serial gate word inside a bounded worldtube. It supplies a particular totally ordered case, not a universal foliation of reality. A clock's proper time along an actual carrier can coordinate its local schedule; this is ordinary physical ordering, not another time in which the block is projected or advanced.

For adjacent sites separated by ℓ , a required newly available input cannot influence the other site in a duration $\tau < \ell/c$. Consequently $\tau \geq \ell/c$ is a necessary gate-signalling condition. It is not a hardware certificate: the nominated two-site Hamiltonian must be implemented through actual local fields or mediators, with controls, preparation, return paths and holding included. A serial causal chain also needs guards adequate for communication between successive gate regions, possibly across the bank; the adjacent-site bound alone does not

supply those guards. The finite-strength pulse bound and finite-speed bound are separate requirements. Enlarging durations or guards leaves the compiled gate count unchanged but can increase the holding interval and accumulated implementation error. The earlier holding and conformance budgets must therefore be justified anew for the enlarged physical schedule; they are not certified merely by the unchanged count of 1,874 windows.

Where the gate maps are bijective, a full state at a cut through the complete declared register inventory, including retained incoming source carriers, together with the fixed operation calendar determines earlier and later states. Equivalently, an open bank can be treated conditionally on all external ingress and control values. The cut follows a specified downward-closed set of events and intersects each retained carrier once. A bank-only state cannot determine fresh port values omitted from its inventory. Actual archives can preserve overwritten authority while later action uses its replacement. Reordering compatible spacelike operations does not change that history's records. Physical retention still requires the declared holding contract over the finite interval. These results establish consistency within a nominated history without a global now or external projector; they prove neither eternalism nor a relativistic quantum-field realization, and they do not assign phenomenology or rule out an irreducible personal initiating power.

16 Conscious participation without an independent owner

A constituted individual can be a real participant whose understanding changes how life proceeds. Bodily organization, practical memory, learned interpretation and commitment make a difference to what that individual can notice and do. Their dependence does not place the real activity elsewhere. If the relevant processes constitute the person's understanding, their activity is the person understanding. The question of experience then concerns how this organization is lived, not whether a further owner stands behind it to receive its products.

Shadow Theory proposes that experiencing is manifested through organized perspectives within the same reality that constitutes their physical activity. Its foundational quality, provisionally called awareness, is not another executive mechanism. Nor does a shared ground make every occurrence part of one universal scene. The positive account concerns particular organizations through which experience and action occur. Their boundaries, current content and continuity require an explicit constitution rather than an inference from common membership in reality.

16.1 The constitution applied, rather than silently revised

The supplied Shadow Psychophysical Constitution applies to a certified realization R^* . That specification identifies physical components and states, actual interaction routes, native timing, available operations and records, operating contexts, resource compatibility and process provenance. It also supplies the constitutive selection doctrine. A bare transition matrix does not determine all those fields: the monograph's finite symmetry obstruction shows why one cannot generally extract a uniquely privileged factorization from the matrix and its measure alone (Rodgers, 2026m). A descriptive grouping, an investigator's measurement panel and the proposed experiential organization are therefore separate objects.

The published A0 describes awareness as the knowing aspect of U , reality prior to the operational source/readout distinction. Its accompanying explanation denies a cosmic personality, universal scene or separately acting force. The later ground-quality clarification distinguishes the unsymbolized ground, the unsplit denoted by U , and the provisional quality attributed to the ground; it does not identify foundational awareness with recognition or thought. Its formal relation to the published wording remains open (Rodgers, 2026o). No

equivalence between the formulations or completed amendment to A0 is asserted here. The agency proofs use neither wording of the awareness premise; the conditional experiential applications retain the supplied A0–A3 constitution.

A1 assigns a localized perspective to a qualifying maximal internal strongly connected component. Qualification requires an executable covering return and at least two distinct native predictive classes in the occurrence’s actual native operating/protocol type and resource context. The return must belong to one physically executable, compatible schedule. Edges that could operate only in mutually exclusive contexts do not supply it. Maximality is an explicit individuation law: overlapping recurrent subassemblies within an admitted core receive no additional perspectives under the present constitution.

This law is deliberately permissive. A genuinely realized one-bit self-return process can qualify when the complete certificate holds. Neither a rock’s mere existence nor a diagram of a feedback loop supplies that certificate; equally, minimality is not an unstated disqualification. Requiring rich interpretation, autobiographical reflection or a particular biological organization as a universal entrance condition would revise A1. Whether the current law identifies nature’s lower boundary remains a substantive question.

A2 identifies a qualifying core’s phenomenal relational organization with a structural copy of its complete endogenous predictive object over all physically admitted finite continuations. The actual point is the image of its realized intrinsic predictive class. The copy preserves native operation and outcome labels, finite test laws, compatible horizon restrictions and well-defined class transition instruments. Predictive-fibre congruence is required; agreement about observable traces alone need not yield the relevant successor-class instrument. Within this constitution, apart from primitive presence, no further manifested qualitative fact is postulated (Rodgers, 2026m).

A3 concerns process continuation. A qualifying core C continues as D at the next native cell when physical process provenance links them, C has exactly one qualifying successor D , and D has exactly one qualifying predecessor C . Episodes are maximal chains of these links. A genuine qualification gap, branch or merger ends predecessor episodes; renewed qualifying occurrences without continuation begin new ones. Gradual replacement can preserve a nonbranching process despite disjoint endpoint matter. Copying memory supplies information continuity, not automatically this process relation.

Given the certified finite inputs and A0–A3, the completion theorem determines the assignments. The theorem’s determinate answer is conditional on its input and laws. It is not a universal realization selector or empirical certification of those laws. The present agency construction neither strengthens A1’s admission rule nor supplies a new phenomenal map. Its contribution is to make some relevant organizational changes and their causal interpretation more assessable.

16.2 Recognition changes an authority relation within a perspective

A practical self-model and the authority granted to it have different roles. The model can preserve bodily calibration, memory, obligations and plans while a particular self-related recommendation loses an unwarranted priority. Understanding the source of that recommendation need not erase the information required for acting. It can change how the information participates in judgment. This is the positive target of recognition: a continuing individual can acquire a more adequate relation to its own operative processes.

The acquired self-mechanism model in the present construction has a limited but inspectable warrant. It predicts an independently specified part of the system’s own recommendation-producing activity, is retained, and is actually used in assessing whether to retain or revise a governing route. This is more than verbal assent. It is also more

specific than a correct description disconnected from action. The separate read, assessment, installation and fresh-action tests identify how acquired information becomes consequential. They establish a minimal functional instance of recognition, not phenomenal understanding or human psychological liberation.

There is nevertheless a conditional connection to the existing consciousness law. The developmental work already observes that two actual intrinsic states of an independently certified core lie in different native predictive classes if one common admitted finite native experiment distinguishes their laws (Rodgers, 2026k, §10.3). Applying A2 then assigns different pointed phenomenal organization. That implication is inherited, not a new proof of consciousness. Its interpretive premise is A2, and the experiment must belong to the nominated native contract rather than a freely added external interrogation.

Accordingly, an acquired interpretation or changed authority route can matter to an assigned perspective when it changes the relevant native organization or actual predictive point. It does not follow that the person explicitly experiences every stored record, model coefficient or counterfactual disposition. Retained scaffolding, its current causal contribution and current experienced content remain distinct. A2 makes a strong proposal for relating organization and phenomenal character; its adequacy must be assessed against independently warranted features of experience rather than protected by relabeling every discrepancy.

The same distinctions prevent functional success from determining subject identity. A person may revise a governing disposition while the qualifying process continues under A3. A different implementation can reproduce the fresh-action policy without inheriting the same episode. Conversely, the persistence of a useful self-model does not prove uninterrupted experience. Failed recall and nonresponse alone establish neither a genuine gap nor its absence. Recognition, practical identity and experiential continuity answer connected but different questions.

16.3 Contribution to a complete occurrence is not its individuation

A teacher can help form a learner's understanding without teacher and learner thereby sharing one experiencing occurrence. A book, retained tool or relationship can change a later performance without becoming part of its complete subject. These contributions may be indispensable to that performance; indispensability alone does not settle phenomenal inclusion. Common ground makes their interaction immanent, but supplies no rule that every contributing activity must be presented together.

The boundary work supplies exact reasons to keep the claims separate. Informational deletion loss, executable native return and distance from permitted disconnected simulators are different quantities. An encoded return can occur along an actual circuit while a suitably resourced disconnected simulator reproduces its admitted trace laws. Schedule-relative candidates can overlap without furnishing one executable covering schedule for their union (Rodgers, 2026i, §§4–5). Thus neither statistical synergy nor individually available connections establish one complete occurrence. The present recognition mechanism requires actual control and intervention correspondence, but cannot promote that correspondence into a new subject-selection principle.

The relational-appearance work makes the corresponding bearer issue explicit. Evidence that a current relation appears, evidence that action is based on that appearance, and a principle placing its qualitative mode in the concrete performance are distinct warrants. If the experience-inclusive act is identical to the physical performance, identity substitution transports its mode. Causal contribution, containment and faithful transmission do not establish that identity by themselves. An exclusive-bearer rival can grant current sensory basing and the physical action route while disputing that the qualitative mode belongs to the whole performance (Rodgers, 2026h, §4); (Rodgers, 2026n, §§8.10,9.5).

The present argument consequently offers a useful orientation rather than a completed boundary solution. It allows a complete experiencing occurrence to be investigated without an independently existing owner behind it. It identifies the actual organization, operative distinctions and process history to which a proposed law would apply. It does not remove Chalmers's subject, quality and structure questions, or prove that a shared basis solves them (Chalmers, 2016). Nested or overlapping perspectives remain questions for a justified successor law if the present A1 maximality rule is rejected.

16.4 Relationships, commitment and the continuity of practical agency

Participation develops through relationships that alter what an individual can understand and do. A learned interpretation can make a neglected option available; a commitment can organize a future project; inquiry can reveal that an established response no longer deserves its former authority. The resulting capacity belongs to the learner's current organization even though its acquisition was relational. The teacher is not thereby the continuing author of every later exercise. Neither is the learner an independent creator of the conditions through which learning became possible.

These developmental differences should remain substantial. Transparent persuasion, direct overwriting, coercive restriction and deceptive evidence supply are not morally or causally equivalent because they occur within the same reality. The public agency work's protected acquisition records can investigate whether a change passed through actual assessment and installation routes during a specified interval. Present proximal success alone cannot recover a provenance difference absent from every accessible state and future law (Rodgers, 2026f, §8.2). A manipulator can even preserve internal auditability while controlling the evidence entering it. Trust therefore concerns relationships among sources, opportunities for correction and actual access, as well as the learner's current plasticity.

Recognition can improve those relationships by making reliance more discriminating. It need not make every commitment provisional at every moment. A person can understand a constraint and retain it, or undertake a justified commitment that reduces future options. The relevant freedom concerns how understanding participates in assessment under actual conditions, not maximal revision frequency or an indiscriminate refusal of limits. The learning work's distinction among representational capacity, produced candidates, selection and validation helps explain why more elaborate models and more updates do not guarantee better judgment (Rodgers, 2026l).

Conscious participation also does not make moral standing proportional to reflective competence. A being can have interests and vulnerability without the modeled ability to revise a rule. A competent agent can use its capacities badly. Normative assessment must therefore consider what a person understood, controlled, owed and could reasonably learn, with additional ethical premises. The account of constitution explains how those capacities and relationships can be real together; it does not derive their moral ranking from a transition table.

The resulting view is positive without introducing a universal proprietor of experience. Particular perspectives can develop through retained organization, encounter one another and transform their manner of acting. Where the constitutive laws are adequate, the activity is lived through the qualifying perspective itself. Its understanding belongs within the same reality as its causes and consequences. That understanding can change participation without supplying either an escape from constitution or a proof that the complete-occurrence problem has been solved.

17 Authorship, recognition and consequential participation

17.1 Does a thin mechanism explain understanding?

The finite mechanism is deliberately less than a theory of human understanding. A lookup table can encode its selected policy. Indeed, the direct neutral-write arm matches its raw performance without self-mechanism acquisition. The positive claim concerns the organization of a particular route: a retained model is acquired from the actual process it represents, predicts fresh cases, is used under an independent criterion and contributes through a real installation path. Those relations are demonstrated; richer semantic and phenomenal interpretations are not.

A skeptical rival can ask whether a model-free learner, a different causal representation or broader access obtains the same selectivity more cheaply. The exact value theorem does not answer that broader comparison. It states its candidate rules, phase boundary and costs. Its constructive significance is that self-mechanism understanding can have an identifiable practical role while its necessity for raw success is false. A universal claim that understanding is indispensable would have been weaker because the example itself refutes it.

The correspondences between the logical, evaluative and physical constructions are equally explicit. They share the generator, retained estimate, authority selector, archive and fresh-action equations. The selective rule is justified by the declared q, H, c inequalities; the physical circuit implements that finite decision under those constants. The 1,874-window schedule executes one audit, installation and one fresh case. The $H = 4$ reward ledger concerns a four-case future block, not four cases within that count. A physical four-case implementation needs additional input, output, holding and restoration resources, or a larger history lift; those costs must enter any device-level value comparison. The local schedule does not derive the chosen reward prices or demonstrate positive net value for a manufactured apparatus. The noisy diagnostic, expanded-generator and relapse extensions also require their own paid implementations; their formulas do not inherit the 1,874-window count.

For human applications, the predictions are therefore discriminating hypotheses rather than reported findings. A correct self-account should predict nominated fresh responses; model-read disruption should affect assessment if the model is being used; an installation disruption should preserve the account while blocking its later effect; and removing a compensatory support should distinguish downstream cancellation from a changed authority relation. Useful practical memory and legitimate protections must be tested alongside improvement. Similar intact outcomes can arise through different routes, and psychological interventions may not isolate those routes cleanly. Nothing here reports such an experiment or justifies diagnosing a person from a verbal statement.

17.2 Does realization turn the person into a spectator?

The spectator conclusion assumes that a cause explained through physical organization is no longer the person's act. Common constitution offers the contrary interpretation: the relevant organization is how the person acts. A detailed explanation can distinguish deliberation from bypass or deviant causation instead of replacing deliberation with an alien actor. The present circuit establishes a minimal functional route, not sufficient conditions for every intentional action. Human authorship also involves appropriate reasons, capacities, circumstances and histories.

This interpretation remains available in deterministic and indeterministic models. Deterministic explanation is not explanation of an outcome occurring regardless of inquiry; it can explain an outcome occurring through inquiry. Counterfactual tests compare different admitted preparations or operations under a common contract, rather than holding an entire

complete world fixed while changing one of its parts. Indeterminism, conversely, does not make a random fluctuation the independent author. An agent-causal account can insist that the person settles the result; an event-causal account can identify self-forming effort with its indeterministic resolution. Both owe an account of attribution and control. Neither is excluded merely because the choosing capacity was received.

The irreducible-settler objection consequently survives at exactly the point it should. If successful, it changes the account of present choice. It does not retrospectively give the person authorship of all the conditions under which that power exists. Nor does a realized mechanism's predictive adequacy prove token-causal constitution beyond its tested regime. The paper's positive account is compatible with disagreement about that further metaphysical claim.

17.3 Why this is more than renaming conditioning

Conditioning describes an origin or dependence; it does not specify present authority. A retained experience can inform judgment, serve as a threat cue, remain inaccessible, or automatically override relevant evidence. These are different organizations of the same preserved information. The new construction identifies acquisition and application routes that distinguish them. In its costed task, understanding supports retention when appropriate and revision when worthwhile. In its relapse model, retained description can outlast its practical use. The dependence of each process does not make the differences unreal.

The distinction also prevents a romantic interpretation of freedom as unlimited openness. A commitment can properly close options; a protection can be necessary; available resources can warrant postponing inquiry. The inherited revision-preservation fixed point describes one way to preserve future auditability, but it is not a universal obligation never to make an irreversible commitment. What matters is the quality of assessment and its actual circumstances, not a maximum rate of amendment.

Unpredictability supplies no shortcut to this conclusion. Krumm and Müller distinguish temporal prediction limits from their proposed computational sourcehood, whose strongest structure-preservation claim remains a conjecture (Krumm and Müller, 2023). The organizational alternatives considered by List likewise concern an agency level requiring its own control account (List, 2025). Anderson's supplied undated manuscript distinguishes levels of freedom, but its stronger cosmic claims lack the physical derivation needed here (Anderson, n.d.). A novel or unpredictable action can still lack ultimate self-authorship; a predictable action can still express a person's competent judgment.

17.4 Responsibility and meaning

The absence of ultimate self-creation does not make truthfulness, care, teaching or repair inconsequential. Their reasons can concern affected people, commitments and future capacities. The present account identifies processes through which those reasons can matter. It does not derive an ethical theory from a transition kernel or identify success at a task with moral goodness.

Historical ownership can deepen through criticism, acknowledgment and retained commitment without becoming authorship of the whole developmental basis. A person's capacities can be socially formed and genuinely exercised by that person. Conversely, shared constitution does not excuse manipulation or erase the difference between understanding and imposed compliance. Those distinctions concern actual routes of acquisition and control as well as further normative judgments. They are reasons to investigate conditions of agency, not to replace all accountability with either absolute desert or passivity.

The positive interpretation is consequently concrete. Understanding can change what a recommendation is permitted to do. Memory can remain while an old rule loses priority. A relationship can become a retained competence without becoming an ongoing external controller. The individual is an organized participant whose acts have consequences through that organization. Their reality does not depend on having first created the whole basis from which they arise.

18 Conclusion: a participant's changing relation to its constitution

The strongest supported account joins a limit on ultimate independent self-authorship to a positive mechanism of understanding and change. Constitution does not place action outside the person. It locates action in the organization through which the person exists. A complete history can contain development, deliberation, commitments and altered conduct. Its completeness does not make those relations idle or supply a second author acting instead of the participant.

The cumulative negative argument has explicit carrying premises. A full actual occurrence contains its act. This differs from uniqueness across histories with complete earlier data fixed. Relativistic geometry constrains simultaneity and causal order; eternalism requires an ontological bridge. Neither common constitution nor a block representation alone excludes a dependent settler. Forward uniqueness suffices to exclude a different future act under the same complete prior data; inherited well-founded authorization obstructs ultimate self-establishment under its own premises. Evidence from independently identified realization and intervention can support a comparative preference for the realized account. Exclusion of a further irreducible initiating relation still requires token-causal constitution; agreement of intervention laws alone does not establish it.

The source-readout framework explains how local access differs from a complete description without turning every difference into absent agency. In the exact history ensemble, the participant learns its source mechanism while remaining uncertain about a fresh target. Later access permits exact command prediction without perfect knowledge of success. This connects global completeness to local acquisition. It establishes neither objective indeterminism nor an illusion of all temporal experience.

The selected-benefit formula also identifies when diagnostic error is systematically associated with different later tasks. It preserves the stated noisy advantage under the explicit stability condition and correctly predicts failure under the checked context coupling.

The positive account is acquired, selective authority revision. The mechanism, retained account, evaluative criterion, write route and fresh action are separately specified. Understanding earns a role when it supplies evidence relevant to whether a recommendation should govern action. It can warrant retention as well as change. Calibrated practical information, memory, relationships and commitments can continue to guide conduct. The achievement is answerability of authority to its grounds, not unrestricted revision.

The block-compatible literature strengthens that claim. Hoefer contests an unwarranted explanatory privilege of a distant boundary. Brennan correctly requires a positive account beyond symmetric entailment; the realized transaction supplies a limited functional instance without upgrading parameters into ultimate sources. Ismael explains how deciding can constitute a judgment belonging to the organized person while accepting that this is not self-creation all the way down. Thyssen's hypothetical and actual bundles require different modal interpretations; the compatibility results expose obligations for either selection account.

The new mathematics makes those obligations checkable. Full-slice parameterization does not establish fragmentary determining power. Individually available alternatives need not

form a legal joint profile. Infinite successive feasibility requires a further completion argument. An exact disclosed forecast can fail against an installed opposing policy while hidden forecasts and calibrated probability forecasts remain possible. Compatible spacelike operations can preserve the same event records across temporal orderings under explicit support and causal conditions. These are applications of established mathematical ideas, not a purported new general theorem of freedom.

Physical realization remains substantive. The retained circuit is checked through its actual compiled routing with the same single-audit, single-fresh-case scope. Finite strength, transport, ingress, holding, clock resources and implementation error remain explicit. Relativistic placement adds finite-speed and mediator obligations rather than a manufactured hardware certificate. Prepared memories and restricted access explain limited temporal asymmetries in these models; a general explanation of human temporal phenomenology needs further evidence.

The awareness interpretation and A0–A3 constitution remain distinct from these operational results. The unknown Ground is not identified with spacetime or a finite source. A local present is proposed as an organized occurrence involving retention and anticipation, rather than a global slice or external sweep. The complete-occurrence problem remains open at the level of psychophysical adequacy, including the wider nested or overlapping possibilities. Agency contributes organizational evidence but does not select subjects by itself.

Freedom through recognition can therefore name a definite achievement. A participant understands a feature of its activity, examines its claim on conduct, and retains a changed or reaffirmed relation to it while continuing to act. That understanding remains conditioned. Its consequences can nevertheless belong to the person whose organization carries the inquiry. This is meaningful participation without a promise of ultimate self-creation.

Research status and independent review. This manuscript is a research preprint for independent critical review. It has not undergone external peer review. No publication, submission, manufactured-device test, human experiment or external certification is claimed. Independent philosophical, mathematical, computational and empirical review is invited, particularly concerning the modal comparison, causal constitution, semantic correspondences, comparator grammar, physical implementation and experiential individuation.

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A Retained operational foundations

The following results retain the first draft’s useful control and developmental machinery. They are inherited theorems, standard specializations or previously constructed examples, rather than discoveries of the present revision. Their purpose is to make the positive account independently inspectable: a constituted organization can acquire information, regulate a plant, assess a rule and retain an operative consequence. None of these results alone establishes phenomenal presence, ultimate self-authorship or moral authority.

A.1 Observation, task compatibility and control

Let Θ, H, A be nonempty finite source, record and action sets. An observation channel $Q(h \mid \theta)$ is fixed for the experiment. Let $\ell_\theta(a) \geq 0$ be regret, with $\min_a \ell_\theta(a) = 0$, and let a

policy $\pi(a | h)$ have access only to the record. Define

$$R(Q, \ell) = \min_{\pi} \max_{\theta} \sum_{h,a} Q(h | \theta) \pi(a | h) \ell_{\theta}(a). \quad (8)$$

If actions change the observation law, that active-sensing process must first be included in the policy tree. It cannot silently be treated as this fixed channel.

Proposition A.1 (Inherited task-compatibility criterion). *$R(Q, \ell) = 0$ exactly when every possible record h has*

$$\bigcap_{\theta: Q(h|\theta) > 0} \operatorname{argmin}_{a \in A} \ell_{\theta}(a) \neq \emptyset.$$

Moreover

$$R(Q, \ell) = \max_{\lambda \in \Delta(\Theta)} \sum_h \min_a \sum_{\theta} \lambda_{\theta} Q(h | \theta) \ell_{\theta}(a).$$

Proof. The finite-dimensional policy space is a compact product of simplexes. Finite minimax applied to its bilinear risk against λ gives the displayed dual; for fixed λ , minimization separates over records. A common optimal action at each record makes every risk zero. Conversely, at a zero-risk optimum every nonnegative term $Q(h | \theta) \pi(a | h) \ell_{\theta}(a)$ vanishes. Every action with positive policy mass at h is therefore optimal for every compatible source; at least one such action exists. $\square$

This is Theorem 2.2 of [Rodgers \(2026j\)](#). Reconstructing the entire source, recovering a target and selecting a common optimal action are different demands. Pairwise compatibility is insufficient: with one record and loss matrix I_3 , each pair of rows shares a zero-loss action but the three rows do not. The minimax risk is $1/3$, attained by uniform randomization. Garbling a record cannot improve the risk with actuators and resources held fixed, because every garbled policy can be simulated from the original record.

A blind reversible SWAP, $(x, 0) \mapsto (0, x)$, regulates an unknown plant while retaining its old value in a receiver. Conversely, exact knowledge of x cannot reset a nonzero plant if identity is the only actuator. Lossy access consequently does not imply absent control, and complete knowledge does not supply a missing actuator.

A.2 Reversible retention and learned regulation

Let $x \in X$ have prior μ , and let a nondisturbing retained record have law $Q(h | x)$. A receiver starts in one ready state and has D available final states; all other scratch must be restored. The target plant set has size g . Admit all record-conditioned permutations, preserving h .

Proposition A.2 (Inherited receiver capacity). *The exact maximum target probability is*

$$p^* = \sum_h \operatorname{Top}_{gD}((\mu(x)Q(h | x))_{x \in X}),$$

where Top_s sums the s largest entries, or all entries if fewer are present.

Proof. For fixed h , distinct ready inputs require distinct outputs, and only gD outputs place the plant in the target. Their total input weight is at most the largest gD weights. Map those inputs injectively to target outputs and extend the finite partial injection to a permutation of the full register space. Repeating for each unchanged record attains the sum. $\square$

This is the finite counting theorem in [Rodgers \(2026j, Theorem 3.1\)](#), not a thermodynamic or efficient-synthesis law. Its record premise is essential: an exact bit record $h = x$ allows $(x, h) \mapsto (x \oplus h, h)$ to reset with $D = 1$. The displaced distinction remains in h ; a blind-capacity bound cannot be applied as though it were absent.

The first draft's calibration example makes acquisition consequential. Let $y = Ax$ on $\mathbb{F}_2^2$, with independent uniform x and uniform unknown $A \in \text{GL}(2, 2)$. Retain labeled calibration images, then one immutable live reading y . The actuator only translates $x \mapsto x \oplus u$, with u computed from admitted records; no additional source-sensitive read, advice or live receiver SWAP is available.

Proposition A.3 (Preserved calibration example). *The optimal average reset probabilities after zero, one and two labeled basis probes are respectively $1/2, 3/4, 1$.*

Proof. With no probe, $y = 0$ identifies $x = 0$ with probability $1/4$. Every nonzero reading leaves the three nonzero sources equally likely, giving optimum $1/4 + (3/4)(1/3) = 1/2$. After learning $Ae_1 = v$, readings $0, v$ identify their sources and account for half the inputs. Each other reading leaves two equally likely sources, giving $1/2 + (1/2)(1/2) = 3/4$. Both basis images determine A ; compute $u = A^{-1}y = x$ and translate. $\square$

Because A, y remain retained, temporary control scratch can be uncomputed while the old source distinction survives in the reading. The example is an application of the private monograph's orbit-calibration methods. It counts probe access and success, not globally optimal memory, gate count or physical acquisition time.

A.3 When an organized description supports its own transitions

For a finite instrument $K^u(x; r, y)$, normalized jointly over record r and successor y , a surjection $\phi : X \rightarrow Z$ supports an exact projected joint record/macrostate instrument for all preparations if and only if

$$\sum_{y: \phi(y)=z'} K^u(x; r, y) \text{ is constant on every fibre of } \phi \text{ for each } u, r, z'. \quad (9)$$

Preparing point masses proves necessity; the common row defines the quotient and induction proves sufficiency. This marked controlled-lumpability condition is used in [Rodgers \(2026i\)](#). Agreement of output marginals alone need not preserve record/successor correlations required by later adaptive action.

For deterministic F_u , statewise closure requires ϕF_u constant on fibres; every resulting quotient row is a Dirac measure. This does not forbid stochastic predictions from incomplete preparations. With F exchanging x_2, x_3 and fixing x_1 , and $\phi(x_1) = \phi(x_2) = 0, \phi(x_3) = 1$, a uniform lift of 0 gives next-macro probabilities $(1/2, 1/2)$ but returns to 0 certainly after two steps. Independently relifting after each step would instead predict two-step probability $3/4$. The one-step lift is not statewise autonomous closure.

A.4 Evaluative revision and finite inquiry

The inherited charter writes $\chi = (q_{01}, q_{10}, d)$, with $f_\chi(0, 0) = 0, f_\chi(1, 1) = 1$ and mixed-case outputs q_{01}, q_{10} . The bit d determines read order. Put $q = (q_{01}, q_{10})$ and $h = (h_0, h_1)$. A retained record $z = (a, b, s, h_0, h_1)$ supplies

$$L_z(q) = \mathbf{1}\{q_{01} \neq a\} + \mathbf{1}\{q_{10} \neq b\} + 2s\mathbf{1}\{q_{01} \neq q_{10}\}.$$

For a case e , execution reads e_d first and stops only when both completions of the unread consideration give the same output; otherwise it reads the second bit. Let $r(\chi, e) \in \{1, 2\}$ count those reads. The eight-character scan minimizes the lexicographic key

$$(L_z(q), \mathbf{1}\{q \neq q^{\text{old}}\}, r(\chi, h), \mathbf{1}\{d \neq d^{\text{old}}\}, q_{01}, q_{10}, d).$$

It therefore retains an equally good current conditional rule before optimizing retained-case read cost. One past case supplies no generalization guarantee for an unknown future distribution. The invariant that the saved candidate has the smallest examined key proves optimality. Installation leaves the ordinary action register untouched; a changed mixed-case bit changes later behavior on a fresh separating case. These are comparative commitments, not a derivation of moral value (Rodgers, 2026f, §3).

Proposition A.4 (Inherited information and endorsement bound). *Suppose two contexts endorse disjoint amendment sets A_0, A_1 . Inquiry laws H_i produce installed laws $P_i = H_i K$ through one common downstream kernel. For $\epsilon_i = P_i(A_i^c)$,*

$$\max(0, 1 - \epsilon_0 - \epsilon_1) \leq \text{TV}(P_0, P_1) \leq \text{TV}(H_0, H_1).$$

Proof. $P_0(A_1) \leq \epsilon_0$ and $P_1(A_1) \geq 1 - \epsilon_1$ give the lower bound by testing A_1 . A common stochastic channel contracts total variation, giving the upper bound. $\square$

The common-kernel premise excludes a free context bypass. Read and installation cuts test mediation, but not endorsement: installing the opposite of a read bit can have the same intact/cut contrast while systematically violating the declared commitment.

For conditionally independent reads $Y_j = z \oplus N_j$, $N_j \sim \text{Bernoulli}(\nu)$, $0 < \nu < 1/2$, with no advice or bypass, the minimum worst-case error of a definite binary installation within $n \geq 1$ reads is

$$R_n(\nu) = \sum_{k > n/2} \binom{n}{k} \nu^k (1 - \nu)^{n-k} + \frac{\mathbf{1}\{n \text{ even}\}}{2} \binom{n}{n/2} [\nu(1 - \nu)]^{n/2}. \quad (10)$$

Equal-prior likelihood testing gives majority's Bayes lower bound; observing all n reads can simulate any stopping policy. Odd majority has the same error in both contexts, attaining minimax. Binomial expansion gives $R_{2k} = R_{2k-1}$, so the preceding odd majority attains even caps. At $\nu = 1/4, n = 3$, error is $5/32$ and the fresh-probe contrast is $11/16$ (Rodgers, 2026f, Theorem 5.2). Shared errors can remove the repetition gain; finite common positive-support reads cannot provide zero error for disjoint endorsements.

A.5 Preserving revisability and retaining an earlier relation

Let G be a finite configuration set satisfying a fixed local audit certificate. Let $N(p, z)$ be the amendments endorsed in retained context z . After transcript h , let $Z_p(h)$ contain every compatible context. A zero-error definite installation into X must have executable output support inside

$$\bigcap_{z \in Z_p(h)} [N(p, z) \cap X].$$

Positive output mass outside that intersection produces error in a compatible context; an executable supported kernel is sufficient. Let $C_B(p, X)$ mean that the installed dispatcher can execute a charged bounded query/installation tree satisfying this condition at every leaf. With stable contexts during audits, exact finite operational semantics, all relevant resources in state and a policy class closed under continuation composition, put

$$W_0 = G, \quad W_{j+1} = \{p \in W_j : C_B(p, W_j)\}, \quad W_\infty = \bigcap_j W_j. \quad (11)$$

This is exactly the set from which some admitted procedure preserves the certificate for every compatible sequence of future audit contexts (Rodgers, 2026f, Theorem 4.2). At the finite fixed point, attaining trees return into the set, proving sufficiency by induction. Any set Y supporting the guarantee must have first-audit trees returning into Y , hence lies in every W_j by induction. Stabilization takes at most $|G|$ strict removals. Finite lifetime fuel must be modeled; a replenished per-audit budget is a separate assumption. The guarantee does not require every possible amendment path to preserve capacity, or make preserved auditability necessary for every agentic commitment.

Finally, the inherited two-register update $m' = z$, $z' = m \oplus u$ retains an earlier parity θ through installation $(m, z) = (0, \theta)$. Inputs $0, q$ give $(0, \theta \oplus q)$ after two ticks. The first two zero-input records distinguish all four states. Replacing z initially by a fixed θ -independent value destroys that route only if every other accessible state and future input is independent of θ and no displaced-value archive is available. Under those premises fair- θ recovery is bounded by $1/2$; restoring the register rescues exact performance (Rodgers, 2026k, §10). Static installation of the same parity also succeeds. The earlier parity-to-charter teaching convention is therefore an illustration of retention and rule use, not evidence that a learner recognized its own constitution or that live dialogue has an absolute advantage over sufficient-state transfer.

A.6 Present causal authority and historical evidence

Lemma A.5 (Inherited boundary-law limit). *If two histories induce the same complete present sufficient-state law, the same future boundary law conditional on that state, the same controlled joint record/successor instruments, and the same admitted operational/intervention grammar, every subsequent finite adaptive test has the same transcript law under those histories.*

Proof. The initial laws agree. Conditional on corresponding histories, a common testing policy chooses the same operation and the two models use the same joint record/successor kernel. Multiplication and summation preserve the joint history/state law. Induction reaches the finite stopping horizon. $\square$

This is the public agency paper’s Proposition 8.1. It is an identifiability limit, not a denial that acquisition history matters. Protected longitudinal records, an accessible archive or a changed boundary law change the premises. Different global reversible histories need not yield the same complete global state merely because their current executive boundaries agree. An old policy can instead be swapped out of the active register and archived while a new policy controls future action. Preserved ancestry, executive accessibility and current causal authority are distinct. The operation does not create the new policy or its author independently of their constitution. Recorded audit-mediated adoption also leaves evidence-supply questions open: a manipulator can preserve internal revisability while controlling the information presented to it.

These preserved results are supported by their proofs and the portable first-draft verification baseline. The companion record distinguishes those earlier executions from the new recognition and implementation calculations performed for this revision.

B Verification and dependency summary

B.1 What carries the conclusions

Conclusion	Carrying premises	Status
No separately constituted personal author	Shared constitution of the individual, capacities and activity	Conceptual consequence of the hypothesis
No ultimate self-authorization	Inheritance requirement and well-founded authorization	Inherited formal obstruction; philosophical premises
No token-distinct initiating addition in a regime	Token-causal constitution	Additional philosophical premise; not implied by common ground
Adequate realized contrasts within a budget	Complete intervention-law conformance and bounded scores	Standard TV consequence, new application
Insufficient self-description cannot identify a target	Independently nominated target varying within a readout fibre	Inherited descent/completion theorem, new application
Acquired self-mechanism prediction	Stable declared generator family and actual noiseless probes	New finite construction and proof
Selective diagnosis advantage	Specified rules, closed audit grammar, source-blind comparator, actual common costs	New exact worked value comparison
Noisy advantage and maintenance law	Class-conditional task law; selected-benefit stability; conditional independent errors; declared maintenance events	New applications; unvalidated error/event premises
Local finite transaction	Ready records, specified local gates, paid ingress, controller, finite holding and deadlines	Exact compiled map; conditional apparatus contract
Conscious perspective and continuity	Certified native realization and actual A0–A3 laws	Inherited conditional constitution; empirical adequacy open
Freedom through recognition in people	Independent semantic, evaluative, causal and psychological correspondences	Philosophical proposal and discriminating hypotheses

Common-ground participation is an explanatory interpretation, not a new operational exclusion theorem. The self-description radius and target-completion applications are conditional consequences of inherited mathematics. Report/read/commit/monitor contrasts are discriminating predictions within the nominated model; whether human interventions instantiate them is empirical. Functional realization alone is compatible with several ontological interpretations.

B.2 Preserved transaction executions

All new finite checks use Python’s standard library and exact rational arithmetic; the local quantum circuit uses exact Gaussian-rational sparse amplitudes. The package contains code and emitted JSON. The checks supplement the written proofs and do not test metaphysical, semantic, psychological or consciousness premises.

Executable	Actual checked scope
<code>check_recognition.py</code>	32 prediction cases; 256 policy cases; 20 risk cases including $q \leq 1/2$; ten diagnostic arm values; eight raw reversible commit states; 165 value-of-diagnosis cases; four stationary examples. All assertions passed.
<code>check_noisy_recognition.py</code>	Ten paired-noise checks; 72 symmetric-value cases; two failing restricted-model classes; 32 fresh predictions after expanded-family identification; three open common-carrier rows. Exact advantages 1/16 and 1/256 reproduced.
<code>check_local_recognition.py</code>	1,024 Boolean transactions; 1,024 exact full quantum routes; 1,024 exact post-audit ingress routes; eight Toffoli matrix columns; 8,466 generic routing cases. Counts 31 bank bits, 55 logical gates, 147 expanded operations, 1,839 routed plus 35 ingress windows. All assertions passed.

The publication-candidate reproduction also reruns the selected first-draft scripts for the calibration frontier, quotient enumeration, noisy-majority values, public-agency arithmetic and finite countermodels. Their emitted JSON is compared with the preserved baseline. The old countermodel script includes floating-point information metrics; this does not change the exact arithmetic of the current recognition and history constructions. These selected reruns do not certify every inherited result or execution. The appendix retains the foundation proofs used here.

B.3 New history and spacetime executions

Executable	Actual checked scope
<code>check_relativistic_arguments.py</code>	2,500 interval, inverse-boost and causal-past covariance checks each; 480 future and 480 past timelike-order checks; 625 spacelike-bridge pairs; 15,625 causal triples; exact Rietdijk coordinates and proper times 8, 10.
<code>check_history_control.py</code>	All sixteen raw four-bit states, bijectivity of four complete slice maps, all four admitted ready preparations, two fixed-record command contrasts and dirty-target counterexamples.
<code>check_global_constraints.py</code>	38,877 finite maps checked against image/surjectivity counts and inclusion-exclusion; unary/pairwise/joint countermodels and finite pruning checks. It does not computationally prove the infinite compactness proposition.
<code>check_history_recognition.py</code>	All 64 complete paths and accessible partitions; exact mechanism, target and action prediction accuracies; 5/8 versus 3/4 under the newly declared conditioning; reversible memory counterexample and exact one-bit joint entropy.
<code>check_forecast_contracts.py</code>	All four binary response policies; disclosed opposition and hidden correct forecasts; 101 rational probability messages; sixteen recognition-generator cases, including behavioral forecasts made obsolete by revision.

Executable	Actual checked scope
<code>check_causal_order.py</code>	512 preparations in two linear extensions, giving 1,024 full 84-bit executions and reversals; event-labeled physical records; 2,080 raw local inverse cases; finite Minkowski event boxes and shared-support counterexample.
<code>check_trace_contract.py</code>	Eight state/input transition pairs, eight idle prefixes, 62 finite probe runs and the differing native SCC decompositions; no A1 certification claimed.

The actual runner and JSON report specify interpreter, execution time, script hashes and successful baseline comparisons. The current pass additionally checks 1,360 finite data/future/target-map cases, four exact conditioning models, and an independent reconstruction of the actual compiled word: 717 windows before ingress, 35 for ingress, and 1,122 after ingress. The general selected-benefit formula is checked against direct joint enumeration, including a correlation counterexample in which the noisy advantage becomes $-7/128$. A stationary coupling check gives accuracy 31/44 under the selector-conditional task law and 29/44 when that condition fails, with the same selector distribution. Mathematical proofs supply the general claims; enumeration checks finite instances. No simulation tests the truth of common ground, an awareness attribution, human insight or a phenomenal temporal flow.

B.4 Dependencies of the expanded synthesis

Conclusion	Carrying premise or proof	Classification
No frame-independent inertial simultaneity	Minkowski metric and Lorentz transformations for spacelike separations	Established special-relativistic geometry
Global common actuality from simultaneity closure	Unrestricted Minkowski domain; ontic closure under all eligible distant presents	Conditional geometric consequence with philosophical bridge
Vacuum development uniqueness	Smooth constraint-satisfying complete data; globally hyperbolic class; isometry quotient	Attributed established physical mathematics
Same-prior-data action exclusion	Future-target constancy on complete prior-data fibres, implied by forward uniqueness	Proved conditional result
Full history differs from current access	Declared source/readout maps; target-varying record fibres	Inherited theorem applied to histories
Acquired understanding within a complete path	Fixed finite source family; actual probe, assessment and ingress chronology	New exact worked connection
Record consistency across causal orderings	Correct dependencies and disjoint supports for incomparable events	Standard proof, new application
Memory asymmetry in the examples	Ready boundary, retained carriers and available read paths	Exact finite construction; wider physical explanation conditional

Conclusion	Carrying premise or proof	Classification
Local experiential present	Realization and A0–A3 plus additional psychophysical and empirical correspondences	Proposed experiential correspondence
No dependent irreducible settlement in every block	Not established by geometry, completeness or constitution alone	Open exclusion obligation

The bibliography and source-engagement record identify the supplied editions, duplicate Schaffer files and consulted author preprints. Current source checks are recorded separately from the inherited complete-corpus coverage. Hoefer’s original-text locators refer to his fully inspected 2001 author preprint. The maximal-development result is used through Sbierski’s inspected primary reconstruction, without claiming that the original 1969 article was recovered. No unavailable text is represented as read.

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