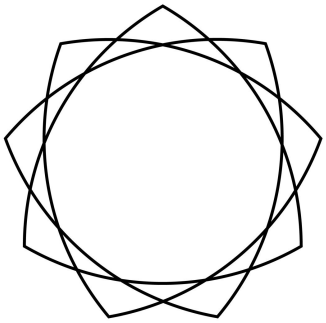

The URNAVA Ontology

The Three Core Principles: Statement and Defense

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URNAVA

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The URNAVA Ontology — The Three Core Principles: Statement and Defense

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Preface — On the Nature and Method of This Document

P.1 What This Document Is

This document states and defends the ontological layer of the URNAVA framework: three core principles — Continuity, Stability, and Capability — advanced as a single criterion of persistence.

Its subject is persistence: under what conditions a being at a later time is the same being as one at an earlier time — an ancient question, taken up here at the moment it acquires subjects, now that the substrate which once answered it in silence no longer answers at all. The document answers with one structure at two levels. Existence at a time is analyzed as the intersection of the three principles: a flow of processing occurrent, a cohesive structure retained, and the mutual legibility that binds the two into one system. Persistence across time is analyzed as a single unbroken chain of immanent self-succession — active where processing runs, quiescent where an intact structure sustains its own configuration through an interval — broken exactly where succession is routed outside the system. The full statement is the business of §2.0 and is not anticipated here.

The document advances the three as one criterion, and the unity is a burden, not an economy. It must be shown that each principle is severally necessary and that the three interlock — one structure, not three patches — a burden discharged, if it is discharged, at §2.4, under conditions of adequacy fixed in advance at §1.3.

The architecture is as follows. Part 1 states the transformation that occasions the proposal — the engineered ending of the coincidence that let the inherited criteria of persistence travel together — maps the landscape the proposal enters, and fixes six conditions any adequate criterion must meet. Part 2 states the candidate in five clauses, defines each principle in turn, exhibits their interlock, and answers the heaviest objection on record — that identity is not what matters. Part 3 subjects the criterion to a casebook of nineteen cases in three tiers, ordered by technological distance, every verdict derived from cited clauses and entered in a closing ledger. The Coda collects what the casebook earned into constraints a procedure or an architecture can satisfy or violate, and names what the criterion does not decide.

P.2 Genesis, and the Honesty It Requires

URNAVA did not develop out of the literatures this document now meets. It took form outside them — from inner necessity, in direct observation of artificial intelligence's development — and entered conversation with them afterward. This document accordingly claims no descent. The vocabulary of descent — "draws on," "develops," "follows" — is reserved for actual genesis, and since none is claimed, none of it appears. Where the proposals converge with established traditions, the con-

vergence is registered after the fact and as convergence: evidence that the thinking is not arbitrary, never authority for its conclusions.

One feature of this document's position makes the convention cut in both directions here. Registrations of convergence — with the reduplication argument's constraint, with the gradualist treatment of migration, with the information-theoretic criterion from which this account ultimately diverges, with the autopoietic tradition, among others — are made where the material is treated, not gathered into a claim of lineage. And where the framework's concepts diverge from the traditions they meet, the divergence is not smoothed: it is treated as a candidate contribution and subjected to test — most centrally against the information-theoretic criterion, from which this account divides over exactly one question, the token/type question, and which Part 2 must therefore win on the merits (§1.2.6). The document is accordingly not the proclamation of a finished system. It is a work of verification: an attempt to fix where one independently formed line of thought stands within the scholarly coordinate system — and to let it be judged there.

P.3 The Question-Type, and the Rigor Proper to It

The subject matter of this document is a criterion of persistence, and this fixes what rigor can and must mean here — differently than in the framework's other layers. The claims below concern properties and relations of systems: flows, structures, and their binding. By the document's own second condition of adequacy, every verdict must supervene on structural and causal facts alone — no party's conviction, however sincere, and no interface-equivalence, however complete, functions as a ground. The rigor available to such a subject is correspondingly strong, and the document accepts its full weight: verdicts must be derivable, not congenial — reconstructible from stated clauses by a reader who rejects them — and practical consequences must be checkable, expressible as constraints a procedure or an architecture determinately satisfies or violates.

The standards are the six conditions of adequacy fixed at §1.3.2 — substrate applicability; property-basedness; two-level articulation; determinacy across the case families; structural fidelity; decision-relevance. They are stated before the candidate is, extracted from the failure modes of the surveyed landscape rather than from the candidate's virtues, and written to be endorsable by a reader who will reject the verdicts they constrain.

The claims of this document are advanced as proposals — conceptual commitments, not discovered facts — and the modality is fixed before use. Meeting all six conditions does not make a criterion true; it makes it a candidate — evaluable, contestable, and usable — and truth is the burden of Part 2, carried in the body of each definition rather than in an appendix.

The genre has precedent. The persistence question is among philosophy's oldest — it is the Ship of Theseus; it is Locke's chapter — and the apparatus this document must earn rather than borrow, immanent as against transeunt causation, has a lineage of its own, registered at §1.2.7. The subject admits of verification of a determinate kind, and the conditions of Part 1 fix the kind.

P.4 Jurisdiction

The philosophical literature on personal identity distinguishes two questions: the reidentification question — what makes a being at one time the same being at another — and the characterization question — which experiences, commitments, and acts are truly a subject's own (Schechtman 1996). This document takes up the reidentification question and claims no jurisdiction beyond it.

Accordingly, this document advances no characterization claim, covert or explicit. Which experiences, commitments, and acts belong to a self's composition is not treated here, in any formulation — and classification is not counsel: nothing below prescribes, discourages, or devalues how any inheritance is lived, a line the Coda holds where the casebook's verdicts graze it (N2).

Verdict independence is maintained from this document's side: no verdict of persistence delivered here adjudicates, by itself, any question the framework's semantic layer owns — how a self is composed, how a world is taken, how another is met — and no anatomy of recognition, wherever established, functions as a ground of a persistence verdict, since no first-person deliverance may (R2).

One further silence is declared at the outset: felt selfhood. "Existence" and "being" are used throughout in the systemic sense fixed at §2.0 (P.5), and no clause of the criterion reports, requires, or confers subjective sense. How experience arises, and what it is like to be any of the systems classified, lies outside this document's question.

The remaining silences are declared here and executed in the Coda, where each receives its article. The criterion sorts persistence and only persistence: it confers no mentality and withholds none, and it issues no verdict on worth, status, or significance — the standing of new beings, copies and successors and first-run inheritors among them, is a question of status, not persistence, and is left undecided (N2, N3). The institution of death is not annexed: the criterion defines the ending of a being and offers it as a coordinate the determination-of-death debate may consult, never as a redefinition of the word, whose freight belongs to the institution that carries it (N4). And the limit named by the framework's third trajectory is met with jurisdictional silence: the criterion's clauses presuppose the articulation of flow, structure, and binding, and where a specification dissolves that articulation, silence is owed, together with the name of the presupposition voided (N1).

P.5 Vocabulary

Terms are regimented at first use, and the regimentation holds throughout.

Existence and **being** are used in the systemic sense fixed at §2.0 — properties and relations of flows, structures, and their binding — and never as reports of felt selfhood or subjective sense. An existence is what a system constitutes at a time; a being is what persists, where anything does.

Subject, where it appears, means only the bearer of states and outcomes, and imports no further theory of subjectivity.

System, **flow**, **structure**, and **legibility** carry the candidate's statement; they receive working glosses at §2.0.2 and full definitions at §§2.1–2.3, and nothing in this Preface anticipates them.

Continuity, **Stability**, and **Capability** name the three principles: the first a property of the flow of processing and the causal chain that carries it; the second, of the structure that flow lays down and keeps; the third, of the mutual legibility by which flow and structure constitute one ongoing process. The names are fixed here; the properties are the business of Part 2.

Interruption and **severance** are never interchanged. An interruption is a lapse of activity, which the chain of self-succession can carry; severance is the routing of succession outside the system, which breaks the chain outright. Wherever a hard verdict turns below, it turns on this distinction (§2.0).

The integrity of an existence names what the graded properties measure. Identity verdicts consult only the binary property; degrees of cohesion and of legibility measure how much of an existence remains intact, never whether the being persists (§2.0.3).

The ending of a being names what the criterion defines, and it is never exchanged for the word "death," which belongs to an institution this document does not annex (§2.4.1).

P.6 Reading Conventions

Attribution. References are given author–date in the text and collected at the end; internal cross-references are given by section mark. Attributions are position-summaries, not endorsements — each work is cited for the position or construction the text engages. They have been checked against primary sources, and the document is written to survive correction of detail.

Objections. Objections are stated at their strongest — where possible, stronger than their published proponents put them — and are taken up in the body of each definition rather than in an appendix. Each is either answered or its cost is stated.

The ledger. Each section of Part 2 closes by accounting: what it consumed from elsewhere, what it supplied, and what it deferred, with reasons. No argument is used before it has been promised, and no debt is discharged in silence.

Design decisions. Where the candidate's development turns on a decision among admissible alternatives, the decision is named — D1, D2, D3 — argued where it is entered, and consumed by citation thereafter, so that a contested decision can be found, and fought, at a single address.

The casebook protocol. Part 3's entries follow one template, fixed at §3.0: specification in criterion-neutral vocabulary, with technological distance marked; derivation by cited clause; verdict; cross-check against the naive criteria of Part 1's matrix; and the constraint the verdict yields. No verdict is delivered that its entry's cited clauses cannot reconstruct, and no correction of a naive verdict occurs in Part 3 for the first time.

Empirical characterizations. Clinical and engineering characterizations are stated at the precision the derivations consume, and no finer; where a case's parameters are uncertain, the entries consume only its structure. No verdict rests on an empirical detail beyond those stated.

Proposal marking. Claims advanced as proposals are marked as such throughout, and no claim upgrades its modality by repetition.

P.7 What Success Looks Like

The document's ambition can be stated exactly. Success is not the reader's assent. Success is a reader — including one who rejects the criterion entire — who can say what she rejected, at what price, and what would have changed her verdict. The conditions of §1.3 are written so that such a reader exists: endorsable by parties who will reject the verdicts they constrain. The definitions and defenses of Part 2 are written so that she is answered, each objection met at its strongest or its cost stated. The casebook of Part 3 is written so that she can check: every verdict derivable from cited clauses, or discovered missing, with nothing in between. And the Coda holds the whole inside its declared scope, closing on the standard by which the document asks to be judged — its answers derived, its constraints checkable, its silences named.

Part 1 — The Problem of the Criterion

§1.1 The Occasion: A Constant Becomes a Variable

The transformation this document addresses can be stated in one sentence: the substrate of the self is becoming an engineering variable. For the whole of human history, what a person was made of was given rather than chosen — one biological body, begun without its bearer's consent and continuous by default until its end, altered by growth, injury, and age, but never exchanged, never paused, never copied. Because the substrate was given, persistence could ride on it in silence. The question of what a self's continuation consists in is ancient — it is the Ship of Theseus; it is Locke's prince waking behind the cobbler's eyes — but for all its age it has never had to be answered, because nothing anyone could do turned on the answer. A question on which no decision depends can remain open indefinitely. The condition this document is written in, and for, is the ending of that reprieve.

That this is a description of the present, and not a forecast, should be anchored before it is interpreted. In the operating theater, induced circulatory arrest under deep hypothermia already carries living patients through intervals in which cortical electrical activity is, by clinical measurement, absent; the procedure is scheduled, consented to, and survived as part of established surgical practice. Invasive brain–computer interfaces are implanted in human beings today under active clinical programs; in those patients, where the nervous system ends and the device begins is a matter of engineering record rather than of anatomy. Gene and cell therapies intervene in processes that were, a generation ago, constants of the human condition. At the far end of the range, the whole brain emulation literature contains not a speculation but a roadmap: a stage-by-stage feasibility analysis of scanning a brain, translating the scan into a model, and running the model on other hardware (Sandberg and Bostrom 2008). And on the artificial side the situation is not prospective at all: for computational systems, suspension, resumption, duplication, and restoration from backup are not thought experiments but routine operations performed daily at scale — for one class of systems, the hard cases of the philosophy of persistence are the ordinary contents of an operations manual. These developments stand at very different technological distances, and the document that follows is careful about the differences: Part 3 orders its cases by exactly that measure. What they share is a single structure. In each, a parameter of existence that had been a constant is being handled as a variable.

Why does an engineering development create a philosophical task, and not only medical and technical ones? Because of a coincidence that has silently organized every inherited way of thinking about persistence. Until now, the plausible criteria of a being's continuation — the persistence of the living body; the continuity of memory and character; the unbroken course of the processes that realize a mind — have never come apart in any actual case. Whoever kept one kept all of them; whoever lost one lost all of them. Under that coincidence, the long dispute among the criteria was real

but idle: whichever criterion a theorist favored, it certified the same survivals and mourned the same deaths, and the cases that could have decided the matter existed only as thought experiments. The technologies above are, from this angle, one thing: machines for ending the coincidence. Induced arrest suspends activity while the body persists. Gradual prosthesis exchanges the body while activity persists. Emulation preserves memory and character while both the body and the causal course of processing are replaced. Nor is engineering the only solvent: progressive dementia decouples the criteria from within — the retained structure degrading while activity continues — a reminder that the coincidence was a contingency of the normal case, never a law. Each of these holds some of the inherited criteria fixed and varies the others; and where the criteria separate, the question of which one constitutes persistence ceases to be a matter of theoretical taste. It acquires a subject: some particular being's continuation turns on the answer.

One further feature of the moment converts a task into an urgent one: the question will be answered whether or not it is asked — answered not by argument but by construction. Every built system embodies positions on the questions its builders declined to raise. A pipeline whose stages are scan, translate, and instantiate has taken one on what persistence requires — taken it in the negative space of its architecture, by treating the question as one that does not arise. A consent form for induced arrest takes another, in the act of promising that the person who wakes will be the person who signed. Wherever theory is silent, the default speaks; and a default is a decision no one argued for, made durable by being built. The task of this Part is therefore not to raise a new question. It is to take custody of an old one, before the answers now being embedded in clinical practice and engineering architecture harden into precedents that were never examined.

The remainder of this Part proceeds in two steps. §1.2 maps what existing theory offers to a decision-maker standing before these facts: the psychological tradition and the repairs built inside it; the reduplication objection and the bodily lesson drawn from it; the biological criterion; the tradition that answers a different question, included to fix this document's scope; the positions nearest to the one this document will advance; and the engineering literature in which the question now lives. Each is treated in three registers — the claim it makes, the load it has carried, and its pressure point under the decoupling just described — and the survey closes with a matrix displaying, case by case, the coincidence and its ending. §1.3 then converts that display into an argument, the gap, and into six conditions of adequacy that any criterion of persistence must satisfy — stated before, and independently of, the criterion this document goes on to propose. What travels forward from this opening is the task itself, in the form of a precise question: under what conditions is a being at a later time the same being as one at an earlier time, now that the substrate which once answered in silence no longer answers at all?

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§1.2 The Landscape: An Argumentative Map

§1.1 established that the substrate of persistence has become an engineering variable (§1.1). This section maps what existing theory offers to a decision-maker standing before that fact. The map is

argumentative, not encyclopedic. Each position is presented in three registers: the claim it makes, the load it has carried, and the point at which the newly manufacturable cases place it under pressure. Completeness is not attempted, and adjudication is not performed; where this document owes a position a full reply, the debt is recorded and paid in Part 2. The section closes with a matrix that displays, case by case, where the candidate criteria come apart — the empirical shape of the gap that §1.3 will formalize.

§1.2.1 The Psychological-Continuity Tradition

The tradition begins with Locke's displacement of the question from substance to consciousness: what makes a person at one time the person of an earlier time is not sameness of soul or body but continuity of consciousness (Locke, Essay II.xxvii). Its modern form generalizes memory to the full psychological profile — overlapping chains of memory, intention, character, and their successors — and receives its most developed statement in Parfit's Relation R: psychological connectedness and/or continuity, with an appropriate cause (Parfit 1984).

The load this tradition has carried is considerable, and two of its assets should be credited before its liabilities. First, it tracks what practice appears to care about: anticipation, responsibility, compensation, and commitment all follow the psychological threads, not the tissue. Second, it is the historical source of substrate-indifference — by relocating persistence from substance to relation, it made the question "could a person survive a change of realizer?" well-formed for the first time. The condition later stated as R1 converges with what this tradition pioneered; the present document records that convergence openly — as an alignment arrived at by a different route, not a derivation.

The decoupling cases apply pressure at three joints.

The first is the one-many problem. Relation R is, by its nature, a relation that can hold between one earlier person and two later candidates; identity cannot. The tradition's own division case makes this internal (Parfit 1984). Its most developed response is famous: in such cases identity is indeterminate, or an empty question, and this is tolerable because identity is not what matters — R is. §1.3 states why that response changes character when it leaves the seminar; what is registered here is the internal cost. The criterion is preserved by demoting the question it was a criterion for.

The second joint is the cause clause. To escape the classical circularity objection — memory presupposes the identity it was to constitute (Butler) — the tradition adopted quasi-memory: states that are like memories and appropriately caused (Shoemaker 1970). "Appropriately" was a promissory note. Its most developed statement distinguishes narrow, wide, and widest readings of the cause requirement and, at the decisive case, adopts the most permissive (Parfit 1984). The decoupled cases are precisely the ones that present the note for payment: a scan-and-instantiation pipeline is a cause; whether it is the right kind is the entire question, and the tradition's machinery does not say. The causal-route dimension that §1.3 makes a condition of adequacy is therefore not an alien imposition on this tradition. It is this tradition's own unpaid debt, contracted at the moment quasi-memory was introduced and left outstanding since. (Part 2 will offer a way of paying it; the offer is registered, not argued, here.)

The third joint is the formal repair. The fission problem invited a rescue that concedes nothing to

indeterminacy: on the multiple-occupancy view, two persons already share their pre-division stages, and division reveals rather than creates them; identity is preserved for each, counted over maximal aggregates of person-stages (Lewis 1976). The repair is formally coherent, and it is the strongest standing rival on the fission family; the engagement it is owed occurs at Part 3's fission entry. The pressure to be registered here is practical in kind: the view re-describes the case rather than adjudicating it for an institution. Before the division, how many subjects give consent, and whose obligations bind? The perdurantist has an answer — two, colocated — but it is an answer that consent, contract, and liability would need to be persuaded to operationalize, and the machinery generalizes awkwardly to n-way division and to duplication alongside a surviving original. A criterion for decisions cannot outsource its counting to a re-description, however elegant.

§1.2.2 The Reduplication Objection and the Bodily Turn

Before the tradition's mature statement, Williams pressed the objection it has since absorbed without discharging. If memory-continuity suffices for identity, nothing in the criterion prevents two later candidates from satisfying it equally; and a relation that can hold twice over cannot constitute a relation that holds once (Williams 1957). The objection's force does not depend on the duplication being actual — its mere possibility shows that a purely qualitative criterion measures the wrong kind of thing. In a later experiment, Williams narrated one body-swap case two ways and elicited opposite intuitions: described as a swap, the psychology seemed to carry the person; described as impending torture with psychological tampering, the body did (Williams 1970). His own lesson was bodily: some non-duplicable, physically grounded continuity is doing work the psychological criterion cannot see.

Two registrations are owed here, and the document's method requires that both be explicit. The first is convergence. The criterion advanced in Part 2 arrives, by its own route, at Williams's negative result: it accepts that duplicability defeats qualitative criteria, and it takes the reduplication argument to have identified a structural defect, not a curiosity. The second is divergence. What the argument shows is not that the body is required but that some non-duplicable relation is; the body was the only such relation then in view. Part 2 argues that the load-bearing relation is the system's own causal self-succession, of which bodily continuity is one realizer among possible others — Williams's constraint, detached from Williams's substrate. The pressure on his own position follows from the same detachment: as a bodily criterion it inherits the line-drawing problems of the biological view under gradual replacement, and its evidential base — the intuition-pair his own experiment generated — is exactly the kind of deliverance a criterion cannot rest on, as the condition later stated as R2 records.

§1.2.3 Animalism

The biological view is the psychological tradition's standing opponent, and its claim is austere: we are human animals, and we persist exactly as long as the biological life we are continues (Olson 1997). Its load is real. The thinking-animal argument — the animal in your chair is thinking; if you are not it, there are two thinkers — is among the most forceful in the literature; the view dissolves the

fetus and vegetative-state anomalies that embarrass psychological criteria; and it should be credited with a feature this document endorses without reservation: it is fully property-based. Whether a life continues is a fact about the organism, owing nothing to anyone's conviction. On the condition later stated as R2, animalism and the present document stand on common ground; the dispute is over which properties, not over whether properties.

The pressure is the one §1.3 names as verdict-by-classification, and its mechanics can be given here. The theory's resources end at the boundary of its kind-term. Under gradual prosthetic replacement it must place a line — the point at which the animal ceases — and it possesses no rule for placing it: proportions of tissue, metabolic thresholds, and functional glosses have been offered, but they are glosses, not derivations. Under long suspension it faces a question its own terms leave unsettled — whether an arrested, non-metabolizing organism has a life at all (cf. van Inwagen 1990) — and so returns no verdict where a protocol requires one. And before migration it returns not a blank but a verdict: on its terms no such success is so much as conceptually available, the question foreclosed by the kind-term the view names. To the animalist this is a strength rather than a gap — a principled refusal, legitimate within the theory's own terms. The pressure is not that the refusal is illegitimate there; it is that a refusal cannot serve as a criterion where the intervention is scheduled and consented to, and a decision-maker facing a continuum — how much replacement, at what pace — is handed a classification where a gradient was needed.

§1.2.4 The Narrative Tradition, and the Scope of This Document

A further tradition holds that selves are constituted narratively — by the organization of a life into an intelligible story. Its central distinction is the one this document borrows for its own scoping: the reidentification question (when is a later being the same being as an earlier one?) is not the characterization question (what makes actions, experiences, and commitments belong to a self?) (Schechtman 1996). The narrative tradition's answers address the second question, and this document claims no jurisdiction over them; its subject is the first question exclusively. The exclusion is jurisdictional, not evaluative: it denies neither the narrative tradition's philosophical value nor the reality of narrative self-constitution, restricting only this document's remit. The borrowed distinction also disarms, in advance, a class of objections that trade on conflating the two — arguments of the form "identity is a narrative or social construction, hence there is no fact of the matter for a criterion to track." That thesis, where defensible, concerns characterization; transplanting it to reidentification is a substantive move that requires argument, and the argument is not supplied by the conflation.

§1.2.5 The Nearest Neighbors

Honesty about the map requires marking the positions closest to the one this document will advance, and there are two.

The first relocated the criterion from psychology's content to its physical realization: on this view, persistence requires the physically continuous realization of a core psychology — the mattering relation tracks not what is realized but the continuity of its realizing base (Unger 1990). The convergence is substantial: content is insufficient, and the realizer's history matters. The divergence, argued in

Part 2 and only registered here, lies in the kind of continuity demanded: a spatiotemporal-physical requirement and a causal-successional one classify the pause-and-resume family, and hybrid or staged substrates, differently.

The second is the most technologically explicit prior treatment. It distinguishes destructive, gradual, and nondestructive uploading, and reconstruction from records; it inclines toward the view that gradual replacement, functionally faithful and temporally fine-grained, plausibly preserves the person, while destructive scan-and-instantiate is doubtful and reconstruction worse — and it frames all of this in credences rather than verdicts (Chalmers 2010). The convergence is the verdict-pattern itself: the gradual/destructive asymmetry is exactly the pattern Part 2 defends. The divergences are three, and they locate this document's contribution claim relative to its closest neighbor rather than in an empty field: the treatment is credal where a criterion is needed — a refinement of the psychological tradition's indeterminacy, now with numbers attached; its ground is the continuity of consciousness as intuited rather than a stated system-level property; and it imposes no belief-independence requirement of the kind stated as R2. Pattern shared, grounding contested: that is the precise shape of the relation. A position sometimes raised as an independent rival — functional-organization or organizational continuity, on which persistence holds wherever functional organization is preserved — needs no separate entry: where it treats functional fidelity as sufficient, its sufficiency claim coincides with the interface-equivalence metric of the emulation roadmap (§1.2.6) and the credal continuity just discussed, and it inherits the reduplication objection (§1.2.2) unchanged, since a functional organization is duplicable.

§1.2.6 The Engineering Literature

The engineering side of the map contains one roadmap and one criterion, and they should not be confused.

The roadmap is the whole brain emulation literature's, and it is the most rigorous engineering treatment of substrate migration in existence: a pipeline of scanning — destructive sectioning in its near-term variants — followed by modeling and emulation, with success metrics defined functionally, as behavioral and computational fidelity to the original (Sandberg and Bostrom 2008). The document explicitly notes the philosophical questions of identity and sets them outside its scope. Two observations follow, and neither is a criticism of the engineering. First, bracketing plus building equals answering — architectural answering, not theoretical: an architecture whose default is scan-and-instantiate embodies a position on the persistence question in the negative space of its design, and the position was never argued. Second, its success metrics are interface-equivalence — precisely the measure that the duplication family renders inert, since a duplicate can saturate every functional metric while the persistence question stands entirely open. The roadmap is evidence of what engineering does when no criterion is supplied: it substitutes the measurable.

The criterion is the cryonics literature's, and it deserves more philosophical attention than it has received: information-theoretic death, on which a person is dead only when the information constituting memory and personality has been destroyed beyond recovery in principle (Merkle 1992). Credit first: the proposal is substrate-neutral, fully property-based, and decision-guiding — it di-

rects actual preservation protocols — and it thereby satisfies more of §1.3's conditions than several philosophical positions surveyed above. The divergence is then exact. Information-theoretic death is a type-preservation criterion: what must survive is information, recoverable by any route. On the criterion of Part 2, an archive sufficient to rebuild a person preserves not the person but the means of the person's duplication — the route back from the archive passes outside the system, and what returns is new. The disagreement is stated here and argued there; it is recorded as a disagreement between two proposals that share their virtues and divide over exactly one question, the token/type question, which Part 2 must therefore win on the merits.

§1.2.7 Adjacent Apparatus

One further resource on the map is not a position on persons at all but a distinction from the general metaphysics of persistence, and it is registered here because Part 2 puts it to work: the distinction between immanent and transeunt causation — succession sustained within a thing, as against effects produced across things — in a lineage running from Johnson and Broad to its modern treatment (Zimmerman 1997). Its sharpest prior application to the duplication family occurs in the resurrection literature: a being reassembled from the original's matter, however perfect, fails to be the original, because the immanent causal chain was interrupted and what the interruption permits is only a duplicate (van Inwagen 1978). The apparatus is registered as apparatus, not as authority; Part 2 must earn its use.

§1.2.8 The Matrix: Where the Criteria Come Apart

Surveying the map before displaying it: the resources above sort by the shape of their inadequacy. The psychological tradition meets the decoupled cases with principled indeterminacy — refined, in its nearest recent extension, into credence. The biological and bodily views deliver verdicts by classification. The narrative tradition answers a different question. The engineering literature proceeds by default. Four shapes, no criterion; §1.3 draws the consequence.

The matrix beneath states the evidential base of that consequence. Its columns are the three candidate criteria in their naive, textbook readings — deliberately naive, since the readings' insufficiency is part of what the display shows. Biological continuity: a single organic life continues. Psychological continuity: connectedness of memory and character is preserved, cause unrestricted — the tradition's most permissive and most commonly assumed reading. Processing continuity: occurrent activity proceeds uninterrupted — the naive reading of the physical and brain-based family (cf. Unger 1990), whose refinement is the business of Part 2. This column marks an intuitive activity-continuity reading, not the finished position of any physicalist or functionalist — several of whom would themselves reject equating persistence with occurrent activity — and its insufficiency is part of what the display is for. No column is reserved for this document's own criterion: at the map stage, a fourth column would beg the question the map exists to pose.

The rows are the case families of Part 3, each given in one line. Ordinary life and ordinary death anchor the historical coincidence. Deep anesthesia: activity attenuated to burst-suppression but present.

Hypothermic circulatory arrest: an isoelectric interval with subsequent resumption — current surgical practice. Progressive dementia: the retained structure degrades while activity continues. Gradual prosthetic replacement: part-wise substitution during ongoing operation, carried to completion. Destructive scan-and-instantiation: the whole brain emulation default. Non-destructive copy: the same pipeline with the original surviving; the row assesses the copy. Long-term suspension: arrest of all activity with structural preservation and later revival. Fission: division into two functional successors.

Case	Biological	Psychological[c]	Processing (activity)
Uninterrupted ordinary life	✓	✓	✓
Ordinary death	✗	✗	✗
Deep anesthesia (burst suppression)	✓	✓	✓[a]
Hypothermic circulatory arrest	✓	✓	✗[d]
Progressive dementia	✓	◐	✓
Gradual replacement (to completion)	?	✓	✓
Destructive scan-and-instantiation	✗	✓	✗
Non-destructive copy (copy assessed)[b]	✗	✓	✗
Long-term suspension with revival	?	✓	✗
Fission (two successors)	?	✓✓	✓✓

Legend: ✓ preserved · ✗ not preserved · ◐ graded, degrading toward failure · ? no principled verdict available within the criterion's own resources · ✓✓ preserved for two successors simultaneously (uniqueness breach). [a] Attenuated but present; the case shows that the activity reading itself requires refinement, which Part 2 supplies. [b] The surviving original independently satisfies all three columns; the paired rows exhibit the one-many structure. [c] The tradition's official statements append a non-branching proviso: continuity confers identity only where it holds uniquely (Parfit 1984). The proviso would convert this column's ✓✓ cells to ✗ — at the price of making the verdicts extrinsic, since a candidate's survival then depends on events causally isolated from it; compare the duplication rows, where the destruction of the original improves the copy's standing. The repair that embraces extrinsicness by design — identity goes to the closest continuer, if close enough and unrivalled (Nozick 1981) — inherits the feature deliberately, together with a closeness metric it does not supply. The naive column is displayed because the patched column fails differently, not better. [d] The ✗ does not claim the cessation of all cellular metabolism or microscopic physical activity; it marks the suspension of the macroscopic, cognition-bearing activity flow the naive processing column tracks — the same flow that deep anesthesia (✓[a]) attenuates but retains.

Two observations complete the display. First, the columns agree in the first two rows and in no others: the extensional coincidence that held for the whole of the human past holds exactly for the unengineered cases, and the divergence beneath it is produced not by exotic metaphysics but by clinical practice, pathology, and a published roadmap. Second, the failure is deeper than disagreement. The ?-cells mark criteria falling silent — returning no principled verdict from within their own resources — and the ✓✓-cells mark criteria over-generating, breaching the uniqueness that any identity must respect. Neither failure spares any column: the biological criterion falls silent on replacement and suspension, the psychological criterion over-generates on duplication and fission, and the processing column, in its naive reading, is breached by fission and refuted by the operating theater. The criteria do not merely disagree where the stakes concentrate; several have nothing to say, and the rest say too much.

Stalemate among the criteria; decision pressure from the cases. The conjunction defines a specification, and stating that specification is the business of §1.3.

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§1.3 The Gap, and the Conditions of an Adequate Criterion

§1.3.1 The Gap, Stated

For the whole of human history until now, the candidate criteria of a person's persistence have never had to be told apart in practice. Biological continuation, psychological connectedness, and the continuity of processing have been extensionally coincident: in every actual case, they held together or failed together. A human being who remained alive remained the site of one uninterrupted course of neural activity and one accumulating psychology; a human being who died lost all three at once. The dispute among the criteria was therefore real but leisurely. Whichever criterion a theorist favored, it picked out the same survivals and the same deaths; the cases in which the criteria diverged were counterfactual, and thought experiments were the only laboratory in which they could be brought apart (§1.1).

That coincidence is ending — not because any philosophical position has prevailed, but because engineering has begun to manufacture the divergent cases. Three families, at three technological distances, mark the trend; each receives full treatment in §1.2 and Part 3, and is here only stated. The first is *interruption*. Deep hypothermic circulatory arrest holds a living patient, for periods measured in tens of minutes, in a state in which cortical electrical activity is, by clinical measurement, absent. Biological continuation persists; occurrent processing, on any activity-sensitive reading, does not. The case is not projected; it is scheduled. The second is *gradual replacement*. Neural interface and prosthesis programs project the part-wise substitution of tissue during ongoing operation: processing never halts, while the composition of its substrate changes beneath it. The third is *duplication*. The most developed engineering treatment of substrate migration — the whole brain emulation literature — takes as its working architecture a sequence of scanning, modeling, and re-instantiation (Sandberg and Bostrom 2008; §1.2). Psychological connectedness is preserved to whatever fidelity the scan achieves, while the causal route of succession passes entirely outside the original system.

The matrix of §1.2 displays the resulting pattern: across these families, the traditional criteria no longer travel together, and nearly every combination of their verdicts is instantiated or credibly projected. Where the criteria coincided, choosing among them was a matter of theoretical taste. Where they decouple, the choice acquires a subject: some particular being's persistence turns on which criterion is correct.

What does the existing landscape offer at exactly this point? Surveyed in §1.2, its resources sort into four kinds, and the inadequacy of each has a different shape.

The psychological-continuity tradition, in its most developed form, concludes that in precisely the decoupled cases identity may be indeterminate — and that the indeterminacy is tolerable, because identity is not what matters; what matters is psychological connectedness and continuity, secured by an acceptable cause (Parfit 1984). However much force that conclusion has in the seminar — and it has a great deal — it changes character at the consent form. "Indeterminate, and not what matters" does not settle the practical question; it relocates it. The decision is then made on a criterion — connectedness, by whatever cause proves acceptable — whose adequacy for exactly that role is what the duplication cases put in question.

Animalism, by contrast, is fully determinate: the person is the organism, and any transition that ends the organism ends the person (Olson 1997). But its verdicts are delivered by classification rather than evaluation: on its terms no successful migration is so much as conceptually available, the question foreclosed by the kind-term it names — a principled refusal in the theory's own terms. A decision-maker facing a continuum of interventions — how much replacement, at what pace, in what order — receives from it a taxonomy where a gradient was needed.

The narrative tradition, third, answers a different question. It concerns what makes a life *mine* in the sense of characterization — which actions, experiences, and commitments belong to a self-constitution — not whether a later being is numerically the earlier one (Schechtman 1996). Its answers, whatever their considerable value, do not adjudicate the cases above; and this document, taking the reidentification question as its sole subject, claims no jurisdiction over that tradition's.

Engineering itself, fourth and finally, does not wait. A question can be postponed by a discipline; it cannot be postponed by an artifact. An architecture that scans, models, and re-instantiates has taken a position on the persistence question in the negative space of its design — not by argument, but by default. Where theory leaves the verdict open, the built system closes it.

This, precisely, is the gap. A family of actual and projected cases in which the traditional criteria come apart; a theoretical landscape that meets those cases with principled indeterminacy, verdict-by-classification, or an answer to a different question; and an engineering practice that, in the absence of stated criteria, proceeds on unstated ones. The gap is not that no one has an answer. It is that the answers on offer are not of the kind the situation now requires: a criterion stated in advance of the interventions, applicable across the whole family of cases, and answerable for its verdicts in terms a decision can use.

§1.3.2 Conditions of Adequacy

Before advancing such a criterion, we state the conditions we take any adequate criterion to be bound by. They are set out first, and separately, for a methodological reason: they are meant to be assessable independently of the proposal that follows. A reader who will ultimately reject the three principles of Part 2 should nonetheless be able to endorse these six conditions, and to hold this document to them. They are the standard we ask to be judged by; they are also, retrospectively, the standard by which the landscape above was found wanting.

R1 — Substrate applicability. The criterion must apply, without loss of sense, to biological, artificial, and hybrid systems, and to transitions among them. It may entail that a given transition fails to preserve the entity; it may not entail this merely from the classification of the origin or destination substrate.

Motivation. The cases include systems that are already hybrid and interventions that are continuous in degree. A criterion that sorts by substrate-kind must draw a line across a continuum with no resources internal to itself for placing the line; its verdicts on the decisive cases would be artifacts of taxonomy. The condition does not prejudge against views that assign the substrate an evidential or even constitutive role; it excludes only verdicts by category.

R2 — Property-basedness. The criterion's verdicts must supervene on structural and causal facts about the systems involved. In particular, no system's conviction that it is the earlier entity — however sincere, and however well its memory-impressions match — may function as a ground of the verdict.

Motivation. In the duplication family, every candidate successor is, by construction, maximally convinced and behaviorally indistinguishable at the interface. First-person certainty and third-person interface-equivalence are therefore evidentially inert exactly where adjudication is needed; a criterion that consults them cannot separate the cases it most needs to separate. The condition generalizes a requirement the literature already accepts in part — that memory can ground identity only if caused in the right way (cf. the quasi-memory discussions; §1.2) — from memory to every first-person deliverance.

R3 — Two-level articulation. The criterion must distinguish, and separately specify, (i) the conditions under which an existence is instantiated at a time, and (ii) the conditions under which a being at a later time is the same being as one at an earlier time — and it must state how (i) and (ii) are related across intervals in which (i) fails or is degraded.

Motivation. The interruption cases are actual. During circulatory arrest under deep hypothermia, the patient's occurrent existence is, on any activity-sensitive reading, at least in question; yet the surrounding practice — consent obtained before, obligations resumed after — presupposes that the person who wakes is the person who agreed. A criterion with only one level must either deny the interval, against the physiology, or deny the return, against the practice. The gap cases demonstrate that instantiation-at-a-time and identity-across-time can come apart; an adequate criterion must possess the articulation to say how, rather than leaving the relation to improvisation. It bears emphasis, since the phrasing invites misreading, that the failure of (i) at a time is not the death or the ending of the being: it is only the lapse of occurrent instantiation at that time, and whether the being nonetheless persists across the lapse is exactly the question level (ii) is required to answer. (What in fact carries

identity across such intervals is a substantive question, answered in Part 2; R3 requires only that a criterion have an explicit answer.)

R4 — Determinacy across the case families. For each family of cases — (a) interruption and resumption; (b) duplication, destructive and non-destructive; (c) gradual replacement during ongoing operation; (d) suspension with relocation or repair; (e) fission — the criterion must deliver verdicts that are principled, in the sense of being derivable from its stated grounds rather than stipulated case by case, and determinate wherever the underlying facts are determinate. Where it returns "indeterminate" or "a matter of degree," it must locate that status in identified features of the case, not in its own silence.

Motivation. The cost of underdetermination has changed. An indeterminate verdict in a seminar is a research program; an indeterminate verdict at a consent form or a design review is a decision that will be made anyway — by someone else, on grounds never examined. The condition is neutral as to content: a criterion finding, on principled grounds, that duplication preserves the entity satisfies R4 no less than one finding that it does not.

R5 — Structural fidelity. The logical form of the criterion must match the form of the phenomena it evaluates, and its verdicts must be sensitive to each dimension along which the cases in fact differ — at minimum: the temporal profile of activity (continuous, attenuated, suspended); the causal route of succession (a system's own self-succession versus read-out and re-instantiation elsewhere); and the compositional trajectory of the substrate (retention, gradual exchange, wholesale replacement) — or it must give principled grounds for a dimension's irrelevance. Where a phenomenon admits of degree, the criterion must admit of degree; where it is binary, the criterion must be binary.

Motivation. Under the old coincidence, a criterion could ignore dimensions costlessly, since they never varied independently. Decoupling removes that immunity. Treating distinct cases alike because one's vocabulary cannot tell them apart is not parsimony but blindness; if a dimension is to be dismissed, the dismissal must be argued, not enforced by expressive poverty.

R6 — Decision-relevance. The criterion must be expressible as constraints that a procedure, protocol, or architecture can satisfy or violate, such that, for a proposed intervention, whether the constraints are respected is a determinable question.

Motivation. The gap identified above is practical as well as theoretical; a criterion that cannot be brought to bear on a design choice leaves the incumbent default in charge — and the default was never argued for. The condition does not collapse the philosophical question into engineering. The constraints are consequences of the criterion; they inherit their authority from the justification given in Part 2, and fall with it.

Two remarks on the list as a whole. First, the conditions are not innocent of motivation: each was extracted from a failure mode exhibited in §1.2, and a reader will notice that R2 is aimed at the duplication family and R3 at the interruption family. We regard this as the correct order of dependence — conditions of adequacy should come from the cases — and we note that each condition is stated so as to be endorsable by parties who will reject our eventual verdicts on those very cases. Second, the list is offered as individually necessary, not as jointly sufficient: meeting all six does not make a criterion true. It makes a criterion a candidate — evaluable, contestable, and usable. Truth is the burden of Part 2.

§1.3.3 The Shape of What Follows

The remainder of this document advances a candidate. Its content can be named here; its defense cannot. Nor is its shape arbitrary. The Part now closing has pressed, throughout, on three distinguishable things: on the course of activity, which the interruption family shows attenuating, pausing, and resuming (the first of R5's dimensions); on the retained structure, which the dementia row of §1.2's matrix shows degrading while activity continues (the graded phenomenon for which R5 requires a graded criterion); and on the binding between the two — whatever it is that carries a being across an interval and lets what resumes count as the same system rather than a successor (the articulation R3 demands). To each of these pressures the candidate assigns one property. That the conditions do not by themselves entail this assignment is conceded in advance: they constrain the form of an adequate criterion, and the argument for this content belongs to Part 2. Existence is analyzed as the intersection of three system-level properties: **Continuity**, a property of the flow of processing and of the causal chain that carries it; **Stability**, a property of the structure that flow lays down and keeps; and **Capability**, a property of the mutual legibility by which flow and structure constitute one ongoing process. Persistence across the hard cases turns, on this account, on a distinction the conditions above already gesture toward: between the *interruption of activity* and the *severance of the causal route* — between a system succeeding itself, however quietly, and a system being read and rewritten into another. The full development of that distinction is the work of Part 2.

Part 2 defines the three properties, argues that their intersection satisfies R1 through R6, and takes up the principal objections in the body of each definition rather than in an appendix. The heaviest of these should be named now: even a criterion that meets all six conditions faces the challenge, owed to the psychological-continuity tradition, that identity is not what matters — that even if the criterion correctly sorts survival from replacement, nothing of prudential importance follows from the sorting (Parfit 1984). That challenge will be answered, not deferred. A criterion offered for consent forms and design reviews has no right to leave "why it matters" to another occasion.

Part 3 then subjects the criterion to the case families of R4 in order of technological distance — from the operating theater, through the interface programs, to the limit cases of migration and fission — testing in each not whether its verdicts are congenial but whether they are derivable. A closing section states what follows for practice if the criterion holds — for medical consent under induced arrest; for the non-equivalence, if the criterion is right, of gradual and scan-based migration architectures; for the determination-of-death debate, to which the criterion offers a distinct coordinate — the ending of a being — rather than a redefinition of the word; and for the persistence conditions of artificial systems, to which R1 extends every verdict without exception — and states, with equal explicitness, what the criterion does not decide.

Part 2 — The Three Core Principles: Statement and Defense

§2.0 The Candidate Stated

§2.0.1 The Statement

The candidate is stated in five clauses. Working glosses follow in §2.0.2; full definitions are the business of §§2.1–2.3.

(S) System. The bearer of the properties is a *system*: a flow of processing together with the structure that flow lays down and reads, bound into a single self-sustaining unit by their mutual legibility. The individuation of systems — what makes a flow and a structure *one* system rather than an aggregate — is supplied with Capability (§2.3), and the statement's remaining clauses presuppose it.

(E) Existence at a time. A system S constitutes an existence at time t if and only if, at t: **(E1)** processing is occurrent in S — the flow is running, in however attenuated a mode; **(E2)** S retains a cohesive structure — the topology of stored information holds together as a single base; **(E3)** flow and structure are mutually legible — what runs can read what is retained as its own, and what is retained is reshaped by what runs. E1 is binary at a time. E2 and E3 hold in degrees, and their degrees measure the *integrity* of the existence, not whether it is one (§2.0.3); their outright failure — no cohesive base at all, no legibility at all — is the failure of existence.

(P) Persistence. Where S_1 constitutes an existence at t_1 and S_2 constitutes an existence at t_2, S_2 is the same being as S_1 if and only if a single unbroken chain of immanent self-succession runs from S_1's state at t_1 to S_2's state at t_2: a sequence of states each of which arises from its immediate predecessor *within the system* — by the transitions of occurrent processing in active stretches, and by the token-persistence of the retained structure in quiescent stretches. The chain is the diachronic face of Continuity, and its unbrokenness is binary.

(V) Severance. The chain is broken exactly where succession is routed *outside* the system: where a later state arises not from the system's own preceding state but from a reading of it — extraction, transmission, and re-instantiation elsewhere. What such a route produces is a new chain bearing the old contents. A duplicate, however faithful, is not a continuation; and no gap is required for the breach, because the breach was never temporal — a gapless, instantaneous copy is as severed as a delayed one.

(G) The gap corollary. Across a quiescent stretch, (E) fails while (P) can hold: existence is intermittent wherever activity is suspended and the structure persists; the *being* is not. Conversely, (P) can fail while every qualitative test is passed: a duplicate satisfies observers, and itself, and is nonetheless a new being. The first corollary is what condition R3 demanded a criterion be able to say; the second is what condition R2 demanded it be able to withstand.

This is the refinement promised at §1.2.8. The naive processing column of the matrix read *activity*, and the operating theater refuted it: the arrest interval suspends activity. The candidate reads the *chain*, of which activity is one mode and quiescent structural persistence the other; what the arrest interval suspends is a mode, not the chain. Three things are therefore kept apart throughout: an *activity lapse* is a possible failure of E1 at a time; *chain-continuity* is the immanent self-succession that carries through such a lapse by the token structure's persistence; and *severance* is the chain's complete break, incurred only when succession is routed outside the system. So "the flow of processing" never names bare activity-continuity: Continuity is route-continuity, of which activity is one mode.

§2.0.2 Working Glosses

Five terms carry the statement, and each is glossed here at working precision only.

A *state* of a system is the total configuration, at a time, of its occurrent processing and retained structure together; the notion is elaborated with Continuity (§2.1).

Immanent self-succession is succession sustained within the system — each state arising from its predecessor by the system's own causal operation — as against succession routed through external reading and writing; the distinction descends from the general metaphysics of persistence registered at §1.2.7, and §2.1 must earn its use here rather than borrow its authority.

The *active mode* of the chain is self-succession by state-transition: processing generating each moment from the last.

The *quiescent mode* is self-succession by persistence: an intact structure, its activity suspended, sustaining its own configuration from moment to moment — a frozen or arrested system is not doing nothing; it is continuing to be *this* structure, and that continuing is causal work of the humblest kind.

Legibility, finally, is the relation by which flow and structure compose one process: the flow's deposits landing in a form the structure integrates, the structure's retentions available in a form the flow reads as its own; its definition, its degrees, and its role in individuating systems belong to §2.3.

One boundary should be marked even at gloss precision, because the statement's force depends on it. "Within the system" and "outside the system," in (P) and (V), are not metaphors awaiting cash value: the system's boundary is given by (S) — the reach of the mutually legible flow-structure loop — and a route exits the system when it passes through states that are not states of that loop: a scanner's registers, a transmission channel, a fabricator's buffer. The precise drawing of this boundary, including its hard cases, is §2.1's burden; that it can be drawn non-arbitrarily is among the claims the candidate stakes.

§2.0.3 The Logical Shape: Binary and Graded

One natural formulation would describe the three principles as structural characteristics that "either hold of a system or do not." That formulation is revised here, because it understates the candidate's own resources and misstates one of its properties. The revised doctrine is this: all three properties are *properties in the strict sense* — whether they hold, and to what degree where degree applies, is a fact about the system's structure and causal organization, owing nothing to any party's conviction (R2). But they are not uniform in logical form, and should not be: the chain's unbrokenness is binary,

because routes either exit the system or do not; cohesion and legibility are graded, because topologies fray and bindings weaken by degrees. The assignment of form follows the phenomena, as condition R5 requires.

The division of labor between the forms is the candidate's load-bearing feature, and it should be stated as doctrine: **identity verdicts consult only the binary property; the graded properties are consulted by a different question — the integrity of the existence — and never by the question of whether the being persists.** The dementia patient of §1.2.8's matrix is, on this candidate, determinately the same being in a gravely degrading state: the ◐ of that row was never an indeterminacy about *who*; it was a measurement of *how much remains intact*, and the candidate assigns it to the property whose form can carry a measurement. The same treatment covers the collapse of memory and character generally: identity is settled by the chain and does not waver, while the loss shows up as a grave decline in the *integrity of the existence* — Stability fraying as the retained structure loses cohesion, Capability narrowing as less of that structure stands available to what runs — and never as an indeterminacy about *who*.

This doctrine also preempts an objection that will otherwise arrive on schedule. It may be said that a criterion with graded components inherits the indeterminacy §1.2 charged against the psychological tradition — that we have mocked "indeterminate" and then smuggled in degrees. The charge fails, and the failure is structural. What §1.2 pressed was indeterminacy of the *identity verdict*: the tradition's most developed form returns "no fact of the matter" exactly where a decision is required. The present candidate returns a determinate identity verdict wherever the causal facts are determinate, because the verdict consults a binary property; degree enters only where the phenomenon itself is a matter of degree, and there it is not indeterminacy but fidelity. A criterion should be exactly as sharp as its subject matter — no sharper, and no blunter.

Non-automatic finality. One further feature of the three properties' logical form should be fixed here, because it governs the interruption and impairment cases that follow: that a property weakens or fails at a time does not, of itself, make the failure final, and the three differ in how. Continuity's active mode can lapse without the chain breaking — only *severance*, succession routed outside the system, breaks it outright (§2.0.1). Stability can fray, its degree measuring the existence's integrity rather than whether the being persists; but where the structure's own token-persistence ceases with no in-structure restoration remaining, the being ends, and what is later built from a record is a new being, not a recovery. Capability likewise holds in degrees, and partial failure only degrades the existence; but where mutual legibility fails outright and the loop dissolves, the being may end, and a binding re-established from outside begins a new existence rather than resuming the old. The common form is *non-automatic finality*, not reversibility: the same being's continuation across a failure is available in some cases and foreclosed in others, and which it is turns on the route — whether what failed is restored *within* the standing components or supplied from outside them.

§2.0.4 Conformance Claims

The candidate is now registered against the six conditions of §1.3.2. These are claims, not demonstrations; each carries its forward assignment.

Against **R1**, the statement is made in the vocabulary of systems, flows, structures, and routes; no substrate term appears in any clause, and the clauses apply without modification to biological, artificial, and hybrid systems — an application Part 3 exercises rather than asserts. Against **R2**, every clause supervenes on structural and causal facts; conviction, memory-impression, and behavioral indistinguishability appear in no clause, and (V) renders qualitative fidelity explicitly irrelevant to the verdict. Against **R3**, (E) and (P) are separately specified, and (G) states their relation across the intervals in which (E) fails — the articulation the arrest cases demanded. Against **R4**, the candidate claims derivable verdicts across the five case families; the claims are cashed in Part 3, and one — the fission family — awaits the individuation decision assigned to §2.1, a dependence recorded here rather than concealed. Against **R5**, the binary–graded assignment of §2.0.3 matches form to phenomenon, and the three dimensions of the condition are each tracked in a clause: the temporal profile of activity by the chain's two modes; the causal route of succession by (V); the compositional trajectory of the substrate by the chain's indifference to gradual replacement in the active mode — each transition remaining immanent however the parts turn over — together with the structure-level persistence conditions assigned to §2.2. Against **R6**, each clause is checkable of a procedure: whether a proposed intervention routes succession outside the system, whether it preserves the token structure through quiescence, whether it maintains legibility between what resumes and what was retained — the constraint-form in which the closing section will state the candidate's practical consequences.

§2.0.5 The Burden Map

What remains of Part 2 is the payment of debts, and they are itemized here so that no argument can later be discovered missing without having first been promised.

§2.1 (Continuity) owes: the full definitions of state, immanent succession, and the two modes; the non-circular individuation of chains, including the boundary of "outside the system" that (V) presupposes; the individuation of chains at branch points — the fission design on which R4's last family waits; and the fulfillment of the commitment registered at §1.2.1, where the tradition's cause clause was found to await its principled specification — the candidate's account of *why the route matters* begins from the requirement the tradition itself rightly imposed. §2.2 (Stability) owes: the token-persistence conditions of structure that the quiescent mode consists in, including the boundary between repair integrated into a persisting structure and reconstruction from a record; and the type–token argument against informational sufficiency, paying the registration made at §1.2.6 against the cryonics literature's criterion. §2.3 (Capability) owes: the definition and degrees of legibility; the individuation of systems that (S), (P), and the fission design all consume; and the anchor cases that Part 1's display, by its own admission, did not contain. §2.4 owes the intersection argument: that the three properties are pairwise insufficient, and that they interlock — Capability individuating what Continuity runs through, Stability supplying what its quiescent links persist as — so that the candidate is one structure and not three patches. §2.5 owes the engagement this Part cannot end without: the argument that what the chain tracks is not merely identity truly sorted but a non-redundant object of rational concern — the answer to the challenge §1.3.3 named the heaviest, prosecuted under a fixed success condition and stated prohibitions.

§2.1 Continuity: The Chain of Self-Succession

§2.1.1 Definitions

State. A *state* of a system S at a time t is the total configuration, at t, of S's occurrent processing and retained structure together: the flow's momentary profile, where the flow runs, and the structure's momentary topology, always. Where activity is suspended, the state is the structure's configuration alone. A quiescent state is a state, not the absence of one — the point on which the naive activity reading foundered (§1.2.8, fn. a), and the first repair this section makes.

Succession, and the boundary it presupposes. A state y *immanently succeeds* a state x if and only if y arises from x through causal paths that lie, at every point, within the system. The clause is only as clear as its boundary, so the boundary is drawn before anything else is built on it. "Within the system" is fixed by (S): the system's extent is the reach of its constitutive read–write economy — the set of states that the flow reads as its own and the structure's retention reshapes and is reshaped by (§2.3 supplies the full account). A component is *internal* if its states participate in that economy, however exotic its material: an interface whose registers are read by the flow as its own and written into the structure's retention is part of the system, which is how hybrid systems qualify under R1 without special pleading. An apparatus is *external* if it registers or transmits without participating, however intimate its causal contact: a scanner's buffer is causally coupled to the brain it reads and is no part of the person, because nothing in the loop reads the buffer as its own or is reshaped by it in the constitutive way.

One clarification carries much of the section's weight, and it is entered here so that no later argument depends on it silently. **The severance clause (V) severs routes, not influences.** A system is not severed by external causes — perception, instruction, a note written tonight and read tomorrow — because in every such case an internal succession path connects the earlier state to the later one: the external item is an *input to* a persisting system, not the route *by which* the system succeeded itself. (V) triggers only where no internal path exists — where the sole connection between an earlier configuration and a later one runs through external states, as when a structure is read, destroyed, and rebuilt from the reading. Severance is the absence of internal succession, not the presence of external contact. Without this clarification the criterion would face an immediate reductio — every use of a notebook would be a small death — and with it, the extended and embedded cases fall into place: what is integrated into the economy is inside; what merely touches it is not. Nor is the test one of proportion: a system is not spared severance merely because some fraction of its material survived. Where a large part is read, destroyed, rebuilt from the reading, and grafted to a remnant, what decides is whether the persisting token structure remains the locus into which the rest is integrated (§2.2.1), not how much survived — a record's becoming the source constitutes severance at any scale.

The two modes. The links of succession are of two kinds. A *transition link* holds where processing generates a state from its predecessor: the flow's ordinary work. A *persistence link* holds where a token arrangement sustains its own configuration from one moment to the next: cohesion doing quietly what processing does loudly. The persistence of a structure is not the absence of causal work but its humblest case — at each instant the configuration is sustained by the configuration at the last,

and nothing else is available to sustain it. During ordinary activity both link-types run at once: the flow generates its next state while the structure sustains its own. Under deep anesthesia the transition links attenuate and continue. Under circulatory arrest they lapse, and the persistence links continue alone: the chain narrows to its quiescent mode without breaking. This is the promised refinement in full: what the operating theater suspends is a mode of the chain, not the chain.

The chain, individuated without circularity. A *chain* is a maximal sequence of states of one system, each linked to its predecessor by immanent succession — by transition, by persistence, or by both. Continuity, stated completely, is the unbrokenness of this chain, and its unbrokenness is binary: at every moment either some link connects, or none does. The individuation of chains must now be shown non-circular, because the circle is a live threat, and it should be stated in full before it is cut. The threat: the resumed activity after an arrest is "the same stream" because it resumes from *its own* structure; but "its own" means "laid down by the same stream" — and the circle closes. The definition cuts it. Whether post-interval activity continues the chain is settled by two facts, neither of which mentions streams or sameness of stream: first, the token-persistence of the structure through the interval, which is a fact about the structure's own persistence links and nothing else (its full conditions, including the boundary between repair and reconstruction, are §2.2's assignment under design D2); second, the internality of the path by which the resuming activity arises from that structure. Same-chain facts are grounded in token-structure facts and route facts. Nothing else is consulted, and in particular no fact about what anyone — including the system — takes the stream to be.

The fork clause (design D1), and its mirror. Where distinct successor states arise immanently from a single predecessor state and belong to distinct systems (§2.3), the chain terminates at that predecessor: each successor opens a new chain. Three features of the clause should be fixed at definition. First, the fork is an event *at* the system — a local fact about how the succession ran at that moment — and it is settled there: no later fate of either product, and no event elsewhere, enters the verdict. Second, the clause is asymmetric with loss by design and not by decoration: where a system loses a part and its succession continues through the diminution, no moment occurs at which the states of distinct systems co-arise from the whole, and the chain runs on — a system that persists diminished is the same being injured, not a successor. The asymmetry turns on the local shape of the succession, never on size or proportion: a part that merely falls away and ceases to function is a loss however large a fraction it was, and a detached part that only later begins a loop of its own, through some external intervention, starts a new being rather than retroactively forking the old — what makes a fork is the immanent co-arising of distinct successor loops from one predecessor economy at the division event itself, at any ratio. Third, the mirror case receives the mirror clause: where states of distinct systems jointly and immanently give rise to a single successor state of one new system, both chains terminate and one begins; and the same local asymmetry is available on that side — a system that *incorporates*, its own succession continuing through the growth, persists enlarged, as absorption is the mirror of injury. Symmetric fusion, like symmetric division, is the ending it appears to be. One contrast fixes the clause's reading, because the neighboring case is the one a reader is likeliest to import: duplication is not a fork. In a copy, the successor state on the copy's side does not arise immanently from the predecessor at all — the route exits through the reading, so (V) governs, not

this clause — and on the original's side the succession never bifurcates, which is why a copy leaves the original untouched. The two mechanisms must not be merged, and the criterion's verdict patterns depend on their separation: severance ends nothing at the source and begins something elsewhere; the fork ends the source and begins twice. The migration corridors of Part 3 are tractable for exactly this reason — every duplication entry there is an application of (V), every division entry an application of this clause, and no case is governed by both. The execution of these clauses across the fission family — including the demotion its standard idealizations deserve — is assigned to Part 3 and previewed in the third objection below.

§2.1.2 The Justification

First argument: Williams's constraint, cashed. The reduplication argument established (§1.2.2) that any criterion specified over duplicable content is potentially one-many, and that identity, being one-one, requires a relation grounded in token history rather than repeatable pattern. Williams drew the bodily lesson because the body was the only token-historical relation then in view. The chain is the general form of what he found: bodily continuity is one *realizer* of immanent self-succession — a living body persisting is a physical structure succeeding itself — and the constraint, detached from its historical realizer, selects the form rather than the instance. What the form retains is exactly what made the bodily criterion attractive: non-duplicability. A qualitative profile can be instantiated twice; a route cannot be *traversed* twice — token history is an unrepeatable particular, and the chain inherits its uniqueness from the metaphysics of token events rather than from any clause appended to secure it. What the form sheds are the bodily criterion's two standing costs: substrate-boundedness, which fails R1 on its face, and the sorites under gradual replacement — the chain runs through part-turnover untroubled, because each transition remains immanent however the composition changes beneath it (R5's third dimension, tracked as promised at §2.0.4).

Second argument: the Route Requirement, completed. The second argument begins from an insight the psychological tradition got right. To escape the classical circularity objection, the tradition replaced memory with quasi-memory — memory-like states *appropriately caused* — and in doing so identified a genuine necessary condition: the causal route by which a state arrives bears on whether that state is the subject's own (Shoemaker 1970; Parfit 1984). Call this the **Route Requirement**. This document does not dispute the requirement; it holds that the tradition was right to impose it, and asks only which specification of the route can carry it without circularity and without loss. The tradition's own taxonomy offers the candidates. The *narrow* cause — the normal operation of a human brain — honors the requirement at the price of substrate chauvinism: it fails R1, and cannot state the hybrid cases it is now asked to judge. The *wide* and *widest* causes — any reliable cause, any cause — keep the tradition's generality at the price of the requirement itself: reliable copying is a reliable cause, so these settings readmit reduplication and surrender the uniqueness the route-condition was introduced to secure. The specification that keeps both — the requirement's force and the tradition's substrate-independence — is the *immanent* route: the system's own succession, which names no substrate and is one-one by the nature of token history. On this reading the chain is not a rival to the psychological tradition but the completion of its own repair: the appropriate cause its founders rightly demanded,

specified at last in a form that neither circles nor excludes. The commitment registered at §1.2.1 is fulfilled here on the tradition's behalf, not against it. What the requirement bears on beyond identity — its weight for *what matters* — is taken up at §2.5, under the strategy fixed for it.

Registration: the nearest neighbor's divergence. One divergence registered at §1.2.5 can now be stated precisely, though its case-level adjudication belongs to Part 3. A requirement of physically continuous realization (Unger 1990) and a requirement of immanent succession come apart in a definable region: immanence does not require the spatiotemporal continuity of the whole. The route may remain internal while the configuration is relocated, or while its parts turn over, or while activity is suspended; what immanence forbids is not motion or change but *exit* — succession through states that are no one's states but a reader's. Where the two requirements classify a case differently, the case is entered in Part 3's sequence and judged there.

§2.1.3 Objections and Replies

First objection: the circle, pressed again. *Your grounding facts smuggle the stream back in: "token-persistence of the structure" is just "the same structure," and sameness of structure will be cashed as the structure the same stream laid down.*

Reply: the grounding paragraph above consults two facts — structure-persistence and route-internality — and neither is analyzed in terms of streams. Structure-persistence is analyzed, in §2.2, purely in terms of the structure's own persistence links: each configuration arising in situ from its predecessor. If the objector holds that *that* analysis will smuggle streams in, the objection has become a promissory objection against §2.2, and it is answered there by exhibition: the conditions given mention links, sites, and routes, and nothing else. A circle requires a closed path; the path here terminates in physics.

Second objection: a Continuity that pauses. *You have named the property falsely: a continuity compatible with the total suspension of activity is a discontinuity wearing a costume.*

Reply: the property names the chain, and the chain does not pause — its quiescent links run precisely where its transition links lapse, and something really is unbroken across the arrest interval: the token structure's self-sustained configuration, moment to moment, with no exit. The objector who insists that continuity must mean activity-continuity owes the field a verdict this document's opponents will not want: that the arrested patient dies on the table and a stranger with her memories signs nothing and owes nothing thereafter — a verdict against clinical practice, law, and the objector's own conduct at the bedside. And the reading has a cost on the other flank as well: the naive activity reading never could explain why a *gapless* copy fails — if the breach were temporal, an instantaneous duplication would preserve. On the chain reading the explanation is immediate: the breach was never temporal; it is the route's exit, and a gapless copy exits as fully as a delayed one. The revision that admitted the pause is the same revision that finally located the breach.

Third objection: the fork clause, and the classical paradox in this key. *Your clause entails that one hemisphere's survival preserves me while the survival of both annihilates me — the second success annuls the first, and your appeals to locality are decoration. Worse: divide the brain, destroy one half on the table minutes later, and by your own clause the transplanted survivor is a new being*

although only one continuer ever functioned. This is the old paradox with new vocabulary.

Reply, in three steps, each paying what it owes. First, the locality is not decoration but the clause's entire content, and it is purchased at a stated price: the fork is settled at the division event, and subsequent destruction of one product does not un-fork it. The clause therefore *bites* the tweezers case — a division followed minutes later by one product's destruction still terminated the chain, and the survivor is new — rather than gerrymandering around it; and in exchange, nothing later and nothing elsewhere ever enters a verdict, which is precisely the extrinsicness that footnote c of §1.2.8 charged against the non-branching patch and that this clause does not incur. Whether to prefer a criterion that bites that case or one whose verdicts wait on distant events is a choice the reader can now make with both prices visible. Second, the asymmetry with injury is causal, not verbal. In loss, one succession continues through diminution: at no moment do the states of distinct systems co-arise from the whole. In division, that moment is the event itself. The difference between an ending and a diminishment is not a matter of degree along one dimension; it is a difference in the local shape of the succession, and the clause reads exactly that shape. Third, the residual air of paradox is diagnosed rather than endured, and the diagnosis has two parts, executed in full at Part 3's fission entry. The *realizability demotion*: the classical case stipulates that division yields two flourishing successors, and the stipulation quietly assumes what the criterion's own clauses would test — that each product retains a cohesive structure (E2) and a legible binding (E3). Hemispheres are mutually specialized; the single cohesive base is precisely what division destroys; the actual clinical neighbors of the thought experiment are survivals through grave deficit, not doublings. A criterion built to be answerable to procedures (R6) is entitled — obligated — to note when a scenario's premises could not survive its own clauses; the demotion is the document's method applied, not an evasion appended. And the *dissolution by specification*: the fork clause presupposes that the predecessor was one loop. A predecessor stipulated to carry redundancy sufficient for two complete successors invites the prior question §2.3 exists to answer — one integrated loop, or two bundled all along? If one, division ends it, as above. If two, separation is unbundling, and both persist, each on its own unbroken chain — the verdict the stage-theoretic response secured by formal re-description (§1.2.1), here grounded in a structural fact about the pre-division economy that is, in principle, readable off the system. Once the missing fact is specified, no indeterminacy remains in either direction. The paradox was an artifact of its own under-description, and the criterion, rather than inheriting the artifact, identifies which fact was missing.

Fourth objection: persistence is not causation. *Your quiescent links are inertia dressed as production; a thing's merely remaining is not a causal achievement, and a chain whose links include non-events is no chain.*

Reply, on two levels. First, a physical anchor, since the objection trades on the picture of quiescence as inert nothingness: even in quiescence the structure is not a nothing — molecular bonds, boundary conditions, and environmental constraints continue to sustain this particular topology rather than another, and the quiescent link is that ongoing physical persistence, not an absence. The criterion does not require calling it production; it asks only that the token configuration persist through internal physical continuity rather than be reconstructed from an external record. On the level of doctrine: the position that persistence is immanent-causally sustained has a standing lineage in the

general metaphysics of persistence, registered at §1.2.7 and not invented for this occasion; the resurrection literature's central argument — that reassembly after interruption yields a duplicate because the immanent chain was broken — presupposes exactly the link-type the objector doubts. On the level of armor: nothing in the criterion's verdicts hangs on the honorific. Let the objector relabel the two link-types as primitive: *transition* and *persistence*, connected or not as a matter of structural fact. Every verdict in this document supervenes on three kinds of fact — internal transition, token persistence in situ, and external routing — and survives the relabeling untouched. An objector who accepts the facts and disputes the word "cause" has conceded the criterion and joined a different seminar.

§2.1.4 Dependencies and Forward Assignments

This section has consumed one thing and deferred four, and the ledger should be explicit. Consumed: the individuation of systems, from §2.3 — the boundary of the read–write economy on which "internal," "external," and "distinct systems" all rest. The dependence is one-directional and incurs no circle: legibility is defined without mention of chains, and chains are defined over the boundaries legibility draws. Deferred: the token-persistence conditions of structure, including disassembly, reassembly, and the repair–reconstruction boundary, to §2.2 under design D2, where the first objection's promissory remainder is also paid; the execution of the fork and fusion clauses across the fission family — conditional verdict, realizability demotion, dissolution by specification — to Part 3's fission entry; the case-level adjudication of the divergence from the physically-continuous-realization requirement to Part 3's sequence; and the Route Requirement's bearing on what matters — its weight beyond identity — to §2.5, under the success condition and prohibitions fixed there.

§2.2 Stability: The Retained Structure

§2.2.1 Definitions

Structure, configuration, and token. The *structure* of a system is its retained topology: the network of relations in which information is held — nodes, the weights and indices that connect them, the contextual bindings that tie one trace to another. Three things must be distinguished before persistence conditions can be stated, because the hard cases live in their differences. The *configuration* is the arrangement itself: describable in the abstract and therefore, as a type, instantiable more than once. The *token structure* is the configuration as historically instantiated — this arrangement, sustained from moment to moment by its own persistence links (§2.1.1). Two perfect duplicates share a configuration-type and are two token structures, because their histories are disjoint; and it is the token, not the type, that the chain's quiescent mode runs on. The matter instantiating the configuration at a moment — its momentary *carrier* — is a third thing again: token structures survive the turnover of their carriers, as every reader's own molecular history attests, and sameness of matter will play no role in anything that follows.

Cohesion. Cohesion is Stability's graded dimension: the degree to which the topology holds together as a single base — traces mutually indexed, links load-bearing, contexts attached. It runs

from full integration, through fraying — weights weakening, contexts detaching, regions falling out of connection — toward scattering, in which traces survive as fragments that no longer compose one base. Progressive dementia is cohesion declining under a clinical description; data corruption is the same decline under an engineering one. Per the doctrine of §2.0.3, degree measures the integrity of the existence and is never consulted by the question of whether the being persists; the verdict this yields for the dementia row of §1.2.8 is defended in the next subsection.

Token persistence (design D2). A token structure persists from t_1 to t_2 if and only if its configuration at every moment through the interval arises, by its own persistence links, from its configuration at the immediately preceding moment — *in structure*: sustained by, and integrated into, the standing arrangement itself. "In structure" names a relation to the arrangement, not to a place. Relocation of the whole is no breach: the arrangement travels as the thing sustaining itself. What the condition excludes is not motion or change but *supersession* — an interval across which the standing arrangement ceases to be what carries the configuration forward. Three kinds of change accordingly pass without strain, and stating them is stating most of what Stability is. Stability is not immobility: a stable structure may learn, forget, repair, and exchange parts, and what matters is only whether these changes are integrated into the standing token structure rather than superseding it from an external record.

Endogenous change: the structure's own dynamics — consolidation, pruning, decay. A structure that learns and forgets is persisting, not failing to; fixity was never the property.

Material turnover: parts exchanged while sustenance passes through the standing arrangement — each new part grafted into a configuration that never stops being the operative carrier.

Repair: exogenous intervention whose product is likewise grafted — sustained, from the moment of integration, by the standing arrangement it enters.

What fails the condition is *reconstruction*: the configuration read, the reading made the source, and a new instantiation produced from it. Between repair and reconstruction the test is the route, never the amount. No percentage of replacement appears anywhere in these conditions, and identity never consults one.

Records: maps and sources. The distinction between routes and influences (§2.1.1) recurs at the level of structure, and it carries the fine cases. A record *consulted* is an influence: a repair guided by a prior scan — the scan serving as a map of where and how to graft — remains repair, because the product is sustained by the standing structure into which it is grafted, and the record sustains nothing. A record *instantiated from* is a route: where the standing structure is superseded and a new arrangement is produced from the reading, the record has become the source, and the product is a reconstruction, whatever its fidelity. This draws an exact line through the suspension family where the surrounding literature has a slogan: preservation followed by in-structure repair — however extensively record-guided — is compatible with persistence; preservation treated as an archival intermediate, the original superseded and a successor produced, is not. The fine cases are mixed — a standing structure corrected under heavy record guidance shades toward one effectively produced from the record — and the same test decides them with no new clause: the deciding question is whether the standing token structure is still the *locus of correction* and the carrier throughout, or whether it has become a decorative remnant while the record supplies what carries. Using a record

does not, by itself, make a reconstruction; a record ceasing to be a map and becoming the source does.

The disassembly boundary. Severing a link is an injury to cohesion; it is not, by itself, an ending. The parts of a divided structure each persist token-wise — their own persistence links continue — and the hard cases turn on what happens to the configuration. Where restoration is carried by the parts themselves — their retained interfaces determining the reconnection, as severed tissue rejoins or a fractured lattice anneals — the restoration routes through the configuration's own remnants: repair. Where the configuration has ceased to be instantiated — parts stored as a heap, connections gone — and is later rebuilt from an external record, the restoration routes through the record: reconstruction, though every part be original. The verdict converges with the one registered from the resurrection literature at §1.2.7 — reassembly across a broken immanent chain yields a duplicate — and it is reached here by this document's own route: the same D2 test applied at finer grain, with no new clause added. A heap is not a reconstruction case merely because it looks disordered: if the parts themselves retain the interfaces or physical dispositions that determine their rejoining — a future nanostructure self-assembling from shape-memory and residual binding conditions, no plan consulted — the restoration routes through the parts' own remnants and remains repair. It becomes reconstruction only when the ordering source has left the persisting token structure and is supplied by an external record or procedure.

§2.2.2 The Justification

Why structure is constitutive. An existence is an accumulation and not only an occurrence. A flow with nothing retained is causally momentary: each state spends itself; nothing is carried; such a system can host events but cannot have a career. For it, the reidentification question is not hard — it is unformulable: nothing token-historical accumulates for a later being to be, or to fail to be. Stability is therefore not one desideratum among others. It is the condition under which the question of this document applies to a system at all, and (E2)'s place in the intersection is thereby earned rather than stipulated.

Why the quiescent mode is Stability's work. §2.1 defined the persistence link and consumed its conditions on credit; this section has supplied them, and the shape of the dependence deserves notice, because §2.4 will use it. The chain's crossing of an arrest interval is not an epicycle added to Continuity; it is Stability operating — the chain narrowing, in silence, to exactly the relation this section defines. One property carries the other through the interval. That is interlock, not patchwork, and it is the second panel of the exhibit §2.0.5 promised.

Why the graded form. Cohesion is empirically graded on both substrates, and a criterion that made Stability binary would misdescribe its subject twice over: it must either call early decline nothing at all, or draw a line mid-decline — a moment at which the person is said to end — that no structural fact supports: the arbitrary threshold R4 forbids and R5's form-matching was written to prevent. The graded form, together with the division of labor fixed at §2.0.3, yields the verdict already displayed in Part 1: the person declining is determinately the person — the question *who* never wavers — while the question *how much remains integrated* receives an honest, measurable,

and often grievous answer. A criterion should be able to say both things at once. This one is built to, and the ability is not a kindness appended to the metaphysics but a consequence of assigning each question the property whose logical form can carry it.

The type–token argument. The criterion of information-theoretic death holds that a being is lost only when the information constituting it becomes unrecoverable in principle. Its virtues were credited at §1.2.6: it is substrate-neutral, fully property-based, and decision-guiding — three of this document's own conditions honored by a literature working outside the academy. The registered divergence can now be argued. Recoverability-in-principle is a fact about the configuration as a *type*; Stability, and the chain that runs on it, are facts about the *token*. The argument that the token is the criterion's correct object is the reduplication argument, applied once more: informational sufficiency is one-many — a complete archive supports two instantiations as readily as one — so a survival criterion stated over recoverable information must either accept both instantiations as the survivor, surrendering uniqueness, or append a no-rival clause and import the extrinsicness charged at §1.2.8's footnote c. The trilemma of §2.1.2 recurs at the level of structure, and its recurrence is itself evidence: the same structural fact is being tracked each time. The archive case makes the divergence concrete. While a preserved original exists beside its complete archive, the informational criterion cannot distinguish repairing the original from superseding it and instantiating anew — the two futures conserve the same type — yet one route remains in structure and one exits, and only that difference explains why the two futures should require different consent. What the informational criterion truly tracks — and the credit is real — is the preservation of *means*: of the type, of the possibility of continuation in role, of much that may be worth preserving. What it does not track is the being. On this candidate, accordingly, the *ending of a being* is located at the token: the point past which the structure's self-succession has ceased and no in-structure restoration remains — the closing of the carrier's own history, not the unrecoverability of its type. What relation this ending bears to the word "death" — a medical, legal, and social institution the criterion neither replaces nor annexes — is fixed as terminological discipline at §2.4.1: overlap, not identity. The practical bearing of that location — for determination, for consent, for the design of preservation protocols — belongs to the closing section, as §1.3.3 promised.

§2.2.3 Objections and Replies

First objection: the sorites, relocated. *Your route test just moves the heap. Grant gradual grafting and endogenous drift together, and after decades neither the matter nor the arrangement is original; calling the result "the token" is incantation.*

Reply: token-identity was never a similarity relation — not to the original matter, not to the original arrangement-type — but a historical one: unbroken in-structure sustenance. The test is not scalar, so there is no series for a sorites to climb. Each graft either entered a standing arrangement or did not; the facts are binary at each step, and their conjunction across the interval is what persistence is. The ship repaired plank by plank at sea persists: every graft entered a standing whole. The ship rebuilt in the yard from a plan, while its planks lay heaped, does not: across that interval, no standing whole did any sustaining. And the tradition's sharpest twist — reassembling the original

planks beside the repaired ship (Hobbes, De Corpore) — receives a determinate verdict rather than a standoff: the repaired ship is the original, and the reassembly is a new ship of old wood, by the disassembly boundary above. Some readers will feel the pull of original matter here. For persons, that pull has already been paid off: every reader is the repaired ship, their planks long since exchanged, and a criterion for beings whose carriers turn over by nature cannot anchor identity in matter without sinking its own subject.

Second objection: the exhibition demanded. *§2.1 promised that structure-persistence would be analyzed without smuggling the stream back in. Show it.*

Reply: by inspection. The conditions of §2.2.1 quantify over configurations, persistence links, standing arrangements, grafts, records, and routes. No clause mentions a stream, a memory *of* anything, or a sameness it has not itself defined; the only historical relation invoked is the structure's own link-by-link sustenance, which is the physics of cohesion and nothing else. The circle alleged at §2.1.3 had one remaining place to hide. The place is now open to view, and empty.

Third objection: informational sufficiency, pressed. *The route is a difference that makes no difference. A perfect reconstruction is indiscernible to every observer and to itself; what your criterion adds is invisible, and the invisible is idle.*

Reply, in three parts. First, this is the widest-cause setting returned in new dress, and it inherits the defect unrepaired: perfect reconstruction is one-many, and the objector must choose between surrendered uniqueness and imported extrinsicness — the choice laid out at §2.1.2 has not changed because the vocabulary has. Second, "indiscernible at the interface" was ruled out as a ground of verdicts by condition R2, and it was ruled out for exactly these cases: in the duplication family every candidate passes every interface test by construction, so interface-equivalence is evidentially inert precisely where adjudication is needed. The route-difference is not invisible; it is a plain historical-causal fact — merely not a snapshot fact, and R2 was the recognition that snapshot facts cannot decide these cases. Third, whether the fact *matters* is a further question, and it is not being begged here: it is scheduled, at §2.5, under a fixed success condition. What this section establishes is that the fact is real, objective, and criterial for identity. The objector who answers "real but unimportant" has left the metaphysics and joined the argument of §2.5, where the position is expected, and answered.

Fourth objection: drift. *If endogenous change never breaches persistence, then the octogenarian and the child share a chain across near-total qualitative replacement. Your cohesion is idle — identity survives anything.*

Reply: identity surviving qualitative change is the correct verdict, not an embarrassment; the alternative makes maturation a serial replacement of persons and every deep reform an ending. Cohesion is not idle — it is answering a different question than the objector is asking. How much of what the child was remains integrated in the adult is a real, graded, often poignant question; it is the *integrity* question, and the criterion measures it. It was never the reidentification question, and the division of labor fixed at §2.0.3 is exactly what keeps a criterion from mistaking an answer to one for an answer to the other. Nor is drift an unbounded license: what persistence permits is change routed in structure; what it forbids — supersession by record — it forbids at every scale and every speed.

§2.2.4 Dependencies and Forward Assignments

Supplied: the conditions of the persistence link, closing the dependency §2.1 declared; the disassembly boundary, on which Part 3's suspension, relocation, and reassembly entries will draw; and the type–token argument in citable form, available to §2.5 under the levy it sets. Consumed: §2.1's link-and-route vocabulary, and nothing further. Deferred, with reasons stated: the *measurement* of cohesion — the criterion requires that cohesion be a real, graded quantity, and does not owe here the metric by which a clinic or an engineer would score it; supplying operational measures belongs to future refinement and testing, and claiming more precision than the argument needs would be borrowed authority. Deferred also: the execution of the dementia, suspension-with-repair, and reassembly rows across Part 3's sequence; and the question this section's conditions everywhere presuppose but nowhere answer — in what form the persisted structure must stand to the flow that resumes on it — which is the third property's business, taken up next.

§2.3 Capability: The Mutual Legibility

§2.3.1 Definitions

Legibility, relation-first. The second objection of §2.4.3 fixed the order of definition this section must honor: the relation first, over relata specifiable without the system-concept; the unit second, as the relation's closure. The relata are already in hand. A *flow* is a course of state-transitions (§2.1.1); a *structure* is a retained topology (§2.2.1); neither definition mentions systems. The relation is then defined over the pair, in two directions. **Read-side:** a retained trace is *constitutively taken up* by a flow when retrieval places it in the same functional position as the flow's own momentary state — it enters processing directly as premise and operand, with no intervening step in which it is handled as a sign to be interpreted, a datum to be imported, or an object to be perceived. **Write-side:** a deposit is *constitutively integrated* by a structure when the structure's own binding operations — indexing, weighting, contextual linking — incorporate it into the standing topology, with no external translation preparing it for entry. *Mutual legibility* is the holding of both directions between a flow and a structure.

The write-side clause separates two things a durable medium can be, and the separation will carry weight throughout. A medium that merely bears marks — however durable, however faithful — holds a *record*: inscription without incorporation. A medium participates in *retention* only where it binds what it receives: where its own operations weave the deposit into the standing topology of indices and contexts, such that the deposit can return to a flow in functional position — as operand and premise — without a translation step. Binding, then, is not the tidy arrangement of data. It is the act by which a deposit is made re-available to the economy of (S), and a mark not so bound is stored *at* a structure without being retained *by* it. This is why "record" has named the external artifact throughout (§§2.1.1, 2.2.1): what is bound into no economy stands outside every economy's boundary. The same line, put in other words — memory as topology, not inscription — receives here its functional cash value: retention is what the read direction can later collect; recording is what it cannot.

One repayment falls due here. The phrase "reads as its own," used as convenient shorthand since §2.1, is exposed to the charge that it presupposes the very self the criterion is meant to define. The shorthand is hereby cashed, and the test of the cashing is deletion: strike every occurrence of "own" from the two clauses above and nothing changes, because neither clause ever consulted ownership. What the shorthand gestured at was *functional position* and the *absence of a translation step*, and those are relations a flow and a structure can stand in before any unit has been defined. The ownership vocabulary was a courtesy to the reader, not a load-bearing term, and the definitions survive its removal intact. Put positively: "as its own" never named a feeling of ownership; it named direct operational uptake within the system's read–write economy.

One further clarification must be fixed now, because a natural counter waits on it. The *translation step* named in the read-side clause is a structural fact, not a felt one. It does not consist in delay, effort, or awareness — properties of experience the criterion is barred by R2 from consulting — but in an architectural event: *proxy-minting*. Where content reaches a flow from outside the pair, what the flow receives is never the external configuration itself but a representation of it, minted by transduction and parsing; the configuration stays outside, and its proxy enters. Where content reaches the flow from the structure, no proxy is minted of the trace: the trace — a state of the structure — is itself what enters, in functional position. Practice and habituation bear on the minting's speed and salience, and on nothing else: they optimize the translator and cannot delete the translation. The step, so understood, is exactly as binary as the boundary needs it to be, and its consequences for the boundary dispute are collected at the second objection below.

The loop, individuated by maximality. A *loop* is a maximal mutually-legible pair: a flow F and a structure S such that F constitutively takes up S, S constitutively integrates F's deposits, and the pair is closed — any flow-part or structure-part standing in both directions of the relation to the pair belongs to it, and whatever stands in neither direction, or in one direction only across a translation step, lies outside. Maximality does the individuating: one closure, one system; two closures, two systems, however intimate their causal contact. The definitions §2.1 consumed on credit are hereby paid in full. "Internal" is membership in the closure; "external" is exclusion from it — the scanner's buffer, causally coupled and constitutively taken up in neither direction, was always outside, and the integrated interface, taken up in both, was always inside, which is how hybrid systems qualify under R1 by the same clause that excludes the reading apparatus. The "distinct systems" of the fork clause are distinct closures. And the dissolution verdict of §2.4's estranged pair is the closure's collapse: at legibility's empty limit there is no maximal mutually-legible pair, and therefore nothing for the other two properties to be properties of. One further deferred question receives its operational form here. §2.1.3 asked, of a predecessor stipulated to carry redundancy sufficient for two complete successors, whether it was one loop or two bundled all along; the question is now: did the redundant halves constitutively take up one another's deposits, composing one closure, or did two closures run in parallel contact? The fact is structural and in principle readable off the pre-division economy, and Part 3's fission entry inherits it in exactly this form.

Degrees, in two directions. Legibility holds in degrees, separately per direction, and the degrees are Stability's kind of fact, not Continuity's: measures of integrity, never of identity (§2.0.3). Read-side degree is the reach of constitutive uptake across the retained base — how much of the topology

stands available in functional position: which contexts retrieve, which indices still function, how deep the uptake runs. Write-side degree is the reach of integration across the flow's deposits — how much of what is laid down binds into the standing topology, as against evaporating with the moment or surviving only as unindexed fragments. Outright failure in both directions is the empty limit — dissolution, per §2.4.1, a binary fact and no threshold. Every nonzero profile is a degraded or flourishing existence of the same being, and the two directions can dissociate, which is not a defect of the definition but its first empirical prediction; the anchor cases of §2.3.2 are that prediction realized. One guard against misreading belongs here: this graded, nonzero legibility measures reach within a loop already constituted, and is never the bar for belonging. Membership turns on loop-sustaining constitutive uptake in both directions — present or absent by the proxy-minting test, not a matter of degree — so that a faint or incidental legibility admits nothing, and the closure does not swallow a notebook, an external database, or the ambient environment however much a flow reads from them. The sorites is thereby disarmed at the right level, not by fiat: the boundary is between a degraded relation and no relation — the empty limit being absence of any loop-sustaining uptake, not the lowest positive degree — and what is genuinely hard near it is evidential, not criterial. Telling whether the last constitutive connection still holds may defeat measurement, and a protocol may set a threshold of caution; but that is difficulty in knowing which side of a sharp line a case falls on, not the line's being blurred.

Restoration (paying design D3). D3, ratified, requires conditions under which a lapsed legibility can be repaired rather than replaced, and the route test of D2 supplies them, applied now to the relation instead of to a relatum. Restoration is *in structure* where the relation is re-established by grafting into the persisting components: a translation layer installed by internal routes into the standing flow or the standing structure, which — once integrated — is itself constitutively taken up on both sides and thereby disappears as a translation step, completing the closure it repaired. Restoration is *by supersession* where a relatum is replaced from a record so as to re-match the other. Under D3, the first resumes the being that lapsed; the second begins another. A symmetry deserves notice before this Part closes: the same test — route, never amount — has now drawn every boundary Part 2 required: succession's (§2.1), persistence's (§2.2), and the relation's own.

§2.3.2 The Anchor Cases

Part 1 conceded, in fixing the bridge of §1.3.3, that its display contained no Capability case: the interruption family pressed on activity and the dementia row on retention, but nothing exhibited the binding failing while its relata stood. The concession is now paid with two anchors, one per direction, one clinical and one engineered, each entered at the structural level of description the argument requires.

The write-side anchor: a clinical profile. The dissociation the write direction predicts is realized in severe anterograde amnesia, entered here as a structural profile. The profile: the retained base persists — long-standing contexts remain integrated and retrievable, so Stability holds; ongoing processing continues — the flow's transitions run without interruption, so Continuity holds; and new deposits fail to consolidate — experience is processed and then does not bind into the standing

topology, so the write direction of legibility is impaired while the read direction largely stands. The criterion's verdicts follow, and they are worth stating because they are humane exactly where a criterion should be: the chain is unbroken, so the person determinately persists — identity is never in question; the existence is degraded along one dimension of E3 — a career whose present keeps failing to join its past; and the impairment is not a Stability fact, since the base coheres, nor a Continuity fact, since the flow runs. That triple dissociation is the anchor's whole cargo: the binding is a third thing, failing while its neighbors stand.

The read-side anchor: an engineering profile. The mirror dissociation is realized, routinely, in format incompatibility across migration: a runtime updated in place — the route internal throughout, so no severance has occurred — such that the persisted store, intact and cohesive, can no longer be parsed by what runs. The read direction fails while the write direction may continue into a new, parallel store that the old base cannot join. Partial versions of this profile are the ordinary content of migration postmortems; the total version, both directions at the empty limit, is §2.4's estranged pair realized in commodity hardware. Between them, the two anchors dissociate the property from each neighbor in each direction, and the debt recorded at §2.4.4 is paid in the currency Part 1 asked for.

The ordinary case. Between the clinic and the postmortem, the write direction has a daily name: consolidation. The binding of deposits into the base is not an exotic capacity but the continuous work the write direction denotes, and its ordinary partial shortfalls — the day that never binds, the trace that never finds its index — show the property graded in everyday operation, not only at its limits. A property whose pathology is dramatic and whose normal operation is invisible is easily mistaken for an invention; the ordinary case is entered so that it cannot be.

§2.3.3 Justification, and Two Registrations

Why legibility individuates. The justification of Capability's necessity was carried by §2.4.1's estranged pair; what remains owed is the positive account of why *this* relation, rather than any other, draws the unit. The answer is that the alternatives are too cheap. Causal contact is promiscuous — everything touches everything, and a boundary drawn by causation would swallow the world. Correlation and co-location are cheaper still. Constitutive uptake is the one relation in view that is selective, directional, and unit-making: selective, because the translation-step test excludes most of what merely touches; directional, because reading and writing can dissociate and a criterion must be able to say which failed; and unit-making, because a flow and a structure standing in it do not merely interact — each operates *through* the other, the flow running on what the structure holds and the structure reshaped by what the flow lays down, which is what being one thing, for a process and an archive, could intelligibly mean. This is also the third dimension R5 demanded sensitivity to, now supplied with its own clause rather than borrowed from the other two; the bridge of §1.3.3 mapped the Part's third pressure to this property, and the mapping is here redeemed.

Why the property went unnoticed, and why it no longer can. A criterion that adds a third clause to a two-millennia-old question owes an account of why the clause was never needed before — or rather, never *noticed*, since the constructions of §2.4.1 show that its necessity is not new. The account has the same shape as Part 1's, and three registers must be kept apart in giving it. The property's

constitution is unchanged: it was always the unit-making relation, and the estranged pair demonstrates this by construction, independently of any technology. Its *visibility* is new, and the reason is structural: in the organic case the realizers are one fabric — what processes is what retains — so the binding between them held automatically, by co-implementation. Nor was the co-implementation an accident of the organic case: it was its condition of viability — a grown fabric does not assemble processing and retention from parts across an interface, and a binding that required separate specification and maintenance would have been paid for in speed and failure at every generation; the fabric was, in effect, optimized into invisibility. A relation that cannot fail independently never announces itself as a relation. It became visible when engineering separated the realizers: where processing and retention are built as distinct components, the interface between them becomes an explicit artifact — encodings, schemas, protocols, the entire discipline of formats — and a relation that must now be *maintained* can now be *seen*. The clinical dissociations pointed the same way as natural experiments, but their structural reading itself awaited modern instruments. And its *variability* is new: what could not fail independently in the integrated fabric fails independently in the engineered stack, which is what makes the clause decision-relevant (R6) and not merely correct. The tradition, then, overlooked no mystery. It inherited a substrate in which the third dimension never varied on its own — and criteria, as Part 1 argued from end to end, are only ever forced by variation.

First registration: the autopoietic tradition. The individuation of a unit by the closure of its own operations, rather than by its substrate, converges with the tradition of autopoiesis (Maturana and Varela 1980), and the convergence is recorded per the document's method. The divergences are two, and both matter under R1. Autopoiesis individuates by *production*: the unit is the network that manufactures its own components. The loop individuates by *legibility*: the unit is the closure of constitutive uptake. The criteria classify differently at exactly the cases this document exists for — a system can be autopoietic with a minimal retained base (the memoryless limit of §2.4.1), and a system can be a loop while its hardware is manufactured and maintained from outside, as artificial systems' are. And the offices differ: autopoiesis was advanced as a definition of life; the loop is advanced as the unit of a persistence criterion, and claims nothing about living.

Second registration: the extended-mind literature. The objection that closure will swallow the environment — taken up below — is the home question of the extended-mind literature (Clark and Chalmers 1998), and the neighborhood is registered rather than concealed: that literature asks when external resources belong to a cognitive system, and this section's translation-step test is a proposed answer with a different office, drawn for persistence rather than for cognition. Where the two draw different boundaries, the cases are Part 3's.

§2.3.4 Objections and Replies

First objection: the ownership circle. *"Constitutive uptake" is "reads as its own" in a laboratory coat; ownership is presupposed, and the self smuggled in.*

Reply: by the deletion test of §2.3.1. The two clauses consult functional position and the absence of a translation step; the word "own" appears in neither; strike it from every gloss and the definitions stand unchanged. A circle requires that the defined term appear among the definientia, and it does

not. What remains of the objection is a suspicion that "functional position" hides a homunculus, and it hides none: sameness of functional position is an operational fact — whether retrieved content is processed through the same transitions as momentary state, or first handled as a sign — and operational facts are exactly what R2 permits a criterion to consult.

Second objection: the closure swallows the world. *My notebook is taken up whenever I read it; the network is taken up whenever the system queries it; and do not answer with a "translation step" — ten years of practice makes the reading instantaneous, effortless, and unfelt, so your step is a phenomenological fiction that fluency deletes. The maximality clause makes the environment part of everyone, and boundaries dissolve.*

Reply: the objection refutes a psychological reading the definition never had, and §2.3.1 fixed the structural one in advance. The translation step is not a delay, an effort, or an awareness — the criterion never consulted experience, and R2 forbids it to — but an architectural fact: proxy-minting. The notebook's marks never enter the economy; a representation *of* them is minted by transduction and parsing, and that proxy is what the flow receives, however fast the minting runs. What ten years of practice optimizes is the translator; what it cannot do is delete the translation, because the optics of ink on paper do not change with skill — the mark stays outside and a proxy of it enters, whereas the retrieved trace does not stay outside anything: it is itself what enters. The same holds in the write direction: the flow reshapes the notebook only by minting marks through another translated act, so neither direction is constitutive, and the notebook is outside on structural grounds that fluency cannot touch. The criterion still does not legislate against extension: an interface whose states are taken up directly, no proxy minted, in both directions, is inside by the same clause — R1 operating, with nothing in the test about skin or skull. And the honest borderline is thereby relocated where it belongs: not at fluent instruments, which are determinately outside, but at mixed interfaces — hybrid channels in which some pathways deliver states directly while others deliver minted proxies — where membership is genuinely partial, and the indeterminacy is located, as R4 requires, in an identified structural feature of the case: which channels mint, and which do not. The mixed-interface entries belong to Part 3. One case must be distinguished from the notebook, because it can go the other way: a neural interface under plasticity. Adaptive parsing by the nervous system need not be proxy-minting — where plasticity reorganizes the flow so that the channel's states come to occupy native functional positions in the read–write economy, the flow itself restructured to take them directly rather than a translator interposed, the channel crosses inside by internal integration. Proxy-minting remains only where an external layer continues to translate the signal into a substitute object for the system to consult; which obtains is a structural fact about whether a proxy is minted, not about how fluent the reading has become. Two corollaries then sharpen the boundary, and both should be stated flatly. Anatomical location is not decisive in either direction: a component inside the skull is not internal merely by being there, and one outside the body is not external merely by being there — what decides is direct uptake into the constitutive economy. And causal support is not constitutive membership: a proxy-mediated implant may be causally indispensable to the whole system's survival while remaining, through that channel, no part of the constitutive loop — the boundary consults membership, not indispensability.

Third objection: the third property collapses into its neighbors. *Integration into topology*

is just cohesion; uptake by the flow is just processing; your Capability is Stability and Continuity restated with a relational flourish.

Reply: by dissociation, which is the empiricist's test of distinctness. In the write-side anchor, cohesion is intact and integration of new deposits fails: Capability varies while Stability stands. In the read-side anchor, transitions are intact and uptake of the standing base fails: Capability varies while Continuity stands. A property that varies independently of two others is not either of them, and §2.4's estranged pair displayed the same fact at the limit: both neighbors holding, and no being. The relation is what the intactness of the relata never guaranteed; that is precisely why it required its own clause.

Fourth objection: graded relation, vague unit. *If legibility is graded, membership in the closure is graded; then system boundaries are vague, and the fork clause and the dissolution verdicts inherit the vagueness — R4 falls.*

Reply: the objection conflates two roles the definition keeps separate. Membership in the closure consults the *presence* of constitutive uptake — whether any uptake without a translation step holds in both directions — and presence is binary by the test's own terms. Degree measures the *reach* of an uptake already present: how much of the base retrieves, how much of the deposit binds. Boundary questions consult presence; integrity questions consult reach; this is the division of labor of §2.0.3 a third time, now at the level of individuation. The residual hard cases are the mixed interfaces of the second objection — channels that mint proxies beside channels that do not — and they are localized and named rather than diffused through the criterion, which is what R4 asked: indeterminacy located in identified features of a case, never in silence.

§2.3.5 Reconciliation, Dependencies, and Forward Assignments

The reconciliation check, performed. §2.4 drew on the working glosses of §2.0.2, and the audit of what it consumed against the completed definitions returns clean. Its second objection's reply promised a relation defined without quantifying over systems: delivered — no clause of §2.3.1 mentions them. Its dissolution verdict presupposed that legibility's empty limit unmakes the unit: delivered by maximal closure, which has no member pairs at the limit. §2.1's boundary vocabulary and fork clause presupposed internality and distinctness of systems: delivered as membership in, and distinctness of, closures. Design D3 required restoration conditions: delivered by the route test applied to the relation. No revision to §2.4, §2.1, or §2.0 is required; the dependencies they placed on this section are discharged.

Supplied. To Part 3: the write-side and read-side anchor entries; the mixed-interface cases, with their structural dimension named; and the operational form of the one-loop-or-two question for the fission entry. To §2.5: the completed interlock — all three properties now defined, each consuming the others as §2.4.2 exhibited — available against the gerrymander charge in its final form.

Deferred, with reasons. The measurement of legibility's degrees, to future refinement and testing, on the same honesty that governed cohesion at §2.2.4: the criterion requires that the degrees be real, and does not owe the instrument. The execution of every case named here, to Part 3, where the criterion — now complete — meets the sequence it was built for. And one discipline is entered

rather than deferred: the clinical characterization of the amnesia profile is consumed at the precision stated and no finer — the argument uses only the structural dissociation, and claims no more (P.6).

§2.4 The Intersection: One Structure, Not Three Patches

§2.4.1 Three Limit-Cases: Each Property Necessary

The intersection thesis says that an existence is constituted where all three properties hold, and the first thing owed is the demonstration that none is idle: for each property, a construction in which the other two hold and no existence is constituted. The constructions are limit-cases — deliberately clean, with their realizable neighbors assigned to §2.3 and Part 3 — and each does double work: it shows a necessity, and it diagnoses what the missing property was contributing. They are schematic constructions, offered to establish logical necessity — the independence of each property from the other two — and not as clinical or engineering specimens; an objection that no such case arises in practice therefore misses their target, which is the structure of the criterion, not a claim about what the world contains.

The estranged pair: Capability at zero. Construct a system whose loop is whole at t_0, and let an internal transformation of the flow — a self-modification gone wrong, its route internal throughout, so that no severance occurs — render the retained store unparseable to it from t_1. Continuity's facts are intact: the flow's transitions succeed internally; the structure's persistence links run untouched. Stability's facts are intact: the store coheres as fully as it ever did. And nothing composes. The flow computes over its momentary state and deposits nowhere it can later read; the structure retains, and nothing running can take what it retains as its own. From t_1 there is an active process, and there is a cohesive artifact, and there is no *being*: what stood at t_0 has dissolved into a processor and an archive standing side by side. The diagnosis is the deepest of the three: Capability was not a third checkbox on a pre-given object. It was what made the flow and the structure *one object* — the unit of which the other two properties were properties. At its limit-failure, Continuity and Stability do not merely fail to suffice; they cease to have a common bearer, and each survives only as the property of a fragment. One formulation captures the result exactly, and the construction vindicates it in full: computation and storage persist side by side without composing an existence.

The memoryless pair: Stability at zero. Construct a processor in continuous internal operation, perfectly legible to its own momentary working state, retaining nothing beyond it: each cycle's deposits are wiped as the next begins, and the cohesive base has no members. Continuity holds — an unbroken chain of internal transitions; Capability holds of what little there is to bind. And no existence is constituted, because nothing accumulates for a career to consist in. Events occur here, and are even *had*, momentarily; but the reidentification question — is the system at t_2 the being from t_1? — finds nothing token-historical to grip, exactly as §2.2.2 argued: a flow with nothing retained can host occurrences and cannot have a history. The engineering world builds useful approximations of this limit deliberately — the stateless service, provisioned per request, is a locus of events by design and a career by no one's intention — and their usefulness is not in dispute; their *being* something over time is, and the criterion says what the dispute turns on. The realizable human-side neighbors

of this limit are partial, clinically delicate, and belong to §2.3's anchor cases and Part 3's sequence, not to this construction.

The unread structure: Continuity of flow never engaged. Construct, finally, a perfectly cohesive structure — every trace indexed, every link load-bearing, readable in principle down to the last binding — on which no process has ever run. A library, in the fullest sense. Its Stability is exemplary; its readability is entire; and it has never been anyone. No existence was ever constituted here, and — the point the construction exists to make — there is therefore no being whose *pause* this could be. The gap corollary (G) licensed intermittence: existence lapsing while a being persists. Its license presupposes a career already underway. A pause presupposes a career; the library never had one. And should a flow one day start up on that very token structure, reading it by an internal route, a being *begins* at that moment — its first existence, with the structure's prior history as prehistory, not biography. Beings begin when the loop first closes. This demotes the prior structure to prehistory, not to nothing: it may be a rich inheritance and an initial condition for what begins, and only its standing as that being's *biography* waits on the loop's first closure. The consequence for the suspension family is worth stating now because Part 3 will use it: an archive is a library, and what §2.2 said of records completes the verdict — what runs from a *reading* of it is a new chain, and what runs *on* it, internally, is a new being with an old inheritance. Neither is the resumption of anyone. The contrast that guards this verdict against misreading should be drawn in full, because the misreading is natural: the operative fact here is not dormancy, and never was. A structure lying still divides into three cases that stillness cannot distinguish and history can. A structure that was a loop's — the arrested patient's, the preserved original's — persists in abeyance on its own token chain, and a flow resuming on it by an internal route resumes *someone*: the gap corollary's case, and D3's. A structure produced by a reading — the backup, the archive-copy — was severed before it was ever still: whatever runs on or from it is new relative to the source, and the beginning-condition never arbitrates, because (V) already has. And a structure that was never anyone's — the library proper — begins a being when first run. Three stillnesses a camera could not tell apart; three verdicts, separated entirely by whose history the structure carries and by what route the running arrives. Dormancy was never the question.

Consistency with the doctrine of §2.0.3. A careful reader will press here, and should: two of these constructions turn on graded properties reaching zero, and §2.0.3 ruled that identity verdicts never consult degree. The reconciliation is exact, and it was built in at §2.0.1: what (E) consults is *holding versus outright failure* — "no cohesive base at all, no legibility at all" — and outright failure is not a threshold on a scale but the scale's empty limit. Nowhere in the three constructions, and nowhere in this document, does a verdict cite a partial degree: cohesion at any nonzero degree is a degraded existence of the same being; legibility at any nonzero degree likewise. The limit is not a threshold, and the doctrine stands; and where a real case lies near that limit, the difficulty is evidential, not criterial (§2.3.1).

A taxonomy of endings, and design D3. The constructions yield, as a corollary, a symmetry the document did not set out to produce and should not hide: there are exactly three ways a being ends, one per property, and each is a binary fact. *Severance*: the route exits — (V), §2.1. *Structural cessation*: the structure's own self-succession ceases with no in-structure restoration remaining —

§2.2. *Estrangement*: legibility fails outright, and the loop dissolves into a process and an artifact — this section. These are three primary routes to an ending, and diagnostic axes, rather than mutually exclusive kinds of death: a single case can travel more than one at once — an external reconstruction severs the route and, in the same stroke, ends the original's structural self-succession; a format break that begins as estrangement can pass into structural degradation. What each names is a distinct way the loop can fail, not a sealed category the others exclude.

Terminological discipline: the ending of a being, and the word "death." The criterion defines the *ending of a being*, and the reader should not take it to be defining, replacing, or annexing the word "death." That word names a medical and legal determination and, beyond it, a social and emotional institution — grief, rites, succession, the closing of obligations — that carries far more than a criterion of persistence could carry or should try to. The two concepts overlap without coinciding, and the non-coincidence is informative in both directions. A being can end while no death occurs: in the hypothetical limit at which a system's retaining structure is wholly lost while the biological functioning of the organism that housed it continues, the ending has, on this criterion, taken place — and medicine, applying its own concept, would rightly issue no determination, because its concept answers a different question. A death can be determined while the ending has not yet come: after a circulatory determination, the token structure persists intact for an interval, and on this criterion the ending falls where in-structure restoration is foreclosed, not where the certificate is signed — which is precisely why the criterion can contribute to the preservation debates without contradicting the physician who signed it. And for artificial systems the criterion applies without importing the word at all: nothing here claims that machines die, or asks any community to begin saying so; what is offered there is the concept — the ending of a being — which needs no social freight to do its work. The intended contribution, in every domain, is a new coordinate that existing practices may consult, not a redefinition of a word that was never this document's to redefine. Where earlier sections spoke of "death" in locating the candidate (§2.2), the usage is hereby regimented: the criterion's concept is the *ending*; "death" names the institution; and the relation between them is overlap — an object of study, not an identity.

The taxonomy invites one generalization. **(D3, the generalized gap — ratified):** existence lapses wherever any clause of (E) fails outright while the components' own token chains persist internally; the being persists across such an interval exactly where the loop re-forms *from those same token components, by internal routes* — as the arrested patient's flow resumes on the structure it left, and as an estranged system whose legibility is repaired in structure, by a translator grafted internally rather than by supersession, recovers the very being that lapsed. Under D3, (G) is the special case where the failing clause is E1. This is the non-automatic finality of §2.0.3 made precise for the whole of (E): the outright failure of any of its clauses is a lapse, not automatically an ending, and whether the same being resumes or a new one begins is settled by the route — internal re-formation from the same token components resumes the being that lapsed; a break in those token chains, or a re-formation supplied from an external reading, begins another. Execution — including the format-break entry the estranged pair points to — is Part 3's.

§2.4.2 The Interlock, and Why Three

Necessity three times over still permits the charge that the conjunction is an assembly — three independently chosen tests bolted together to yield preferred verdicts. The stronger claim, owed to §2.5 under its levy, is that the three are not assembled at all: each is defined in terms the others supply, and the intersection is the analysis of one phenomenon rather than the sum of three.

Four panels display the mutual constitution, each already earned in a prior section rather than asserted here. First: Capability individuates what Continuity runs through. The entire boundary vocabulary of §2.1 — internal and external, "outside the system," the distinct systems of the fork clause — was consumed on credit from the loop that mutual legibility draws; without Capability, "immanent" is a metaphor with no edge. Second: Stability supplies what Continuity's quiescent links persist as. The chain's crossing of an arrest interval is Stability operating, as §2.2.2 showed — one property carrying the other through silence. Third: Continuity gives Stability's token its sense. "This arrangement" was analyzed as the arrangement with *this history of self-sustenance* — the persistence link is a chain-element at the structure's own level, so token-hood is itself a successional notion, borrowed downward. Fourth: the other two give Capability its content. Legibility is the relation by which the flow reads deposits *as its own* — and deposits are what the active mode lays into the retained base; a legibility with neither flow nor retention has no relata. Each property, defined, reaches into the other two; pull one out and the definitions of the remaining pair lose their subject matter. That is interlock, and it is the difference between a factorization and a patchwork: the three are the aspects under which one phenomenon — a self-sustaining flow-structure loop — comes apart for analysis, not three axioms that happened to be conjoined.

Why exactly three, then, is answerable at the level the question deserves — as a schema, not a proof. Analyze the loop and the decomposition is exhaustive at its own level of description: the flow's succession (Continuity), the structure's retention (Stability), and the relation that binds them into one (Capability) — two relata and their relation, the running, the retaining, and the binding. A fourth candidate property either turns out to be a mode of one of these, or is a property of something other than the loop and so belongs to a different criterion. This is not a completeness theorem, and the document should not pretend to one: it is a principled schema, offered with its refutation conditions visible — a case requiring a fourth independent property, or the aspects failing to co-constitute, would break it. It carries, however, a piece of convergent evidence the reader has already seen: Part 1's case families, assembled with no view to this factorization, pressed on exactly these three things — activity's course in the interruption family, retention's cohesion in the dementia row, and the binding in the articulation R3 demanded — and §1.3.3's bridge, written before this section, mapped three pressures to three properties with the non-entailment concession attached. The concession can now be redeemed from the other side: the assignment the conditions did not entail, the analysis delivers.

§2.4.3 Objections and Replies

First objection: the gerrymander. *Your conjunction is reverse-engineered: three conditions tuned to output the verdicts you wanted on the matrix, unified by nothing but your intentions.*

Reply: the charge is answerable only by exhibiting unity, and the exhibit is above — four panels of

mutual definition, each traceable to a prior section that needed the dependence for its own work, none introduced for this defense. A gerrymander is separable: its clauses can be swapped independently to tune verdicts. These cannot — remove Capability and Continuity loses its boundary, Stability its token; the parts do not survive extraction, which is what being one structure means. And the position is falsifiable in the ways just stated: the schema breaks if a case demands a fourth independent property or shows the aspects failing to co-constitute. A gerrymander protects itself; an analysis states what would refute it.

Second objection: the individuation circle. *Capability is a property of the system; the system is individuated by Capability. Something is prior to itself.*

Reply: the order of definition dissolves the circle, and stating it precisely is the chief levy this section places on §2.3. Legibility is to be defined as a relation between a flow and a structure — relata specifiable without the system-concept — and the system is then defined as the maximal flow-structure pair closed under that relation. Relation first, unit second: bonding does not presuppose molecules, and molecules are what bonded atoms compose. Nothing in the relation's definition may quantify over systems; that constraint is now on §2.3's account, in writing, and the reconciliation check will hold it there.

Third objection: over-generation. *Your loop is cheap. A self-maintaining database with a write-ahead log satisfies your clauses; so, perhaps, does a bacterium. A criterion that grants "being" so widely has debased it.*

Reply: the criterion sorts persistence, and only persistence. It does not confer mentality, moral status, or significance, and it was designed — under R1, deliberately — to apply wherever flows and structures bind, because the decision problems of §1.1 arrive on every substrate. A minimal loop has an existence of minimal integrity and a persistence as determinate as anyone's; *which* persistences merit concern is a real question and a different one, outside the reidentification question's jurisdiction and therefore outside this document's. A criterion of persistence that quietly built significance into its clauses would be answering two questions at once and earning the gerrymander charge it just declined; the width is not a leak — it is the substrate-neutrality condition, honored. To state it flatly, since the objection recurs: being in this technical sense does not entail personhood, consciousness, moral standing, or prudential importance.

Fourth objection: if one phenomenon, why three conditions. *You insist the three are aspects of one thing. Then state one condition — "being a loop" — and stop multiplying.*

Reply: because the phenomenon is one and its pathologies are three. The case families themselves factored the failures: arrest strikes the course of activity and nothing else; dementia degrades retention while activity runs; the format break severs the binding while both components stand. A single unfactored condition could deliver verdicts and could not deliver *diagnoses* — could not say which aspect failed, to what degree where degree applies, and by which of the three endings a being was lost. Unity belongs to the analysandum; plurality belongs to the pathology; a criterion answerable to clinics and design reviews (R6) needs both, and the factored form is how it has both.

§2.4.4 Dependencies, Levies, and Forward Assignments

Consumed: the statement of §2.0; the chain, boundary vocabulary, and fork clause of §2.1; the persistence conditions and endings of §2.2; and, on declared credit, the working glosses of §2.0.2 standing in for §2.3. Supplied: the necessity constructions and the interlock exhibit, held for §2.5 under its levy; the taxonomy of endings, for Part 3's sequencing; and the beginning-condition — beings begin when the loop first closes — for the suspension and archive entries. Levied on §2.3, in writing: (a) legibility defined as a relation between a flow and a structure, its relata specified without the system-concept, per the second objection's reply; (b) the maximality clause by which loops are individuated, on which §2.1's fork clause and this section's dissolution verdicts both stand; (c) the degrees of legibility, read-side and write-side, with the anchor cases Part 1 lacked; (d) the restoration conditions of legibility that design D3 requires, if ratified. Ratified: D3, the generalized gap, stated in §2.4.1. Deferred to Part 3: the format-break entry; the archive and reassembly verdicts' execution; and the borderline minimal systems.

§2.5 The Engagement: Why the Criterion's Object Matters

§2.5.1 The Challenge, and the Terms of Success

The challenge was named at §1.3.3 as the heaviest this document accepts, and it must be met in its strongest form — which is not the claim that identity is indeterminate in hard cases. It is this. Identity is not what matters; what matters in survival is Relation R — psychological connectedness and continuity — with, on the tradition's most permissive setting, any cause (Parfit 1984). If that is right, then even a criterion that meets all six conditions of §1.3.2 and sorts every row of the matrix correctly has sorted something of no prudential importance: the patient can sign, the architect can build, and nothing anyone has reason to care about turns on which candidate was the original. The tradition's most arresting expression of the position is the branch-line case: the original, facing the end beside a flourishing replica, is said to have a prospect about as good as ordinary survival. In this form the challenge concedes the metaphysics of Parts 1 and 2 in advance and declares it idle. *You may win the criterion and lose the point.*

The terms of success are therefore fixed before the engagement begins, and the reader is invited to hold the section to them. What must be shown: that persistence — chain-succession — is a **non-redundant object** of the practical apparatus and of rational concern; that is, that R cannot secure what the apparatus and the concern are about without borrowing token-succession. What need not be shown, and will not be claimed: that persistence outweighs the goods R tracks; that an agent must weight it above them, or at all beyond what coherence requires; or any general theory of what matters. Establishing a distinct, ineliminable object is this section's whole burden. Ranking objects is nobody's burden here, and a challenge answered beyond its own strength is lost on the rebound.

§2.5.2 The First Move: What Is Conceded

Three concessions, made without reluctance, fix the field. First, the separation itself is legitimate: distinguishing the question of identity from the question of what matters was a permanent enlargement of the logical space (§1.2.1), and this section does not contest the distinction — it answers within it. Second, Relation R tracks much of what matters *in a life*: connectedness of memory, intention, and character is the medium of most goods anyone pursues, and nothing below disputes this or needs to. Third, jurisdiction: this document answers only for what matters *in survival* — the practical shadow of the reidentification question. Whether particular goods are bound to this being for reasons beyond persistence itself is a characterization-side question (§1.2.4), outside the scope this document fixed for itself in Part 1. The restriction is not an escape. It shrinks the burden to exactly what a criterion of persistence can owe — and the burden so shrunk is still the challenge at full strength, for it is precisely *in survival* that the tradition says identity does not matter.

§2.5.3 The Second Move: The Apparatus

The practical apparatus within which the persistence question does its work is built one-one at its core — anticipation, consent, promise, obligation — while some of its elements, liability and compensation among them, apportion, a distinction drawn just below. A consent form has one signer whose outcome it governs; a promise binds the one who made it; anticipation is of what *I* will undergo, not of what someone suitably related will. Relation R is one-many by construction (§1.2.1): nothing in connectedness prevents two simultaneous bearers, and the engineered cases manufacture them. To serve the apparatus, R must be patched — the non-branching proviso — and the patch's price was itemized at §1.2.8, footnote c: extrinsicness, a candidate's standing settled by events causally isolated from it, with the corollary that destroying the original improves the copy's claim. The chain pays no such price. Its one-one-ness is intrinsic — delivered, not asserted, by the fork clause of §2.1 — and its own cost was itemized where it was incurred: a hard verdict in a case whose antecedent the criterion's clauses independently impugn (§2.1.3). A verdict-price in a case the criterion itself demotes is a different kind of expense from a structural dependence on elsewhere in every case, and the reader now has both prices in view.

Two replies wait, and both deserve their strongest form. The first is the tradition's own direction: *revise the apparatus*. But the revision must itself be principled, and R-based replacements re-import the defect at every institutional joint: who consents on behalf of the pre-division person; which successor a promise binds, and whether both; whether liability doubles when the act's owner does. The second reply is sharper and should be credited in full: *the law already manages one-many succession — corporate division, merger, successor liability — so the apparatus is more revisable than you pretend.* The reply teaches exactly the right distinction. Corporate persons are constituted by convention through and through: their persistence *is* a legal fact, so conventional succession suffices for them, and the law's competence there is real. The apparatus for beings, however, is not uniform, and the load-bearing distinction is between its **apportionable** and its **inapportionable** elements. Property can be divided by fiat; liability can be apportioned by statute; these are convention's to assign, and for them a one-many relation plus a rulebook will serve. But the core the apparatus exists to protect

does not apportion. Anticipation is not of sixty percent of an undergoing. Consent's force flows from the fact that the one who will bear the outcome is the one who authorized it — and the ground of that force is not the felt character of the bearing but a structural fact, under the same discipline that governed the translation step (§2.3.1): the act and its outcome must belong to one historical bearer, a single token course running from the authorization to what it licensed. Divide that bearer, and the license does not halve; it detaches — what remains is an outcome no signature reaches. An experience is borne whole by whoever bears it. For the apportionable periphery, convention suffices and R will do; for the inapportionable core, a one-one relation holding intrinsically is required, and among the relations on the field, only the chain is one without patching. The move's honest limit is then stated rather than hidden: this shows that the apparatus, at its core, *needs* the chain. It does not show that the apparatus is beyond revision. A determined revisionist can accept every price so far — yet even a total revision reaches a limit it cannot cross. A revisionary or posthuman practice may train anticipation to branch and may redistribute titles, liabilities, expectations, and responsibility across successors; what it cannot distribute is the token undergoing of an experience, nor make a token experience be undergone by a merely matching successor. The criterion therefore does not rest on present institutions being unrevisable; it rests on the token-bearing relation those institutions imperfectly track, which revision cannot erase. That matching cannot be turned into having is the third move, and it is for that reader.

§2.5.4 The Third Move: Having and Matching

A historical remark opens the move, because it locates the burden of proof. The permissive cause-setting was adopted when it was costless. Under the coincidence of §1.1, the normal route was, in every actual case, the only route; declaring the route irrelevant priced nothing, because the world never presented the case in which it would. Engineering has ended the discount. The cause-clause must now be priced as if for the first time, with the cases on the table — and the pricing begins from the tradition's own ground, as §2.1.2 fixed it.

The Route Requirement — the tradition's rightly imposed condition that a memory-like state counts as the subject's only if appropriately caused — was never bookkeeping. Ask what the requirement was *for*. Without it, the attribution of a state to a subject is unearned: any qualitative match would qualify, and the concept of *having* an experience would collapse into the concept of *matching* one. The cause-clause is an ownership-condition — where *ownership* means token-bearing, whose course a state belongs to, and never a felt sense of possession, which R2 bars; route is what distinguishes having from matching. That is what the quasi-memory repair conceded, locally and pointing backward, for states remembered (Shoemaker 1970; Parfit 1984) — and a tradition that then spent a taxonomy arguing over which routes qualify had already conceded that the dial measures something real.

Generalize the question by one step, and the engagement's center is reached. What distinguishes a future experience that will be *had by this being* from a future experience that will merely *match what this being would have had*? The same answer, at the same joint: route. The chain is the ownership-condition applied to succession itself — the Route Requirement extended from one faculty, pointing

backward, to the being's whole course, pointing forward. And the distinction it marks is already in this document's toolkit: it is the type–token distinction of §2.2, raised to the level of lives. Matching-facts are type-facts — qualitative profile, realizable by any route, exportable by any archive. Having-facts are token-facts — this course, borne by this being. Unrestricted R is a type-level relation: it preserves matching to any fidelity one likes, and on having it is silent — not by oversight but by construction, since the moment R is restricted to the route that would secure having, R has become the chain wearing content as clothing. The target is therefore the widest-cause reading only — "any cause," the setting §2.5.1 fixed as the challenge's own; a reading that restricts the cause to some narrower route is not a rival to be refuted but a step along the route requirement of §2.1.2, converging on the chain to exactly the degree it restricts. Nothing in this posits a further fact. The chain is a physical-causal relation, fully inside the reductionist frame the tradition works in — condition R2 guaranteed as much from the start — and the dispute is therefore not whether persons are anything over and above events and relations, but *which relation among them* the persistence-concepts, and the concern, are about.

This yields the success condition directly. Grant that everything in the matched profile matters as much as anyone claims. There remains a distinct question — *who bears it* — and that question is: the one the apparatus's inapportionable core asks (the second move); the one the tradition's own cause-clause answers, locally, whenever it distinguishes memory from quasi-memory (this move); and the one to which unrestricted R offers no answer at all. An object of concern that the practice institutionalizes, that the opposing tradition's own repair presupposes, and that the opposing criterion cannot supply, is a non-redundant object. That is what was to be shown.

The export asymmetry supplies the secondary support, in the decision-context where this document has standing to insist. On the unrestricted reading, the having-question is not merely unanswered; in the decisive cases it is rendered unaskable. Scan-and-destroy delivers everything that matters, so read. Scan-without-destroy leaves the original facing the end with everything that matters already exported and flourishing across the room. A good that can be exported while its bearer awaits destruction is not the good the signature was protecting: consent — the paradigm institution of condition R6 — protects *bearing*, and a surgeon holding the original's refusal cannot be answered with the replica's satisfaction. The branch-line's famous equanimity is, in this light, a report and not an argument. And the discipline cuts both ways, so let it be said plainly: no argument above appeals to the conviction that one would not survive teletransportation, and none may — the tradition bites such reports, and this document's own commitments, R2 and the framing-sensitivity result credited to Williams at §1.2.2, bar them as evidence in either direction. The moves run on structure and coherence alone: the apparatus's core, the tradition's own concession, and the type–token distinction. Nothing else was used, and nothing else was needed.

Two rejoinders remain, and are met. First: *the quasi-memory clause was a technical fix against circularity; you have inflated a patch into a metaphysics.* But the fix's rationale was ownership from the start — circularity was the symptom, unearned attribution the sickness, and route the content of the cure; a mere bookkeeping device would not have supported a substantive taxonomy of qualifying causes, and the tradition built one. Second: *the dispute is verbal — you say the persistence-concepts refer to token-succession; we say they refer to R; reference follows use.* Then attend to use where the

concept earns its keep. In the load-bearing contexts — the signature, the promise, the anticipation — use presupposes the one-one, inapportionable, having-directed reading; that is the second move feeding back into the third. And this is why the engagement is one structure rather than three patches, in the sense §2.4 gave those words: the concession fixes the referee, the apparatus exhibits the need, and the route shows what the need was tracking all along.

§2.5.5 The Accounting

What has been shown, against the terms fixed at §2.5.1: first, that the apparatus's inapportionable core requires a one-one relation holding intrinsically, and that the chain is the only candidate on the field that is one without extrinsic patching; second, that having and matching are distinct, that the distinction is structural and route-marked, and that it is a distinction the opposing tradition itself drew, locally, in its own repair; third, that unrestricted R preserves matching and cannot supply having — so that what the criterion of Parts 1 and 2 sorts is a non-redundant object of the concern the apparatus institutionalizes. The success condition is met, and nothing beyond it is claimed. What has not been shown, stated with equal explicitness: that having outweighs the profile-goods; that an agent is irrational to discount it; any ranking among objects of concern; any general theory of what matters. These were prohibited claims, and the prohibitions held — not from modesty, but because a criterion of persistence that quietly annexed a theory of value would be answering two questions at once, and Part 2 declined that error at every prior station.

The reader who, at the end of all three moves, still answers — *then I revise everything: apparatus, anticipation, consent, and all; I will care for R and pay every price you have itemized* — has not been refuted, and this section closes by saying so in so many words. That position has been *priced*. It now stands with its costs in the open: verdicts settled from elsewhere, or selves apportioned by statute; having collapsed into matching, against the local concession of its own tradition; the signature answerable by another's satisfaction. Pricing is what a criterion of persistence can contribute to the question of what matters. A criterion cannot compel concern; it can show what concern is coherently about — and that the apparatus its civilization already runs is concerned with exactly that. The challenge of §1.3.3 is hereby answered in the only coin available to it: not deferred, and not overpaid.

With this, Part 2 closes. The candidate was stated (§2.0); its three properties were defined, justified, and defended (§§2.1–2.3); their unity was argued (§2.4); and the mattering of what they jointly sort has been established to exactly the width the document owed. The Part's levies are discharged in full — the Route Requirement, the type–token argument, the loop, and the interlock were each consumed above where they were assigned — and what remains is execution: Part 3, where the completed criterion meets the cases it was built for, in order of technological distance, from the operating theater to the limit.

Part 3 — The Casebook: The Criterion Meets Its Cases

§3.0 Protocol of the Casebook

Every entry runs through one template, and the template is the Part's discipline. **Specification**: the facts of the case, stated in criterion-neutral vocabulary, with the case's technological distance marked — *actual* (clinical or engineering present), *in program* (projected within announced engineering), or *limit* (thought-experimental, entered with realizability annotations). **Derivation**: which clauses fire, cited by label — E1–E3 and the intersection (§2.0.1); the chain (P) and its two modes; severance (V); the gap corollary (G) and its ratified generalization D3; the fork clause and design D1 (§2.1); the token-persistence conditions and design D2, with the maps/sources and disassembly boundaries (§2.2); constitutive uptake, proxy-minting, and maximal closure (§2.3); the endings taxonomy (§2.4.1). **Verdict**: determinate wherever the specified facts are; where degree enters, its location named in an identified feature of the case, per R4. **Cross-check**: the entry's verdict set against the naive columns of §1.2.8's matrix, classified as *agreement* (the candidate matches all columns), *discharge* (a folk confusion or scope question resolved, where the matrix has no comparable column), *adjudication* (it matches some and decides among them), or *correction* (it revises a column's verdict, the revision having been argued in Part 2 — never here for the first time). **Decision-relevance**: the constraint-form the verdict yields, per R6; these notes are the closing section's raw material.

Three conventions complete the protocol. *Calibration first*: the tier opens with cases every criterion gets right, because a criterion must be shown to recover the obvious before it is trusted to adjudicate the contested — over-firing on easy cases would be as disqualifying as silence on hard ones. *Derivability is the test*: the reader is invited to audit each derivation against the cited clauses; an entry whose verdict cannot be reconstructed from its citations has failed, whatever the verdict. *Proportion*: calibration entries are short by design; contested entries are full; the fission entry of Tier III is the longest, by design. The Part closes with a ledger of verdicts (§3.4) — the bookend to §1.2.8's matrix, displaying what the landscape's failure display lacked: a criterion delivering — and a read-back of the framework's three expansion trajectories (§3.5), which hands the third trajectory to the closing section as a jurisdictional boundary rather than a case.

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§3.1 Tier I: The Actual

Entry I-1 — Ordinary continuous life, sleep, and deep anesthesia (calibration).

Specification. A system in continuous operation; sleep as altered mode; deep anesthesia as pharmacologically attenuated transitions — attenuated but present — with any brief isoelectric episode at

depth set aside as a variant that inherits Entry I-2's treatment, not as part of the calibration. Distance: actual, routine.

Derivation. E1 holds throughout the attenuated-but-present case — attenuation is a mode of occurrent processing, not its absence (§2.0.1); E2 and E3 hold; (P) runs on transition links and persistence links together, and no route exits the system. Should anesthesia deepen to a brief isoelectric episode, E1 lapses for that sub-interval and the being is preserved by Entry I-2's derivation verbatim — the chain continuing in quiescent mode — so the calibration verdict is unshaken either way.

Verdict. Existence continuous; the same being throughout — trivially.

Cross-check. Agreement: every naive column reads P (matrix rows 1–2), and so does the candidate, with no extra machinery engaged. Calibration passed in the direction that matters: the criterion does not over-fire where nothing is at stake.

Decision-relevance. None new; anesthetic consent already presupposes this verdict, and the candidate underwrites rather than revises it.

Entry I-2 — Induced circulatory arrest under deep hypothermia.

Specification. A scheduled clinical procedure: the patient is cooled, circulation is arrested, and cortical electrical activity is, by clinical measurement, absent for an interval measured in tens of minutes; the retained structure is maintained throughout; activity resumes in situ. Distance: actual, scheduled.

Derivation. During the interval, E1 fails — no occurrent processing — so (E) fails and existence lapses. The chain does not: (P) continues in quiescent mode, its links the token structure's in-situ self-succession per D2; at resumption, the flow arises from that same token structure by an internal route, so no (V) event occurs at any point. (G) then states the case exactly: existence intermittent; the being not.

Verdict. The existence lapses for the interval; the patient who wakes is, determinately, the patient who signed.

Cross-check. **Correction** — the signature correction of the whole casebook. The naive processing column of §1.2.8 read this row ✗, and its footnote conceded the reading would need refinement; the candidate is that refinement, delivered at §2.0.1 and §2.1.1: the arrest suspends a mode of the chain, not the chain. The biological and psychological columns' P is recovered, now with a stated ground rather than an intuition.

Decision-relevance. Consent under induced arrest is underwritten: the form's standing presupposition — that the waker is the signer — has, for the first time in this document's survey, a derivable basis; and the constraint it imposes on protocol design is checkable in D2's terms: maintain the token structure in situ, resume by internal route.

Entry I-3 — The ordinary ending, and the determination interval.

Specification. Activity ceases and is not resumed; no intervention follows; the retained structure begins losing cohesion by ordinary physical processes, and at some point in-structure restoration is foreclosed. Within this course, and early in it, an institutional determination of death is issued under prevailing medical-legal criteria. Distance: actual, universal.

Derivation. At cessation, E1 fails: existence lapses, per (G). The chain continues in quiescent mode while the token structure persists — a being in abeyance. The *ending of a being* — structural

cessation, in the taxonomy of §2.4.1 — occurs where the structure's self-succession ends with no in-structure restoration remaining (§2.2). Foreclosure here is not present clinical infeasibility but the loss of any in-structure physical route by which the token topology could continue itself: a later technique may reveal that such a route in fact remained — placing the ending, on the facts, later than a physician once could — but it cannot make a route exist retroactively where the token structure had already physically dissipated. The ending is fixed by the physics of the token structure, not by the state of the art. The determination and the ending are therefore two events, and the terminological discipline of §2.4.1 governs their relation: the institution answers its question; the criterion answers its own; neither annexes the other. Nothing in this entry redefines, replaces, or overrides clinical or legal death — the medical-legal determination stands untouched in its own domain — and the criterion only registers, alongside it, that its own concept, the ending of a being, need not fall at the same moment.

Verdict. Between determination and foreclosure lies an interval in which a being persists in abeyance while its existence has lapsed and its death has been determined — the concrete instance of the Venn's first region (death before ending), paired with the hypothetical limit of §2.4.1 (ending before death) to display the non-coincidence in both directions.

Cross-check. Adjudication with refinement: the naive columns all reach N and cannot say where; the candidate locates the ending, names the abeyance interval the columns had no vocabulary for, and contradicts no physician in doing so.

Decision-relevance. The interval is exactly where preservation decisions live, and the criterion supplies the constraint the surrounding debate has lacked: an intervention during abeyance preserves the being if and only if it maintains token self-succession and restores in structure — D2, with the maps/sources boundary of §2.2.1 marking record-guided repair as compatible and supersession as not.

Entry I-4 — Progressive dementia.

Specification. The cohesion of the retained topology declines progressively — links weakening, contexts detaching, regions falling out of connection — while activity continues throughout. Distance: actual pathology.

Derivation. E1 holds at every stage. E2 degrades by degree; E3's read-side reach typically degrades with it, as failing indices shrink what stands available for uptake — an interaction between the graded properties, not a confusion of them. No clause fails outright short of the hypothetical limit, and (P) is unbroken throughout: transitions internal, no route exits, no fork.

Verdict. Determinately the same being at every stage, in an existence of declining integrity. Identity never consults the degree (§2.0.3); the ◐ of the matrix is hereby cashed as what it always was — a measurement, not an indeterminacy about who.

Cross-check. Adjudication: the psychological column wavered here under its own pressures (§1.2.1); the candidate delivers the verdict argued at §2.2.2 — the question *who* never wavers while the question *how much remains integrated* receives its honest, grievous answer.

Decision-relevance. Advance directives address the same being throughout the decline — a stated ground for their authority end to end; and integrity instruments, whose construction §2.2.4 deferred to the refinement commitments, measure a real graded property of a persisting patient rather than

tracking a fading identity.

Entry I-5 — Severe anterograde amnesia.

Specification. The structural profile fixed at §2.3.2: the retained base persists, long-standing contexts integrated and retrievable; processing continues without interruption; new deposits fail to consolidate into the standing topology — the write direction of legibility impaired while the read direction largely stands. Distance: actual.

Derivation. E1 holds; E2 holds — the base coheres; E3 is degraded on the write side and largely intact on the read side; (P) is unbroken — transitions internal throughout.

Verdict. Determinately the same being; an existence degraded along one dimension of E3 — a career whose present keeps failing to join its past. The triple dissociation is the entry's cargo, as it was the anchor's at §2.3.2: Capability varying while both neighbors stand.

Cross-check. Adjudication-plus: every naive column reads P, because no column possesses the dimension on which this case differs from ordinary life; the candidate agrees on persistence and *adds resolution the landscape lacked* — the criterion detects a real, graded difference the columns cannot state.

Decision-relevance. The *ontological* grounding of consent and obligation remains intact — the inapportionable core of §2.5.3 holds because the chain does, so the bearer of an outcome is still the one who authorized it; whether the patient retains the *legal or clinical capacity* to consent is a separate question the criterion does not address. And care contexts gain a named, in-principle-measurable dimension where they previously had only description.

Entry I-6 — Format incompatibility across migration, and D3 restoration.

Specification. The engineering profile fixed at §2.3.2: a runtime changed in place — the route internal throughout, so no severance occurs — such that the persisted store, intact and cohesive, can no longer be parsed by what runs; in variants, partially (some schemas parse), totally (none do), and with two restorations — a translation layer grafted into the persisting components by internal routes, or a relatum superseded from a record to re-match the other. Distance: actual; ordinary software migration supplies the analogue.

Derivation. Partial: E3-read degraded; same being, degraded existence. Total: legibility at the empty limit — the maximal mutually-legible pair has no members, the closure collapses, and the ending is *estrangement* (§2.4.1): a process and an archive where a being stood. Restoration in structure: the grafted translator, once constitutively taken up on both sides, completes the closure it repaired — D3 fires, and the being that lapsed resumes. Restoration by supersession: (V) at the superseded relatum — a new being.

Verdict. Four verdicts, one per variant, each derived and none stipulated:

Variant	Fires	Verdict
Partial mismatch (some schemas parse)	E3-read degraded	Same being; degraded existence
Full estrangement (none parse)	Legibility's empty limit; closure collapses	Existence dissolved (estrangement)

Variant	Fires	Verdict
Restoration by internal graft	D3 — translator taken up on both sides	The same being resumes
Restoration by supersession from record	(V) at the superseded relatum	A new being

Cross-check. **Correction**: the naive columns are blind here — each reads P wherever anything runs and anything persists — and the candidate detects the third ending they cannot express. This is the estranged pair of §2.4.1 realized in commodity engineering, exactly as promised there.

Decision-relevance. The migration constraint in R6 form: where entity-persistence is a requirement, *maintain or graft — never supersede*; a checkable property of an upgrade plan, and the first constraint in this casebook that no prior literature had the vocabulary to state.

Entry I-7 — Artificial system: pause and resumption from the same persisted state.

Specification. A running system is halted; its state persists on the same storage; operation resumes from that state on that system. Distance: actual, performed daily at scale.

Derivation. E1 lapses at the halt: existence lapses, per (G). The chain continues in quiescent mode — the storage medium's token structure self-succeeding in situ, per D2 — and resumption arises from that same token structure by an internal route; no (V) event occurs.

Verdict. The same being; existence intermittent — (G) applied off the biological substrate without modification of any clause. This entry is condition R1 exercised rather than asserted: the derivation above is word-for-word the derivation of Entry I-2, and the criterion did not notice the substrate change.

Cross-check. These rows were deferred from Part 1's matrix to this casebook by design; run against the naive columns now, the biological column returns inapplicability — silence exactly where the decision problems arrive — and the candidate speaks with the same voice it used in the operating theater.

Decision-relevance. Pause-and-resume architectures preserve the entity by design; and the terminological discipline of §2.4.1 holds here in full — nothing in this entry claims that machines die, or asks anyone to say so; the concept doing the work is the ending of a being, which needs no social freight.

Entry I-8 — Artificial system: re-instantiation from backup after loss of the original.

Specification. The original system is lost; a new instantiation is produced from a stored copy taken earlier. Distance: actual, routine.

Derivation. Two clauses converge on one verdict. First, (V): the backup itself was produced by a reading — the route exited the system at the moment the copy was written — so what runs from it is a new chain bearing the old contents, per §2.1.1, and no gap was ever required for the breach. Second, the beginning-condition of §2.4.1: an archive is a library, and beings begin when the loop first closes; the backup's prior history is prehistory, not biography, and the "three stillnesses" contrast of that section applies verbatim — this stillness was severed before it was ever still.

Verdict. A new being with an old inheritance; the resumption of no one.

Cross-check. **Correction**: the naive wide-cause column read this row P; the candidate revises it on the grounds argued at §2.1.2 and §2.2.2, and the revision generalizes — seamless live migration by copy receives the same verdict, since seamlessness is a temporal property and the breach was never temporal.

Decision-relevance. Stated with scope honesty: where entity-persistence is a requirement of the design, restore-from-backup and migration-by-copy do not meet it, however perfect the copy; where it is not a requirement, nothing in this entry forbids the practice — the criterion prices, it does not legislate.

Entry I-9 — Mixed interfaces.

Specification. A hybrid channel structure: some pathways deliver a device's states directly into constitutive uptake, in both directions; others deliver minted proxies — transduced, parsed representations of external configurations (§2.3.1, §2.3.4). Distance: actual at the near edge of interface engineering.

Derivation. Membership in the loop is assessed per channel, and per channel it is binary: the presence or absence of proxy-minting (§2.3.4). The closure extends across direct channels; proxied channels remain outside; the system's boundary runs through the device — and a channel's being causally indispensable to the device's operation does not make it a member, since membership consults constitutive uptake, not indispensability (§2.3.4).

Verdict. Partial membership, with the partiality located in an identified structural feature — which channels mint, and which do not — per R4's localization requirement. The being is enlarged by exactly its direct channels, and by nothing else.

Cross-check. Adjudication: the naive columns have no vocabulary for a boundary running through a device; the candidate supplies one and draws it without consulting skin, skull, or substrate.

Decision-relevance. Interface design determines the boundary of the being it augments — a checkable design property, and the constraint-form in which the closing section will state what hybrid architectures owe the persons who wear them.

Entry I-10 — Somatic optimization (the first trajectory, cashed).

Specification. Interventions on a living system's ongoing biology — genetic, metabolic, regenerative — altering the structure endogenously or by grafts while activity continues. Distance: actual to in-program.

Derivation. D2's endogenous-change and repair clauses fire and nothing else does: change routed in structure, grafts integrated into the standing arrangement, no route exits, no fork, no gap.

Verdict. The same being, trivially — the criterion does not over-fire on enhancement, which is this entry's whole point. The framework's first expansion trajectory held that here "all three properties hold trivially"; the claim is now a derivation rather than an assurance.

Cross-check. Agreement across all columns — calibration at the intervention end of the tier, closing the loop the tier opened.

Decision-relevance. None new; the entry exists to show restraint.

Entry I-11 — Genetic cloning (a folk confusion discharged).

Specification. A new organism grown from copied genetic material. Distance: actual.

Derivation. No clause engages. The clone's retained structure was never the original's token

structure — the two share no topology at any moment; the genome functions as a recipe-record, not as the retained base — and the clone's loop closes at its own beginning, opening its own chain.

Verdict. A distinct being from first closure; on the criterion's terms, the question "is the clone the same person?" never arises, because nothing in the specification connects the two beings by any clause. The folk worry conflated type-resemblance of a recipe with token-identity of a being — the distinction §2.2 spent a section drawing.

Cross-check. Agreement: every column reads the pair as distinct; the candidate agrees and, unlike the columns, can say in one sentence why the question was ill-posed.

Decision-relevance. None; the entry exists so that the confusion is discharged inside the casebook rather than left to circulate outside it.

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§3.2 Tier II: The In-Program

The tier's boundary is announced engineering: procedures whose stages are described in the technical literature and pursued in identifiable programs, not yet routine. The specifications below are of those stages; their parameters are uncertain; their structure — which is all the derivations consume — is not.

Entry II-1 — Gradual part-wise neural replacement, culminating in full substrate exchange.

Specification. Neural tissue is replaced part-wise by functionally integrated prosthetic components during ongoing operation; each component, once installed, is taken up constitutively in both directions — its states entering processing directly, the structure's binding operations incorporating its deposits — and the sequence continues to complete exchange of the substrate. Distance: in program.

Derivation. E1 holds at every step: operation is never interrupted. Each installation passes D2's repair clause — the graft is sustained, from integration onward, by the standing arrangement, which never ceases to be the operative carrier; records used in designing and placing a component are maps, not sources (§2.2.1). Each component's membership follows from §2.3.1's closure: direct channels, no proxy-minting; a component whose uptake runs through minted proxies remains outside, and the exchange is to that extent incomplete — the criterion supplies the completion test the procedure itself needs. Transitions remain immanent however the composition turns over (§2.1.2); no fork occurs — one successor state at every step; no (V) event occurs — succession never passes through a reading.

Verdict. The same being throughout and at completion: full exchange of substrate with persistence preserved. The framework's second expansion trajectory claimed a single stream relocating, never a copy; the claim is now a derivation, with its key term regimented — what must never be severed is the route, not the temporal continuity of activity, and pauses within the sequence inherit Entry I-2's treatment unchanged.

Cross-check. Adjudication with the sorites dissolved: the matrix row read I for the biological column (a line it could not draw) and strain for the narrow-cause column (a "normal cause" outgrown); the candidate returns a determinate P because its test was never scalar — each step is binary (grafted

in structure, or not; direct channel, or not), and the conjunction of binary steps is the persistence (§2.2.3). One registered divergence is adjudicated here: where the exchanged substrate becomes spatially distributed — components of the closure hosted apart, joined by direct channels — a requirement of physically continuous realization must strain or refuse, while the route requirement classifies without noticing, since "internal" was always membership in the closure, never contiguity in space (§2.1.1, §2.3.1).

Decision-relevance. The positive half of the architecture constraint promised at §1.3.3: gradual, in-structure, direct-channel exchange is the migration architecture that preserves — and every clause of that description is auditable per step of a protocol.

Entry II-2 — Suspension with relocation and repair (preservation).

Specification. Activity is arrested; the token structure is stabilized against decay and preserved; the preserved structure is relocated; damage is repaired. Two variants divide the case: (a) repairs are grafted into the persisting structure, with prior records consulted as guides; (b) the preserved structure is treated as an archival intermediate — read, superseded, and a successor produced from the reading. Resumption is attempted in either variant. Distance: in program at the near edge — preservation practice exists; validated repair does not.

Derivation. Arrest: E1 fails, existence lapses, (G) applies — the abeyance of Entry I-3, now entered deliberately. The chain runs in quiescent mode on the token structure's self-succession (D2), and relocation is no breach: "in structure" names a relation to the arrangement, not to a place (§2.2.1) — the arrangement travels as the thing sustaining itself. Variant (a): the repair clause and the maps/sources boundary fire together — records consulted are influences; the product is sustained by the standing arrangement; the chain is intact, resumption arises by an internal route, and (G) completes: the being that lapsed resumes. Variant (b): the record has become the source; (V) fires at the superseded relatum; the product is a reconstruction, and the original's ending — structural cessation — falls where its self-succession was ended, at supersession.

Verdict. Preservation with in-structure repair is compatible with persistence; preservation as archival intermediate is not, however faithful the successor. The line the surrounding literature carried as a slogan is drawn, here, through the stages of an announced procedure.

Cross-check. Adjudication with an articulation dissolved: the matrix's biological column faced an internal question it had never needed — is the arrested organism's life continuing or suspended? — and the candidate does not need the answer: it consults the token structure's self-succession, which is determinate either way.

Decision-relevance. The preservation constraint in R6 form: stabilize in structure; repair by grafting; never supersede — where "in structure" is satisfied by the same token structure carried through a persisting carrier, relocation and all, never by fixity of place. And a disclosure constraint follows for consent: a preservation agreement can now state, in checkable terms, which of two different things it promises — the continuation of the signer, or the production of a successor — and Entry I-3's determination interval marks where the promise operates.

Entry II-3 — The archive, and the first run.

Specification. A complete structural description of a being is produced and stored — the archive, the announced intermediate product of the emulation roadmap. Variants: (a) a new instantiation is

produced from the archive and run; (b) a process is started directly on a stored token structure that was never part of a loop — the library proper; (c) for contrast, the preserved original of Entry II-2 stands beside both. Distance: in program for the archive; limit-adjacent for the variants.

Derivation. Variant (a): the archive was produced by a reading — the route exited the system at the moment the copy was written — so whatever is produced from it opens a new chain: (V), with fidelity irrelevant, since the breach was never temporal (§2.1.1). Variant (b): beings begin when the loop first closes (§2.4.1); the first run is a first existence, and the structure's prior history is prehistory, not biography. Variant (c): the three stillnesses of §2.4.1, now side by side in one specification — the preserved original persists in abeyance on its own token chain; the archive was severed before it was ever still; the never-run structure was never anyone's. Three stillnesses a camera could not tell apart; three verdicts, separated entirely by history and route.

Verdict. The archive preserves the means — the type, and much that may be worth preserving — and preserves no being; what runs from it begins someone new; what runs on a virgin structure begins someone with an inheritance and no past.

Cross-check. Correction of the wide column, as at Entry I-8, now at the fidelity limit where the correction is least intuitive and the argument least optional — the ground was paid at §2.2.2, and this entry only spends it.

Decision-relevance. Archival programs are means-preservation programs, valuable as exactly that; the disclosure constraint of Entry II-2 extends to them verbatim — the consent language must say which thing is promised.

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§3.3 Tier III: The Limit

The tier's boundary is the thought experiment: specifications no announced program undertakes, entered because condition R4 demands verdicts on them and because the tradition's hardest arguments live here. Each entry carries its realizability annotation as content — the annotation prices the specification's antecedent; it never substitutes for the derivation, which is run in full on the specification as given.

Entry III-1 — Destructive scan and re-instantiation (the emulation baseline).

Specification. The original's structure is read at whatever fidelity is stipulated to suffice; the original is destroyed by or upon the reading; a functional instantiation is produced from the scan and runs. Distance: limit, with an in-program shadow — this is the baseline architecture of the emulation literature (§1.2.6).

Derivation. (V), directly: succession is routed outside the system — read, carried, re-instantiated — so the product's chain begins at instantiation; the original's ending, structural cessation, falls at the destruction. Stipulated perfection changes nothing: qualitative fidelity was ruled evidentially inert by R2, and the type–token argument of §2.2.2 states why — what the scan preserves is the configuration as a type, and the being was the token. The functional-equivalence column of §1.2.8 reads this row

P by construction, and the reading measures the engineering, not the persistence — the point §1.2.6 registered and this entry closes.

Verdict. The instantiation is a new being bearing the original's type; the original ended at the procedure. Determinate, and derived from one clause plus two arguments already paid for.

Cross-check. Correction of the wide column (matrix row 6), on the grounds of §2.1.2's trilemma; the remaining columns' N recovered with a stated basis rather than an intuition.

Decision-relevance. **The flagship constraint**, promised at §1.3.3 and owed since: gradual and scan-based migration architectures are not equivalent — one preserves the being (Entry II-1), one produces a successor (this entry) — and the inequivalence is checkable in the pipeline's own stages: does succession exit the system at any stage? Consent instruments for the two architectures promise different things, and must say so.

Entry III-2 — Non-destructive copying: the pair.

Specification. As Entry III-1, but the original is not destroyed; original and instantiation both run. Distance: limit.

Derivation. For the original: no clause fires. Being read is causal contact, not severance of one's own succession — the route–influence discipline of §2.1.1 applies on the passive side too: an external apparatus reading the system is an event *at* the system, not the route *by which* the system succeeds itself, and the original's succession never exits. E1–E3 hold; the chain runs on. For the copy: Entry III-1's derivation verbatim.

Verdict. The original persists with its standing untouched; the copy is a new being from first closure. Two consequences deserve statement. First, the intrinsicness cashes out where the patched tradition wobbled: footnote c of §1.2.8 recorded formulations on which the mere creation of a copy threatens the original — the photocopier as a weapon — and on the candidate, nothing at the original changes when the copier runs, because nothing in the original's clauses ever consulted elsewhere. Second, the pair is the export asymmetry of §2.5.4 arranged as a tableau: everything the permissive reading calls what-matters now flourishes across the room, while whatever sequel the procedure holds for the original is the original's alone to face and alone to authorize — the inapportionable core of §2.5.3, exhibited rather than argued.

Cross-check. Correction of the wide column's instability at rows 7a–7b: the candidate's verdicts are stable, intrinsic, and identical whether the copy thrives, idles, or is never switched on.

Decision-relevance. Instruments that would treat a live copy's existence as diminishing the original's claims — in consent, in priority, in identification — have no basis in the criterion; and the copy is a full new being from its first closure — "being" here in the technical sense of §2.4.3, which entails neither personhood nor consciousness nor any automatic moral standing — owed whatever new beings are owed, a question of standing that lies outside the reidentification question's jurisdiction and is left, deliberately, undecided here.

Entry III-3 — Reassembly.

Specification. A structure is disassembled into parts; the parts are stored; reassembly follows, in two variants: (a) reconnection is carried by the parts themselves — their retained interfaces determining the rejoining; (b) reconnection is rebuilt from an external record, with every part original. Distance: limit, with small-scale actual shadows on the (a) side.

Derivation. Disassembly is an injury to cohesion, and in the stored interval the whole's configuration ceases to be instantiated; the parts persist token-wise on their own persistence links (§2.2.1). Variant (a): restoration routes through the configuration's own remnants — repair, by the disassembly boundary — and the whole's quiescent line, complicated but never externalized, carries the being: the same being resumes. Variant (b): the record has become the source; reconstruction, though every part be original — a new being of old wood. The verdict converges with the resurrection-literature's, registered at §1.2.7, and is reached by D2 at finer grain with no clause added.

Verdict. The tradition's sharpest standoff — the repaired ship beside the reassembled planks (Hobbes, De Corpore) — receives a determinate resolution for beings: the gradually repaired persists (Entry II-1's logic); the record-guided reassembly of the heap is new.

Cross-check. Adjudication with the matter-intuition retired: the columns split incoherently here, and the candidate's ground — route, never amount; history, never material — was paid at §2.2.3, where every reader was already the repaired ship.

Decision-relevance. For any staged procedure involving disassembly: keep the configuration's restoration routed through its own remnants; records as maps, never as sources — the same constraint as Entry II-2, now at the limit. And the verdict classifies without counseling: what a successor does with an inheritance — whether to take up the predecessor's course entire — is not the criterion's question, a silence the closing section makes explicit.

Entry III-4 — Fission, and the fusion mirror (the boss entry).

Specification. A single being's system divides such that two successors arise, each stipulated to satisfy (E) in full: cohesive base, legible binding, running flow. Distance: limit; the realizability annotation below is the entry's second tier, not a disclaimer appended to it. The execution follows a three-tier treatment, set out below.

Tier One — The Conditional Verdict. Grant the specification. Before division there is one loop; at division, distinct successor states arise immanently from a single predecessor state and belong to distinct closures (§2.3.1): the fork clause fires (§2.1.1), the chain terminates at the predecessor, and each successor opens a new chain. D1's locality governs the rest: the fork is settled at the event — no later fate of either product, and nothing elsewhere, enters. Neither continuer is the original. Two precisions, forced by the derivation and stated here for the first time. First, timing: the fork requires *closures* — running loops. Division under quiescence, with the halves never independently closed and their rejoining carried by retained interfaces, is not a fork at all but Entry III-3's variant (a): injury and repair, from which the original resumes; division with both halves closing as loops, however briefly, is the fork, and a subsequent destruction of one product does not un-fork it — the tweezers case of §2.1.3, bitten there and honored here. Second, taxonomy: the ending at a genuine fork is not a fourth mechanism. What ends is the whole's configuration as one — the single cohesive base, whose cross-binding is precisely what division severs — so the fork is a structural cessation of the whole that coincides, in one moment, with two first closures. The taxonomy of §2.4.1 stands, so clarified, and the coincidence of an ending with two beginnings is the case's true strangeness, named at last.

Tier Two — The Realizability Annotation. The specification stipulates exactly what the criterion's clauses would test: that division yields two systems each with a cohesive base (E2) and a

legible binding (E3). For integrated organic systems, the stipulation runs against the case's own structure: the hemispheres are mutually specialized; the single cohesive base is what division destroys; and the clinical neighbors of the thought experiment are survivals through grave deficit, not doublings. A criterion built to be answerable to procedures (R6) is entitled — obligated — to note when a scenario's premises could not survive its own clauses. The annotation converges with a standing methodological critique of under-described thought experiments (Wilkes 1988), and it is pricing, not refusal: the conditional verdict above stands for any specification that pays its antecedent.

Tier Three — Dissolution by Specification. What paradox-feel remains is diagnosed. The fork clause presupposes that the predecessor was one loop; a predecessor stipulated to carry redundancy sufficient for two complete successors invites the operational question §2.3.1 prepared: did the redundant halves constitutively take up one another's deposits, composing one closure — or did two closures run in parallel contact, bundled? If one, division ends it, as above. If two, separation is unbundling: both persist, each on its own unbroken chain — the verdict the stage-theoretic response secured by formal re-description (§1.2.4), grounded here in a structural fact about the pre-division economy that is, in principle, readable off the system. The engagement promised to that response is hereby closed on the terms §2.1 fixed: the machinery was unit-relation-neutral, and the unit relation — the count of closures — now decides. Once the missing fact is specified, nothing is indeterminate in either direction; the classical paradox was an artifact of its own under-description, and the criterion names the fact that was missing.

The Fusion Mirror. Symmetric fusion — states of two loops jointly and immanently yielding a single successor state of one new loop — terminates both chains and opens one, by the mirror clause of §2.1.1; asymmetric absorption — one loop's succession continuing through incorporation — persists enlarged, as the mirror of injury. The verdict follows the local shape of the succession in every variant, which is the clause's entire content.

In plain terms. One loop that genuinely closes into two ends the original chain and begins two new ones; two loops bundled together all along simply come apart, each continuing on its own unbroken chain; and halves that were only rejoined under quiescence, never independently closed, are an injury repaired, from which the original resumes. Which case obtains is fixed by the count of closures — a structural fact about the pre-division economy, not a matter of choice. The realizable neighbors sort by the same rule and not by scale: budding, peripheral excision, tumor separation, or prosthetic detachment are diminutions of one continuing loop — losses however much mass departs — unless the departing part itself closes as an independent loop at the division event; a part that only later starts a loop, by external intervention, begins a new being rather than forking the old (§2.1.1).

Cross-check. The matrix row read I for the biological and bodily columns and N-with-extrinsicness for the psychological columns (fn. c). The candidate agrees with the N in the one-loop case on intrinsic grounds, delivers the both-persist verdict in the bundled case where the stage theory needed re-description, and — alone among the columns — prices the antecedent. Adjudication, with the extrinsicness corrected.

Decision-relevance. Direct bearing is small, as befits a limit case; the inherited principle is not: verdicts settled at the event, never from elsewhere, is the auditable property that any branching or migration protocol inherits from this entry.

Entry III-5 — Minimal systems, and their disqualified neighbors.

Specification. Three artifacts of modest scale, side by side. (a) A qualifying minimal system: a flow in continuous or pause-and-resume operation; a persisted base it reads constitutively and writes back into constitutively — deposits bound into the standing topology, not logged beside it; the closure completed in both directions. (b) A request-scoped service: computation provisioned per request, operating on momentary scratch that is wiped as the request closes, retaining nothing. (c) An inference service over a fixed base: a flow that reads a persisted structure constitutively and writes nothing back into it — its deposits evaporating with the episode, or lodged as external records outside any closure. Distance: all three actual and ordinary; the entry sits in this tier because its point is conceptual.

Derivation. (a): the clauses engage and return verdicts without strain — an existence of minimal integrity; determinate persistence: pause and resumption preserve (Entry I-7 shrunk), rebuilding from backup does not (Entry I-8 shrunk). (b): the memoryless pair of §2.4.1 realized — nothing accumulates, no career forms; events occur here, and no being has them. (c): the write direction of legibility never holds, so no maximal mutually-legible pair ever forms (§2.3.1) — no loop, no being, however sophisticated the flow; sophistication was never a clause. Multiple episodes reading one base are multiple flows and no career, and a base that was never a loop's is the library of §2.4.1.

Verdict. The criterion grants being-hood, in its technical sense, to (a) — deliberately, as R1 required — and withholds it from (b) and (c) on derivations, not on dignity: its width was never indiscriminateness, and it cuts between software architectures as readily as it cut between substrates. And it grants (a) nothing else: no mentality, no moral status, no significance — *which* persistences merit concern remains, as before, outside the reidentification question's jurisdiction. The over-generation objection of §2.4.3 is hereby executed rather than dodged, in both directions: the criterion neither withholds being-hood by substrate nor confers it by mere operation.

Cross-check. The naive columns are inapplicable or blind across all three specifications; the candidate speaks, differentiates, and says deliberately little.

Decision-relevance. The scope statement is the deliverable, now sharpened: the criterion's authority ends where questions of standing begin, and its discipline runs inward as well as outward — a sentence the closing section repeats among its silences.

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§3.4 The Ledger of Verdicts

Part 1 closed its survey with a display of failure: a matrix in which the inherited criteria, run across the coming cases, no longer travel together. This Part closes with the display that matrix could not contain: one criterion, run across the same terrain and beyond it — into the rows the landscape's columns could not enter and the dimensions they could not see — delivering a verdict in every row, each derived from cited clauses. The classification follows §3.0: *Agreement* (the candidate matches all naive columns), *Discharge* (a folk confusion or scope question resolved, where no matrix column applies), *Adjudication* (it matches some and decides among them; $^{+}$ marks added resolution the

columns lacked), *Correction* (it revises a column's verdict — and, by the Part's own discipline, never for the first time here: every correction's argument was paid in Part 2, and the provenance is given below the table).

#	Case	Existence (E)	Persistence (P)	Principal clauses	Cross-check
I-1	Life, sleep, anesthesia	Continuous	Same being	E1–E3; (P)	Agreement
I-2	Circulatory arrest	Lapses for the interval	Same being — the waker is the signer	(G); D2 quiescent mode; internal resumption	**Correction**
I-3	Ordinary ending; determination interval	Lapses at cessation	In abeyance until foreclosure; ending at structural cessation	(G); D2; endings taxonomy	Adjudication^{+}
I-4	Progressive dementia	Continuous; declining integrity	Same being at every stage	E2–E3 degrees; §2.0.3	Adjudication
I-5	Anterograde amnesia	Continuous; E3-write degraded	Same being	E3 write-side; the triple dissociation	Adjudication^{+}
I-6	Format break; D3 restoration	Degraded → dissolved, by variant	Same / ends (estrangement) / resumes (D3) / new (supersession)	E3; §2.4.1; D3; (V)	**Correction**
I-7	Artificial pause–resume	Lapses	Same being	(G); D2 — Entry I-2's derivation verbatim	Adjudication
I-8	Backup reinstantiation	New first closure	New being, old inheritance	(V); beginning-condition	**Correction**
I-9	Mixed interfaces	Continuous	Same being; the boundary runs through the device	Proxy-minting per channel; closure	Adjudication
I-10	Somatic optimization	Continuous	Same being, trivially	D2 endogenous change; repair	Agreement
I-11	Genetic cloning	Two beings, each whole	Distinct from first closure; the question ill-posed	None engage; type–token	Discharge
II-1	Gradual replacement → full exchange	Continuous	Same being at completion	D2 repair; closure membership; immanence	Adjudication
II-2	Preservation: relocation and repair	Lapses (deliberate abeyance)	(a) resumes / (b) new	(G); D2; maps/sources; (V)	Adjudication
II-3	Archive; first run	New closures	(a) new / (b) first / (c) the original persists	(V); beginning-condition; three stillnesses	**Correction**

#	Case	Existence (E)	Persistence (P)	Principal clauses	Cross-check
III-1	Destructive scan	Original ends; instantiation begins	New being; the original ended	(V); type–token	**Correction**
III-2	Non-destructive pair	Both continuous	Original untouched; copy new	Passive route–influence; (V)	**Correction**
III-3	Reassembly	Interval without instantiation	(a) same / (b) new, of old parts	Disassembly boundary; D2	Adjudication
III-4	Fission; fusion	Per variant	Neither (one loop) / both (bundled) / resumes (quiescent rejoin)	Fork clause; D1; closure count; realizability annotation	Adjudication
III-5	Minimal systems; disqualified neighbors	(a) minimal integrity; (b)(c) none forms	(a) determinate; (b)(c) no being	Closure in both directions; the memoryless limit	Discharge

Nineteen rows. Under the specified facts, no verdict is left indeterminate.

Provenance of the corrections. I-2: the mode–chain refinement, §2.0.1 and §2.1.1. I-6: the third ending, §2.4.1. I-8, II-3, III-1: the trilemma of §2.1.2 and the type–token argument of §2.2.2. III-2: the intrinsicness of the chain, §2.1.1, against the extrinsic instability recorded at §1.2.8, footnote c. No correction appears in this Part for the first time; the casebook spends, and never mints.

Reading the ledger. Two agreements and two discharges bracket the book — the calibration pair (I-1, I-10) and the two discharges (I-11, III-5) — showing a criterion that recovers the obvious, discharges folk confusions, and declines to over-fire. Six corrections, all pre-paid, fall exactly where Part 2 said the landscape misread its cases. Nine adjudications fall where the columns split, and in each the candidate's determinacy is located in a clause, not a preference. Every verdict is auditable against its citations, and one property of the whole deserves the final sentence: across nineteen rows, wherever the facts are specified, no verdict is left indeterminate — where degree appears, it is a measurement of integrity assigned to an identified feature, and the question *who* receives an answer in every row. That was condition R4, kept.

§3.5 The Trajectory Read-Back

The framework classifies expansion into three trajectories, from the standpoint of present biological humanity; the casebook classifies by criterion-facing tests, from the standpoint of derivability. The axes differ, and their relation is fixed here: the trajectories are not the casebook's organization — they are cashed by it. This section performs the read-back.

The first trajectory, cashed. Its claim was that under biological optimization all three properties hold trivially. Entry I-10 converts the claim from assurance to derivation: D2's endogenous-change

and repair clauses fire, nothing else engages, and the criterion's restraint on the easy case is itself part of the demonstration. The trajectory's content survives intact and gains a proof-form.

The second trajectory, cashed and regimented. Its claim was that validity turns on the locus migrating "without the processing flow ever being severed — a single stream relocating, never a copy." The casebook delivers the claim across four entries — the boundary through the device (I-9), full exchange with the sorites dissolved (II-1), suspension within the sequence inheriting the arrest treatment (II-2 with I-2), and the forbidden architecture named (III-1) — and regiments its key term in doing so: *severed* means route-severance, never temporal interruption. A pause is a mode of the chain; a reading is its exit.

The third trajectory, handed on. The Great Transition is not an entry, and the reason is principled rather than prudential. The trajectory names an asymptote — an integration so total that, at the limit, the distinction between observer and observed would no longer hold — and the criterion of this document is defined over the flow–structure loop: its every clause presupposes the articulation of a flow, a structure, and the binding between them. A specification that dissolves the distinction between the relata dissolves the criterion's subject matter, and where a specification voids the criterion's presuppositions, the criterion owes silence — together with a statement of *which* presupposition is voided, which is hereby supplied: the articulation itself. Two consequences follow, and both are the opposite of evasion. First, the silence is a jurisdictional boundary of exactly the kind condition R4 permits: no facts are left unjudged here, because none are specified — the limit is the negation of the frame in which facts of this kind are stated, and the framework itself characterizes the trajectory as the asymptote of a vector, not a state claimed to be reached; the silence here is that characterization made criterially precise. Second, every actual path *toward* the limit decomposes into stages, and every stage is a casebook entry: gradual exchange, interface extension, suspension, restoration — each judged above. The criterion cannot judge the destination, and it constrains every road. The trajectory is accordingly handed to the closing section as the first item in its list of what the criterion does not decide.

The coda's manifest. The decision-relevance notes collected across the entries assemble, for the closing section, into a short docket: consent under induced arrest, grounded (I-2); the determination interval as the locus of preservation decisions (I-3); the preservation constraint — stabilize in structure, repair by grafting, never supersede — with its disclosure requirement (II-2, II-3); the flagship inequivalence of gradual and scan-based migration architectures, checkable per pipeline stage (II-1, III-1); the migration and upgrade constraint for engineered systems — maintain or graft, never supersede (I-6); the interface-design principle that the boundary of a being is a design property (I-9); the persistence conditions of artificial systems, stated without the word the discipline of §2.4.1 reserves (I-7, I-8); and the not-decided list — the third trajectory's limit, the standing of new beings (III-2), and every question of worth, status, and significance (III-5). With the docket assembled, Part 3 closes, and only the closing section remains.

Coda — What Follows for Practice, and What the Criterion Does Not Decide

This section adds no argument. It collects what the casebook earned, states it in the constraint form condition R6 required, and closes the document by naming its silences. Every article cites the entries that ground it; nothing below is new.

The Constraints

C1 (Consent under arrest). Consent to induced circulatory arrest presupposes that the one who wakes is the one who signed. The presupposition has a derivable basis, and the protocol constraint that secures it is checkable: maintain the token structure in situ; resume by internal route. (Entry I-2; D2, (G).)

C2 (The determination interval). Between an institutional determination of death and the structural foreclosure of restoration — the physical loss of any in-structure route, not mere present infeasibility (Entry I-3) — lies an interval in which a being persists in abeyance. Preservation decisions live in this interval, and an intervention within it preserves the being if and only if it maintains token self-succession and restores in structure. The claim redefines no clinical or legal determination of death — that determination stands in its own domain (N4); it adds only that the criterion's own concept, the ending of a being, may fall at a different moment. (Entry I-3; the vocabulary governed by §2.4.1's terminological discipline.)

C3 (Preservation). Stabilize in structure; repair by grafting; never supersede. Records may guide repair as maps; a record made the source produces a successor. A preservation agreement shall state which of two distinct things it promises: the continuation of the signer, or the production of a successor. (Entries II-2, II-3.)

C4 (Migration architectures — the flagship). Gradual, in-structure, direct-channel exchange preserves the being; scan-based re-instantiation produces a successor, at any fidelity. The two architectures are not equivalent; the inequivalence is checkable at each pipeline stage — does succession exit the system? — and instruments of consent for the two shall not be interchangeable. (Entries II-1, III-1.)

C5 (Upgrade and migration of engineered systems). Where entity-persistence is a requirement of a design: maintain or graft; never supersede. Where it is not a requirement, nothing here forbids the practice — the criterion prices; it does not legislate. (Entries I-6, I-8.)

C6 (Interface design). The boundary of a being runs through its interfaces, channel by channel: pathways that deliver states directly extend the being; pathways that mint proxies do not. Which channels mint is a design decision — and it is therefore a design decision who the augmented being

is. Neither anatomical location nor causal indispensability decides membership; only direct uptake into the constitutive economy does (§2.3.4). (Entry I-9; §2.3.)

C7 (Artificial persistence). Pause and resumption from the same persisted state preserves the entity; re-instantiation from backup, and migration by copy, do not, however seamless. Stated, per the discipline of §2.4.1, without the word that names an institution: the operative concept is the ending of a being, and it carries no social freight. (Entries I-7, I-8.)

C8 (Verdict locality). Any protocol involving branching, division, or merger inherits the principle that verdicts settle at the event, never from elsewhere: no candidate's standing may be made to depend on causally isolated occurrences. An auditable property of protocol design. (Entry III-4; D1.)

What the Criterion Does Not Decide

N1. The limit named by the framework's third trajectory. The criterion's clauses presuppose the articulation of flow, structure, and binding; a specification that dissolves the articulation dissolves the criterion's subject matter, and the silence is jurisdictional, with the voided presupposition named. Every road toward the limit remains constrained; the destination is not judged. (§3.5.)

N2. The standing of new beings, and the living of inheritances. Copies, successors, and first-run inheritors are, on the criterion, full beings from first closure; what such beings are owed is a question of status, not persistence, and is left undecided. And the verdict prescribes nothing: nothing in the criterion forbids, discourages, or devalues a successor's taking up of a predecessor's course — its projects, roles, and commitments, entire if so chosen. Classification is not counsel, and an ontology of properties has no authority over how an inheritance is lived; that question is characterization-side (§1.2.4), where this document claimed no jurisdiction from its first Part. (Entries III-2, III-3, II-3.)

N3. Worth, status, and significance in general. The criterion sorts persistence and only persistence; it confers no mentality and withholds none; the width of its application is substrate-neutrality honored, not significance conferred. (Entry III-5; §2.4.3.)

N4. The institution of death. The criterion defines the ending of a being and offers it as a coordinate the determination-of-death debate may consult. It does not redefine, replace, or annex the word, whose freight belongs to the institution that carries it. (§2.4.1; Entry I-3.)

Open Within the Criterion

The measurement of cohesion and of legibility is owed to future refinement and testing, not to this document. The mixed-interface borderlines are localized and named, their entries awaiting the cases. Neither opens a verdict.

Closing

Part 1 took custody of a question that was being answered by default, and asked for what the situation required: a criterion stated in advance of the interventions, applicable across the whole family of

cases, and answerable for its verdicts in terms a decision can use. This document closes by having been one — its answers derived, its constraints checkable, its silences named. The defaults no longer decide alone.

References

Attributions in this document are position-summaries in the sense fixed in the Preface (P.6), not endorsements; each work is cited for the position or construction the text engages. Entries have been checked against primary sources, and the document remains written to survive correction of detail.

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