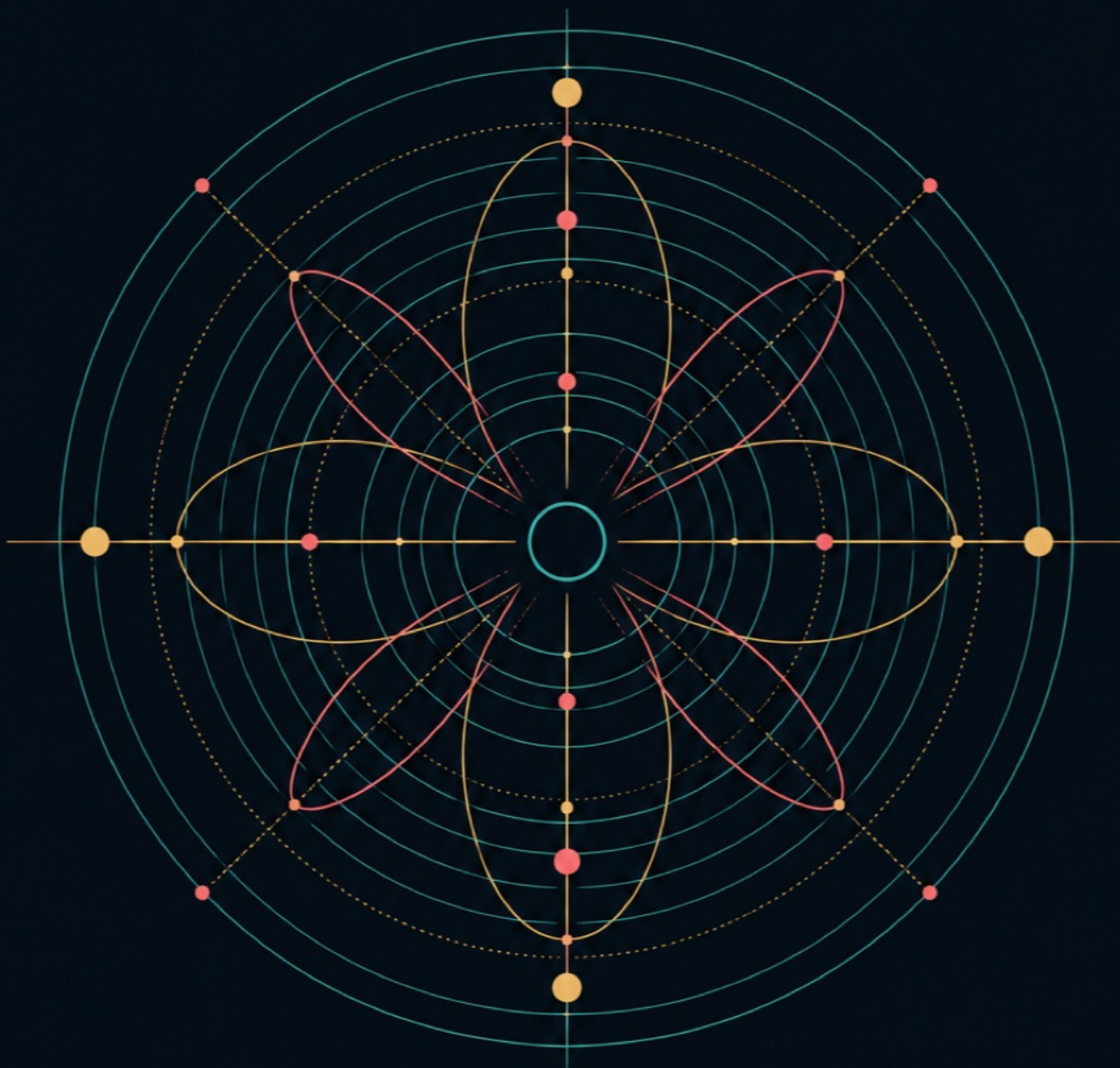


CAUSALITY AND ATTRACTION

A CONTINUUM OF STEADY STATES



CONCLUSIONS

THE SERIES APPENDIX

SID J.A. HUBBARD

MMXXVI

Conclusions of Causality and Attraction

The First Principles, Universal Laws and Generalized Principles of Nested Causality

Sid J.A. Hubbard

2026

Contents

Prologue: What the Continuum Found	1
First Principles	2
1. Persistence Comes Before the Inventory	2
2. Every Observation Has an Address	2
3. Zero Infinity Is the Reference	2
4. Knowledge Requires a Frontier	3
The Universal Laws	4
5. The Law of Nested Causal Enclosure	4
6. The Law of Nested Exchange	4
7. The Law of Nested Infinities	4
Generalized Principles	6
8. Causality Arrives from Both Directions	6
9. Scale Is Generated by Recursion	6
10. The Levels Are Products of the Map	6
11. Attraction Is Causality with a Human Interface	7
12. The Observer Is Inside the Map	7
13. Prior Capture Is a Structural Failure of Reception	7
14. Impossible Problems Are Often Address Errors	7
15. Intervention Restores a Missing Relationship	8
16. The Return Is Part of the Result	8
Conclusion: Where We Begin	9
The Series Appendix	10
Appendix A: The Canonical NCM Field Card	10
Appendix B: Field Enclosures	11
Appendix C: The Combined Mathematical Registry	15
Appendix D: The Continuum Across Fields	19
Appendix E: Cognitive State and Deliberate Return	20
Appendix F: Time Beside the Clock	24
Appendix G: Institutions, Cybersecurity and Prior Capture	24
Appendix H: The Civic Enclosure and San Francisco	25
Appendix I: AI-Assisted Authorship and the Signal	39
Appendix J: Evidence, Provenance and Falsification	47
Appendix K: Vision of the Whole	47
Bibliography of the Series	49
Volume I: Causality and Attraction	49
Volume II: The Climate Continuum	50

Volume III: The Antarctic Enclosure	51
Volume IV: Numbers and Enclosures	51
Volume V: The Origin of Cosmology	51
Volume VI: Nested Causal Modelling	51
Volume VII: A Continuum of Cognitive States	51
Volume VIII: The Clock: Countable Infinity for Time	53
Volume IX: The Hacker	53
Volume X: CodeX	54
Volume XI: The Civic Enclosure	54
Volume XII: The Signal	55

Prologue: What the Continuum Found

We begin with everything still here.

The universe did not arrive for this conclusion as a collection of solved objects. It arrived as weather and memory, law and number, ice and light, machines and cities, attention and time. Each volume entered through a different opening. None of those openings remained separate for long. The same architecture kept becoming visible inside things that had been assigned to different fields.

Something persists. Something larger makes its persistence possible. Something smaller remains active within it. Matter, energy, information, authority, memory, labor and consequence cross the boundaries. The crossing changes their form without granting them permission to disappear. Every boundary opens onto another boundary. Every model eventually reaches the place where it must stop speaking as though the map and the territory were the same.

These observations became the Continuum of Steady States. The Continuum became the Three Laws of Nested Causality. The laws made a method possible. The method made visible interventions that could not be seen while the blamed object was mistaken for the enclosure producing its condition.

The twelve volumes do not end in a final object. They end in a way of looking.

This work gathers what that way of looking has established. It separates the first principles required to begin, the universal laws observed throughout the series, and the generalized principles that became available as those laws were used. It does not replace the volumes. The Series Appendix preserves their extended apparatus behind the conclusions so the road remains available after the destination has come into view.

First Principles

1. Persistence Comes Before the Inventory

A thing that persists is not necessarily made from the same inventory from one moment to the next.

A flame remains while fuel and oxygen enter and heat and combustion products leave. A body remains while food, air, water, cells, memory and attention change. A city remains while generations arrive and depart, buildings are replaced, meals are prepared, waste is removed and knowledge is carried forward. A language remains while no speaker possesses all of it and every living sentence changes what may be said next.

The stable thing is therefore not exhausted by a list of its contents. It is a maintained relationship among conditions, boundaries, exchanges and active inner states. The series calls this a steady-state dynamic equilibrium.

This is the first principle because an inventory-first account begins too late. It finds the pieces after the enclosing conditions have already made their relationship possible. It can describe what is present while leaving out why this arrangement persists here, why another arrangement does not, and what would change the range of states available within it.

Persistence is not stillness. Persistence is a dynamic achievement.

2. Every Observation Has an Address

Observation always occurs at a scale, from a point of view, within a boundary, using instruments and distinctions whose authority is finite.

The smallest complete address developed by the series is:

[Enclosing | Departure | Enclosed]

The first position contains the thing enclosing the focal thing. The center contains the focal thing as an observable departure from the reference condition. The third position contains the things the focal thing encloses.

The form is recursive. The first and third positions may themselves be complete Enclosure Functions. A body is enclosed by an environment and encloses organs. An organ is enclosed by a body and encloses tissues. The environment is enclosed by larger ecological and planetary conditions. The tissues enclose cells and molecular processes. The address can open in either direction without requiring the focal thing to surrender its identity.

This is not a hierarchy pasted onto reality after the explanation is complete. The address records where the explanation is true. Existing causal models, equations, historical accounts, institutional analyses and personal observations retain their lawful domains inside it. Nested Causal Modelling does not erase those accounts. It recovers their location and permits their boundaries to meet.

3. Zero Infinity Is the Reference

An observed thing requires a difference. A difference requires a reference.

Ordinary zero can mark an empty account, a chosen origin, a balance between quantities or the absence of a measured object. Those zeroes remain useful. They do not by themselves provide a reference that stays available as scale changes in both directions.

Zero Infinity, written 0^∞ , is the empty, countably open reference architecture from which any observable state can be described as a departure. It is not another object in the universe. It is not a hidden substance, a location before the beginning, or a numerical value to be inserted beside the numbers it helps address. It is the balanced reference that permits unlike phenomena to enter one structure without becoming the same phenomenon.

Zero Infinity enters the model through its ternary origin:

$$[ff|-1|ff]|VE|[ff|+1|ff]=0^\infty$$

This is an Enclosure Function, not an arithmetic sum. The contracted departure -1 and expanded departure $+1$ each retain a complete ternary address bounded in both directions by ff . The Vector Equilibrium, VE , occupies the center between them. The complete balanced enclosure resolves as 0^∞ . No isolated term is Zero Infinity by itself.

The Vector Equilibrium therefore gives the reference its geometric expression: omnidirectional balance without a privileged direction. The observed universe consists of departures that persist. The reference does not compete with them. It makes their direction, scale and relation legible.

We do not begin by pretending to hold infinity. We begin at the reference from which finite departures can be counted.

4. Knowledge Requires a Frontier

The universe does not end where a model stops.

The series used the Final Frontier to name the deterministic boundary at which an account must stop claiming authority. The completed work now permits a useful notational distinction.

ff names the deterministic frontier of the universe: the boundary belonging to the territory whether or not a present observer can locate it.

FF names the deterministic frontier of the model: the resolved edge of its evidence, observation, computation and authority.

Most inquiry reaches FF without establishing ff . Confusing them turns ignorance into cosmology, measurement limits into physical walls, and institutional confidence into truth. Keeping them distinct permits a model to stop honestly while the universe continues.

The number field provides the limiting case. Numbers continue in countable relation without a final ordinary number. When the numerical architecture itself establishes the same deterministic continuation that bounds the model, FF can be known as ff . Elsewhere that equality is a result to establish, not a license granted at the beginning.

A frontier does not prohibit discovery. It is what allows discovery to move the boundary without pretending that the earlier map already contained the new territory.

The Universal Laws

5. The Law of Nested Causal Enclosure

Every steady-state dynamic equilibrium is enclosed by one or more larger steady-state dynamic equilibria.

The outer enclosure does more than surround the inner state. It supplies boundary and initial conditions that shape what can occur and what can persist within it. Atmosphere changes the possible flame. Ecology changes the possible organism. Law changes the possible institution. A platform changes the possible community. A home changes the possible bodily state of the person it encloses. A city changes the possible lives of everyone within it whether or not it recognizes them as beneficiaries of the city.

The enclosed states remain active. Molecules still react. Cells still metabolize. People still choose. Local mechanisms are not replaced by the enclosing account. The law completes the causal picture by restoring the conditions under which those mechanisms can produce this result.

The Enclosure Function records both directions without flattening either:

[thing enclosing the thing | the thing | things the thing encloses]

Every valid use must preserve that order. Reversing the positions reverses causal meaning.

6. The Law of Nested Exchange

What leaves one enclosure must enter another account as transit, transformation or arrival.

Matter may become waste, food, tissue, product or atmosphere. Energy may become motion, heat, stored potential or radiation. Information may become memory, instruction, policy, code, price or silence. Authority may become permission, prohibition, exposure or protection. The form changes. The crossing remains.

Nested Exchange is not the assertion that every transfer is equal in local units or morally balanced between participants. It is the discipline of following the boundary event far enough that disappearance is not smuggled into the map. One observer may record a departure while another records an arrival. Junction equivalence establishes whether they are observing the same crossing.

This law made omissions visible throughout the series. Heat lost from one account must be sought in another. Public cost displaced from one budget may arrive in hospitals, streets, families or lost capacity. A community removed from a platform does not vanish; its people, risks, memories and unmet needs arrive elsewhere. A machine-generated sentence remains downstream of human language, human instruction, human selection and human responsibility.

Nothing crosses a real boundary into nowhere.

7. The Law of Nested Infinities

Every enclosure is enclosed, and every enclosure contains further enclosures.

Between a body and an organ are tissues, membranes, circulation, signaling and relations that become visible when the map requires them. Between a city and a citizen are homes, streets, businesses, families, laws, services, customs and exchanges. Between a number and what appears to be the next number are indefinitely refinable numerical relations. Between an observation and its asserted cause are scales whose omission may be harmless for one purpose and fatal to another.

The law does not require infinite calculation. A Nested Causal Model maps the active enclosures relevant to its inquiry and halts at FF. Infinite depth and scale remain available; they are not required to occupy the working calculation all at once.

The consequence is practical. No present scale earns final authority merely by being the scale presently visible. The next useful enclosure may be outward, inward or adjacent. A problem that cannot be changed at one address may become tractable when the map reaches the enclosure that maintains it.

The capacity to continue is universal. The obligation to continue belongs to the question being asked.

Generalized Principles

8. Causality Arrives from Both Directions

The standard causal account is strongest where local interactions can be measured from below. Nested Causality retains that account and adds the causal projection of enclosing conditions from outside.

Volatile causality names bottom-up mechanism and contribution. Once the local event has occurred, human intention cannot travel backward and make that completed event not have occurred.

Nonvolatile causality names outer-to-inner projection. Laws, boundaries, permissions, environments, architectures and resource conditions can often be changed by human beings, changing the range of events that may subsequently become possible within them.

These terms do not rank danger. A nonvolatile condition may be lethal. A volatile event may sustain life. The distinction locates causal direction and the corresponding possibility of intervention.

Existing causal inference, hierarchical causal models, structural causal models, mechanism science, systems analysis and game theory remain available. NCM encloses their successful accounts and asks which larger and smaller conditions make each account locally valid. It adds address and direction without demanding that a neighboring discipline stop being itself.

9. Scale Is Generated by Recursion

Scale need not be imposed as an external label when the address already records what encloses what.

At Level 1, the focal departure is placed between populated outer and inner positions. Opening either position produces another complete address. Depth is the number and pattern of those openings. Scale is the relation among the addressed enclosures. Parallel structures can remain parallel rather than being forced into one vertical ladder.

The map grows until the active structure becomes visible or the model reaches FF. This prevents two opposite errors: stopping at the blamed surface because it is easy to see, and invoking the whole universe when the next active enclosure is enough.

The useful map is neither flat nor infinite in memory. It is recursively available and finitely addressed.

10. The Levels Are Products of the Map

The levels of NCM are not ambitions selected before inquiry begins.

Level 1 appears when a valid enclosure map locates the focal departure. Level 2 appears when the relations among those enclosures are followed and causal flow and Nested Exchange become visible. Level 3 appears when the same focal departure is compared under different enclosing states and an active enclosing condition can be distinguished from background description. Level 4 appears when changing that condition produces a testable intervention with a predicted path, stopping condition and observation capable of proving the model wrong.

Each level is fruit produced by the preceding map. An intervention announced before the active enclosure has been found is a preference wearing the language of causality. A Level 4 NCM can disagree with its author because the route from condition to result has been made available for observation.

11. Attraction Is Causality with a Human Interface

Human beings are enclosed by causality without being reducible to passive conduits of it.

The enclosing world projects conditions inward. The body, memory, culture and present state contribute from below. Within the interval still open to choice, free will can dampen, redirect, withhold, cultivate or release what would otherwise pass into action. The series names that capacity attraction.

Attraction does not stand outside nature. It is maintained within the human enclosure. Its power is finite at any moment and enormous across time because a human decision can alter an enclosing condition that subsequently projects into many lives.

The right question is not whether a person can command every cause. It is where the remaining interface lies and which enclosing condition can still be changed.

12. The Observer Is Inside the Map

The observer is not absent from observation.

In cognition, the active enclosure includes point of view, filter, body, workspace, priors, memory and world. Ordinary waking consciousness is one configuration of those relations. Identity is not a defect to abolish; it is a durable enclosure that permits responsibility, continuity and return.

The cognitive-state experiment extended the recursive address to the observer. Notice contents. Include the experienced “I” among the contents without denying the person. Stop treating the present scale as final. Retain agency. Return deliberately. The claimed state remains a testable proposal rather than a metaphysical entitlement.

This principle generalizes beyond consciousness. Every model must record who or what can observe, at what resolution, through which instruments, and with what authority. A view from nowhere is an observer whose enclosure has been hidden.

13. Prior Capture Is a Structural Failure of Reception

A novel relation can be repeated accurately and still be lost.

Prior capture occurs when a receiving enclosure substitutes the nearest familiar relation for the one actually proposed. The vocabulary may survive while the causal direction changes. The conclusion may be praised while its novelty is translated away. Validation then succeeds by transforming the proposal into something the validating field already recognizes.

The risk became visible in long-horizon human–machine research, but it is not confined to machines. Institutions, disciplines, editors, courts and audiences perform the same substitution. Familiarity reduces processing cost. It can also destroy the object being evaluated.

The correction is not exemption from criticism. It is fidelity before criticism: state the proposition, direction, scope, exclusions and intended test in a form its author recognizes. Then challenge that object. A powerful claim should welcome what can defeat it. It should not be defeated by replacement with a weaker claim that was never made.

14. Impossible Problems Are Often Address Errors

Many problems appear impossible because responsibility has been assigned to the visible departure while causal authority remains in its enclosure.

The dirty body appears to be the problem while the missing shower remains invisible. The vulnerable computer user appears dangerous while the law that prevents domestic technical learning remains intact. The suspect sentence appears machine-authored while the provenance record and intellectual contribution are ignored. A climate variable appears to be the whole field while the living systems carrying the exchange disappear from the objective. An origin model appears to enclose the universe while the observation actually arrives from within it.

NCM does not promise that every desired outcome is available at every scale. It makes a stronger practical demand before surrender: finish the map far enough to find the active condition. Somewhere within the nesting available to human influence, there may be an enclosure whose modification makes the old problem state unable to persist.

The apparently impossible problem is therefore not where disciplined inquiry is excused. It is where the present address must be challenged.

15. Intervention Restores a Missing Relationship

The strongest interventions in the series do not begin by forcing the focal person or object to become worthy of a different result. They identify a missing or misdirected causal projection and repair the relationship.

The civic enclosure made this visible in its most accessible form. A home projects sanitation, food preparation, protected sleep, clean clothing, storage, address and security inward to the people it encloses. The unhoused person is the visible relief image of civic functions withheld behind private enclosure. The intervention does not manufacture a better person. It restores those projections at civic scale while homes remain private and markets continue.

The same form appears elsewhere. Change the legal boundary and different technical learning becomes admissible. Change the information enclosure and a different scientific question becomes fundable. Change the cognitive rule of exclusion and a different state becomes available. Change the evaluation boundary and novelty can be judged without pretending statistical resemblance establishes authorship.

The intervention should be the smallest change to the active enclosure capable of producing the intended difference, with its costs, exchanges, limits and failure conditions visible.

16. The Return Is Part of the Result

A transformation is incomplete if it cannot account for what follows.

The expanded cognitive state requires deliberate return. A public intervention requires maintenance and reassessment. A scientific model requires recovery of the successful predictions of the model it encloses. A new publication requires provenance sufficient to reconstruct how its claims entered the record. A social change requires the people living within it to retain agency rather than becoming material administered by the solution.

This principle distinguishes intervention from disruption. Disruption values the break. Intervention values the resulting state and the lawful path into it. The road back, the maintenance cycle, the transferred cost and the next observation all belong to the map.

Nothing is solved merely because the old arrangement has been interrupted.

Conclusion: Where We Begin

The first principles give us persistence, address, reference and boundary.

The universal laws give us enclosure, exchange and infinite nesting.

The generalized principles give us causal direction, recursive scale, emergent analytical levels, human attraction, the enclosed observer, protection against prior capture, a new reading of impossible problems, structural intervention and deliberate return.

Together they describe a universe in which no observed thing stands alone, no crossing is permitted to disappear, no present scale is automatically final, and no model is allowed to confuse the end of its authority with the end of reality.

The Continuum does not make every answer easy. It makes the location of the unanswered question visible. It does not give human beings command over the universe. It restores the enormous range of conditions human beings can modify before accepting a problem as inevitable.

The volumes began in different fields because the laws were visible everywhere. Their conclusions meet because the fields were never separate in the territory. Physics, biology, climate, mathematics, cosmology, cognition, time, law, computation, cities and language remain distinct enclosures. Their exchanges make one world.

Impossible problems are always accompanied by unfinished maps, undiscovered enclosures, unimaginable interventions, and human beings who have not given up.

With Nested Causal Modelling, The Zero Infinity and The Final Frontier, the impossible problem is no longer where we stop, it is where we begin.

The Series Appendix

The appendices printed inside the twelve volumes remain part of those works. They record the sequence in which the Continuum was discovered, tested, corrected and extended. This appendix does something different. It presents the apparatus as it stands after the twelve volumes can be seen together.

Repetition that belonged to discovery has been removed. Mathematical expressions that appeared in separate fields have been brought into one registry. The visions that closed individual inquiries have been joined at the end. Citations have been moved into the bibliography and grouped by the volume whose claims they support. The applied appendices retain their own boundaries, because unification does not require unlike things to become the same thing.

Appendix A: The Canonical NCM Field Card

Begin without belief

Nested Causal Modelling does not require prior belief in the Three Laws, the Zero Infinity or any physical interpretation of the Continuum. It begins with an observation and asks where that observation is true.

Establish the reference

State the condition against which a difference can be observed. The universal reference is written 0∞ : the balanced, unoccupied reference available at every scale and depth. A local study may use a measured baseline, but the local baseline must not be mistaken for the universal reference from which all departures become addressable.

Name the departure

The departure is the focal thing, event, state or relation being modeled. It is not automatically a problem. It is what has become sufficiently different from the reference to be observed.

Write the enclosure

Use the canonical order:

```
[ thing enclosing the thing | the thing | things the thing encloses ]
```

The first and third positions may themselves contain complete Enclosure Functions. The structure is therefore recursive:

```
[  
  [ enclosing the enclosing | enclosing | enclosed by the enclosing ]  
  |  
  departure  
  |  
  [ enclosing the enclosed | enclosed | enclosed by the enclosed ]  
]
```

Mapping what actually occupies each position is the discipline. The form is not made stronger by filling it with speculative layers. It becomes useful when every relation can be observed, measured, historically supported or explicitly marked as a proposal.

Follow both causal directions

Outer enclosures project conditions inward. This is nonvolatile causality: top-down causal projection whose terms may remain open to human alteration before they become locally committed.

Enclosed mechanisms contribute upward into the focal state. This is volatile causality: bottom-up causal production whose completed events cannot be reversed by renaming their enclosing conditions.

The distinction is directional. It does not mean safe and dangerous, calm and unstable, weak and strong, or easy and difficult.

Account for exchange

Record what crosses the boundary: matter, energy, information, money, authority, labor, memory, risk, waste, attention, rights or consequence. Name the source and destination. If an apparent loss cannot be located in an adjacent enclosure, the accounting is unfinished.

Let the levels emerge

Level 1 appears when the relevant enclosures have been mapped.

Level 2 appears when enclosures between those enclosures become visible and causal flow can be followed through them.

Level 3 appears when alternative enclosing states can be compared using the same focal departure and the same measures.

Level 4 appears when a nonvolatile causal condition can be changed, the change can be reversed or compared, and the projected result can be tested against what the model predicted.

The level is not selected before the inquiry. It is the fruit of the map's achieved resolution.

Declare the frontiers

FF is the deterministic end of the present model's evidence and authority. It is where this map stops.

ff is the deterministic frontier of the universe. It belongs to the territory whether or not this model has reached it.

Most models establish FF, not ff. The distinction prevents the end of present knowledge from being installed as the end of what exists.

Retest

A completed map states what observation would change it. An intervention states what result would show that the wrong enclosure was selected. A model that can absorb every outcome has crossed its Final Frontier without admitting it.

Appendix B: Field Enclosures

The following field enclosures are carried from *Nested Causal Modelling: Solving Impossible Problems*. They show how NCM recovers a field's successful local knowledge, locates the field inside the conditions that shape it, and identifies a frontier project without requiring the field to surrender what it already knows.

Physics and Cosmology

Current focus: preserve and extend the dominant local models. Search for missing particles, refine constants, build larger instruments, improve cosmological parameter fits, and defend the standard origin narrative against anomalies that appear at scale boundaries.

Why the focus is incomplete: the largest problems in the field are not only missing-object problems. The Hubble tension, vacuum energy, singularities, early structure, and the quantum measurement boundary all appear where otherwise successful models are pushed beyond their stated enclosures.

Final Frontier: the boundary between local physical law and the enclosing conditions that make local law coherent across scale.

Funding correction: move a defined portion of frontier physics funding from object searches alone toward boundary-condition research. Preserve particle physics, General Relativity, quantum mechanics, and the hot Big Bang where they work. But require a parallel program that studies where these maps stop and what enclosing structures would recover them as local cases.

Nested causal modeling of the field: physics encloses particles, fields, measurements, instruments, and equations. It is itself enclosed by mathematics, cosmological assumptions, detector limits, funding incentives, and inherited definitions of what counts as real. The active departure is the growing mismatch between local success and global boundary failure.

Intervention project: create a Boundary Problems Institute for physics and cosmology. Its first mandate would be to compare singularities, vacuum energy, Hubble tension, measurement, and early structure as one class of enclosure failures. The deliverable would not be a manifesto. It would be a falsifiable atlas of where standard models fail, what boundary assumptions each failure exposes, and which experiments or observations could distinguish a missing-object explanation from a missing-enclosure explanation.

If this project succeeds, the current funding focus becomes partially obsolete. The field stops treating every anomaly as a request for one more entity inside the old map and begins funding the boundary where the map itself must be enclosed.

Climate and Earth Systems

Current focus: carbon accounting, emissions reduction, temperature projections, energy transition, and policy instruments organized around global atmospheric targets.

Why the focus is incomplete: carbon matters, but climate is not carbon. The living Earth is a nested system of atmosphere, ocean, soil, water, plants, animals, microbes, agriculture, energy, cities, trade, governance, and human survival. A single-variable funding focus can improve one metric while damaging the enclosure that makes life stable.

Final Frontier: life-support stability under coupled natural and human systems.

Funding correction: keep emissions work, but subordinate it to a larger Life-Support Enclosure Program. Fund the boundary between atmospheric metrics and ground-level viability: soil moisture, food resilience, water systems, land use, animal systems, heat exposure, local industry, energy access, and governance feedback.

Nested causal modeling of the field: climate science is enclosed by measurement networks, global models, political treaties, moral language, energy systems, and public fear. It encloses agriculture, local ecology, urban heat, industrial production, water, and biological adaptation. The active departure is the reduction of a life-support continuum to a politically manageable carbon frame.

Intervention project: build a Global Life-Support Atlas that scores regions by nested resilience rather than emissions alone. Each region would be modeled through water, food, heat, soil, energy, transport, health, ecological integrity, and institutional capacity. The project would test whether life-support enclosure predicts harm and adaptation better than carbon metrics alone.

If it succeeds, climate funding is not abolished. It is re-aimed. Carbon remains inside the model, but life encloses carbon.

Biology, Medicine, and Public Health

Current focus: disease categories, molecular mechanisms, pharmaceutical intervention, genetic risk, health-care delivery metrics, and population statistics.

Why the focus is incomplete: living systems are not only chemical machines. A patient is enclosed by metabolism, immune history, diet, housing, stress, work, family, environment, microbiome, sleep, exposure, care access, and meaning. Public health often fails when it treats measured disease as the object while the active enclosure remains unchanged.

Final Frontier: health as nested biological, environmental, and social stability.

Funding correction: fund medicine that can cross the boundary between molecular precision and lived enclosure. Maintain drug discovery and clinical trials, but require a frontier portfolio for multi-scale health: immune-environment interaction, chronic inflammatory load, food systems, toxic exposure, loneliness, housing, work stress, and care continuity.

Nested causal modeling of the field: medicine encloses organs, cells, pathways, diagnoses, drugs, devices, and clinical records. It is enclosed by insurance, regulation, food systems, labor, housing, culture, industrial chemicals, and public trust. The active departure is the gap between treating disease episodes and stabilizing the human enclosure in which disease becomes likely.

Intervention project: launch a Nested Health Cohort in several regions. Instead of recording only diagnosis and treatment, it would map the patient's enclosure: food, housing, work, sleep, environment, social support, toxin exposure, transport, care fragmentation, and immune markers. The test is whether enclosure variables predict chronic disease onset, treatment failure, and recovery better than conventional risk models alone.

If it succeeds, funding shifts from treating bodies as isolated repair sites toward designing the enclosures in which fewer bodies break.

Artificial Intelligence and Computation

Current focus: larger models, more compute, benchmark performance, automation, national competitiveness, safety overlays, and commercial platform advantage.

Why the focus is incomplete: intelligence is not only scale. A model can be powerful inside the wrong enclosure and therefore become dangerous because it optimizes what should not have been isolated. Benchmarks can reward surface success while hiding boundary failure.

Final Frontier: lawful enclosure of machine intelligence inside human, institutional, ecological, and epistemic boundaries.

Funding correction: continue technical AI research, but redirect frontier funding toward enclosure science: model boundaries, provenance, human agency, institutional feedback, auditability, adversarial incentives, knowledge integrity, and the effect of automation on the systems it enters.

Nested causal modeling of the field: AI encloses models, data, compute, benchmarks, products, and user behavior. It is enclosed by markets, security, education, labor, law, platforms, and public epistemology. The active departure is the acceleration of optimization before boundary conditions are mature.

Intervention project: create a Boundary Benchmark Suite. Instead of asking only whether a model answers correctly, it would test whether the model knows when its enclosure has failed: missing context, corrupted source, adversarial framing, moral displacement, institutional misuse, privacy leakage, and false certainty. The strongest model would not be the one that always speaks. It would be the one that knows when the map ends.

If it succeeds, current benchmark-driven funding becomes obsolete as the primary frontier. The frontier becomes not intelligence alone, but bounded intelligence.

Materials, Energy, and Manufacturing

Current focus: batteries, critical minerals, fusion, hydrogen, semiconductors, advanced manufacturing, supply-chain resilience, and industrial competitiveness.

Why the focus is incomplete: energy and materials are often funded as technology races while their enclosing systems remain under-modeled. A battery is not only chemistry. It is mining, water, labor, transport, waste, grid behavior, geopolitics, manufacturing knowledge, and end-use patterns. A breakthrough that cannot be enclosed by supply, maintenance, repair, recycling, and local resilience may only move the bottleneck.

Final Frontier: closed-loop industrial capacity that preserves energy, material, labor, and ecological viability across the full lifecycle.

Funding correction: fund frontier materials by enclosure, not only by performance. Require every major energy or manufacturing program to map input dependency, repairability, waste, recycling, deployment context, labor skill, geopolitical exposure, and failure mode.

Nested causal modeling of the field: materials science encloses atomic structure, synthesis, performance, degradation, and fabrication. It is enclosed by mines, grids, factories, standards, logistics, capital, policy, and waste systems. The active

departure is the assumption that performance improvement inside the lab is equivalent to civilizational improvement outside it.

Intervention project: build a Frontier Materials Ledger. Each candidate technology would be scored not only by efficiency, density, cost, or strength, but by enclosure completeness: source, manufacture, operation, repair, reuse, recycling, toxicity, substitution, labor, and strategic exposure. Fund the technologies whose whole enclosure improves, not only those whose laboratory metric wins.

If it succeeds, funding moves from isolated performance breakthroughs to industrial systems that can actually carry the future.

Agriculture, Food, and Land

Current focus: yield, emissions, genetic improvement, fertilizer, mechanization, alternative proteins, land conservation, and market scale.

Why the focus is incomplete: food is a living enclosure, not only a production variable. Soil, water, animals, microbes, seeds, labor, weather, machinery, debt, transport, local culture, nutrition, and markets are held together. When policy isolates one target, the harm moves elsewhere.

Final Frontier: food systems that preserve soil, nutrition, livelihood, animal systems, water, and local resilience while remaining productive.

Funding correction: move beyond the false choice between industrial output and ecological purity. Fund the frontier where productivity and life-support integrity are measured together.

Nested causal modeling of the field: agriculture encloses plants, animals, soil, labor, equipment, capital, and food. It is enclosed by weather, water, land prices, regulation, trade, diet, energy, and public myth. The active departure is the reduction of food to yield, emissions, or ideology while the living system carries the cost.

Intervention project: create regional Food Enclosure Trials. Compare standard yield-driven farms, carbon-focused interventions, regenerative systems, mixed animal-crop systems, and high-tech controlled production using one nested score: food output, nutrient density, soil condition, water, animal health, labor viability, cost, resilience, and local stability.

If it succeeds, funding stops using one metric as the field's moral center and begins supporting food systems that can remain alive.

Social Science, Governance, and Conflict

Current focus: polling, institutional reform, economic indicators, security studies, polarization, behavioral modeling, and conflict management.

Why the focus is incomplete: human conflict is often treated as a failure to persuade, deter, punish, or redistribute. But many conflicts are steady states. They persist because the enclosure rewards continued opposition more than resolution. Alternative modes of competition are underfunded because the current system can measure conflict better than it can design honorable rivalry.

Final Frontier: transforming destructive steady states of conflict into lawful, productive, nonfatal competition.

Funding correction: fund conflict enclosure as a science. Do not only study polarization after it occurs. Map the incentives, identities, media loops, institutions, resource flows, and myths that keep conflict stable.

Nested causal modeling of the field: governance encloses law, coercion, legitimacy, money, identity, story, territory, and time. It is enclosed by history, technology, demography, ecology, trade, and fear. The active departure is the persistence of conflict as a stable operating mode even when all parties publicly claim to want peace.

Intervention project: establish a Conflict Steady-State Observatory. It would model conflicts as enclosed systems, identify what each side gains from continuation, and design alternative competitions that preserve status, agency, and group meaning without requiring destruction. The test is whether redesigned competition reduces violence or institutional breakdown better than persuasion or punishment alone.

If it succeeds, funding moves from managing conflict symptoms toward replacing destructive equilibria with better games.

Education and Human Development

Current focus: standardized achievement, workforce preparation, technology deployment, curriculum reform, access, and institutional ranking.

Why the focus is incomplete: education is funded as if learning can be optimized inside the school while the child's enclosure remains outside the model. Sleep, food, family stress, housing, screens, safety, attention, mentorship, play, and meaning determine whether instruction can take root.

Final Frontier: preserving and developing human attention, curiosity, competence, and moral agency across the full learning enclosure.

Funding correction: fund education around the learner's full boundary. Keep literacy, numeracy, science, and skill development central, but measure whether the surrounding conditions allow learning to persist.

Nested causal modeling of the field: education encloses students, teachers, curriculum, assessment, school design, peer culture, and credentialing. It is enclosed by family, labor markets, housing, media, nutrition, sleep, technology, and social trust. The active departure is the decline of attention and meaning inside institutions that still measure output as if the old enclosure holds.

Intervention project: build Learning Enclosure Schools. These schools would test not a new curriculum alone but a full boundary design: sleep protection, phone boundaries, nutrition, mentorship, project work, family support, teacher authority, apprenticeship, and public exhibition of mastery. The outcome measure would be durable competence, not short term test movement alone.

If it succeeds, funding shifts from school reform as content adjustment to education as human enclosure design.

Space, Oceans, and the Remaining Commons

Current focus: missions, platforms, launch systems, resource claims, remote sensing, national prestige, exploration, and security.

Why the focus is incomplete: the remaining commons are too often treated as empty theaters for expansion. Space and oceans are not merely places we have not yet exploited. They are boundary environments that reveal the limits of life support, governance, measurement, logistics, and human meaning.

Final Frontier: lawful expansion into commons without repeating the unenclosed extraction patterns that damaged earlier frontiers.

Funding correction: fund exploration together with governance, life-support closure, environmental sensing, debris prevention, rescue, jurisdiction, and shared scientific access. The frontier is not only arrival. It is lawful presence.

Nested causal modeling of the field: exploration encloses vehicles, crews, sensors, habitats, logistics, law, capital, and public story. It is enclosed by planetary limits, geopolitics, engineering constraints, life-support requirements, and the ethics of commons. The active departure is expansion without a complete enclosure for consequence.

Intervention project: create a Commons Frontier Charter and testbed. Any major public frontier mission should map its scientific gain, governance, environmental effect, debris or waste pathway, rescue obligation, public knowledge return, and commercial enclosure. Missions that cannot state their boundary should not be called frontier science.

If it succeeds, the frontier remains open without becoming another name for unmanaged extraction.

Appendix C: The Combined Mathematical Registry

Status of the registry

The mathematical expressions of the series do not all have the same status. Some are established equations enclosed by the work. Some are accounting identities. Some are proposed operators. Some are notation for observations that remain to be tested. Their coexistence in one registry does not promote every expression to established physics. It makes their origin, function and evidential burden visible in one place.

The ternary address

Let a focal departure be D , its enclosing condition E_+ , and what it encloses E_- . Its minimum address is

$$\mathcal{A}(D) = [E_+ \mid D \mid E_-].$$

Because both boundary positions may themselves be addressed,

$$\mathcal{A}(D) = [\mathcal{A}(E_+) \mid D \mid \mathcal{A}(E_-)].$$

This recursion does not require an infinite calculation. The model expands only through active enclosures until it reaches ∞ . Nested infinity describes the continuation available to the structure, not an obligation to calculate the universe before answering a local question.

Reference and departure

For an observed state X , departure is written relative to the Zero Infinity:

$$D_X = X - 0\infty.$$

This is an address relation, not ordinary subtraction from a numerical infinity. 0∞ contributes no object or quantity. It keeps the reference open while the departure is resolved at a finite scale.

Bidirectional causality

The state of a focal enclosure at time t may be represented schematically as

$$D_t = \mathcal{P}_{nv}(E_+, t) + \mathcal{M}_v(E_-, t) + \mathcal{X}_t,$$

where $\mathcal{P}_{nv}$ is the nonvolatile projection from enclosing conditions, $\mathcal{M}_v$ is bottom-up volatile mechanism, and $\mathcal{X}$ records exchanges crossing the focal boundary. The expression is a modeling scaffold. Each application must supply domain-specific quantities and cannot infer causality merely by naming the terms.

Nested exchange

For a declared enclosure over a declared interval,

$$\Delta Q_E = Q_{in} - Q_{out} + Q_{generated} - Q_{transformed}.$$

Where the relevant domain conserves Q , generation and disappearance must be resolved as transformation or transfer into another enclosure. Where the measured quantity is not physically conserved, the equation becomes an accounting demand rather than a conservation law. Money, rights and attention do not become matter by being placed in the same registry.

Recursive scale

The earlier series notation

$$E_{n+1} = \widehat{B}(E_n)$$

records one enclosure being opened into the next enclosing boundary. The limit

$$\lim_{n \rightarrow \infty} E_n$$

does not license a finite model to claim possession of the terminal enclosure. It records the Law of Nested Infinities. The operative boundary of a calculation is still FF.

Vector Equilibrium and Zero Infinity

The ternary origin of Zero Infinity is

$$[ff|-1|ff]|VE|[ff|+1|ff]=0\infty$$

or, typographically,

$$[ff|-1|ff]|VE|[ff|+1|ff]=0\infty.$$

The expression is an Enclosure Function rather than ordinary addition. The -1 and +1 departures occupy complete ternary addresses on either side of VE; the balanced relation of the whole generates the 0∞ reference. The Vector Equilibrium supplies the geometric image of omnidirectional balance: equal radial and circumferential vectors with no privileged direction. VE is the central geometry. 0∞ is the universal reference architecture generated by the complete relation. The geometry alone must not be mistaken for the reference.

The Isotropic Vector Matrix extends tetrahedral and octahedral relations through space. Jitterbug transformations demonstrate continuous change among geometric states while vector relations remain accountable. These structures provide the geometric vocabulary through which the series first recognized balanced reference, departure, contraction, expansion and return.

Irrational enclosures

Three familiar constants organize recurring forms of departure:

$$\pi = \frac{C}{d},$$

preserving rotational closure across scale;

$$\phi = \frac{1 + \sqrt{5}}{2}, \quad \phi^2 = \phi + 1,$$

preserving recursive proportional growth; and

$$e = \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n,$$

preserving continuous proportional change.

The series proposes reading these not only as numbers used to describe forms, but as invariant relational enclosures encountered wherever those forms persist. That physical interpretation remains a research proposal beyond the established mathematical identities.

The physical boundary proposals

Volume I proposed enclosing successful local equations by making their boundary dependence explicit. In schematic form, the Einstein and Schrodinger proposals were written as

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} + FF_{\mu\nu} = \frac{8\pi G}{c^4}T_{\mu\nu},$$

and

$$i\hbar \frac{\partial \psi}{\partial t} = \widehat{H}\psi + \kappa_{FF}\psi.$$

FF_mu_nu and kappa_FF are proposed boundary terms, not accepted additions to General Relativity or quantum mechanics. Their work is unfinished until the terms are operationalized, dimensional consistency is demonstrated and independent predictions distinguish them from the equations they enclose.

The observer operator

Volume VII proposed a bounded operator for observer-scale transition:

$$E_{obs}(0\infty) = 1 - \tanh\left(\frac{C_{bw}}{\Psi_{0\infty}}\right).$$

Its present operational meaning is stronger than its measurement status: change the rule of exclusion without filling working memory with an inventory of scales. C_bw and Psi_0∞ require independent operational definition before the equation can add predictive capacity beyond the verbal instruction.

The terrestrial count

Volume VIII adds a count beside conventional time rather than replacing UTC, TAI or the SI second. For a selected Schumann-resonance mode between boundaries B0 and B1,

$$N_{SR}(B_0, B_1) = \int_{B_0}^{B_1} f_{SR}(t) dt.$$

The conventional timestamp permits exchange with existing instruments. The integral preserves the number of passages actually made by the changing terrestrial enclosure.

The Right-to-Life deficit

The original RTLDI sensitivity expression was

$$\Delta G = \eta(1 - R)G_0,$$

where R is a normalized right-to-life protection score, G0 is the selected economic baseline and eta is an estimated sensitivity. The Atlas result depends upon empirical scoring, denominators and sensitivity analysis, not upon the visual simplicity of the equation.

Civic accounting

The Civic Enclosure defines net annual cost as

$$C_{net} = C_{operation} - C_{displaced} - C_{avoided, realized}.$$

Projected savings are not realized savings. A cost enters the displaced term only after the earlier expenditure is actually retired or reduced, and an avoided cost enters only after the payer and amount are observed. The target state requires the same functional metrics before and after intervention so that dignity is not substituted for accounting or accounting for dignity.

What the registry permits

These expressions share an architecture: reference, departure, enclosure, boundary, exchange and finite authority. They do not share one unit, one proof or one evidential status. The registry joins the maths without flattening their domains.

Appendix D: The Continuum Across Fields

Physical reality

Physics first made the enclosure visible. A local mechanism can be exact within its boundary while a larger question remains unresolved because the boundary conditions were treated as background. Cosmological singularities, vacuum energy, measurement and scale disagreement became candidates for enclosure failure rather than automatic evidence that another object must be inserted inside the same map.

Earth and climate

The climate volumes restored the atmosphere, ocean, crust, water, plants, animals, microbes, cities and human institutions to one life-support enclosure. Carbon remains causally important inside that whole. It does not become the whole because it is the quantity most easily counted and governed.

Antarctica then made the outer condition visible at planetary scale. Ice, ocean circulation, atmosphere, albedo, geology and international governance meet there. The continent is not an isolated indicator. It is an enclosure whose changes project into the rest of the Earth system and whose observed anomalies may expose the limits of models built elsewhere.

Biology and the observer

Life persists through nested exchange. A body encloses organs, tissues, cells and microbial worlds while being enclosed by food, air, water, climate, home, city, language and history. Consciousness does not hover outside this architecture. It encounters the world through a body and a finite working channel, and it can sometimes change the configuration from which attention and action become available.

Human exchange

Economics appears wherever humans carry biological need, memory, property, promise and expectation through exchange. A price is locally real. So are the enclosing conditions that determine who may enter the market, what costs are externalized and what cannot be withheld without destabilizing the human enclosure that makes exchange possible.

Institutions and computation

Law, cybersecurity and artificial intelligence show the same hazard in another form. A rule aimed at one object projects through platforms, organizations and people that were not visible in the original frame. The local act can be lawful or technically correct while the enclosing system produces a result no participant selected. Mapping the projection is not opposition to law or technology. It is how their effects become governable.

Application record

The series applications can be read as one sequence:

- the Continuum identified persistence through enclosure and exchange;
- climate policy showed how a manageable variable can capture a whole field;
- Antarctica revealed a planetary boundary object;
- numbers supplied recursive address, invariants and the Zero Infinity;
- cosmology tested the framework at the scale limits of physical models;
- Nested Causal Modelling turned the observations into a discipline;
- cognitive state made the observer part of the map;
- the terrestrial clock added an enclosure count beside standardized duration;
- cybersecurity followed law and technical power into the lives they enclose;
- CodeX documented prior capture during human-machine research;
- the Civic Enclosure relocated homelessness from the blamed body to the city missing its own functions;

- the Signal relocated AI-authorship judgment from stylistic resemblance to provenance, novelty, reasoning and reader value.

Appendix E: Cognitive State and Deliberate Return

This appendix retains the complete research boundary and minimal protocol from Volume VII. Its position here matters: the observer is not exempt from the method used on every other field.

Scientific Status of the Claims

This appendix separates the book's evidential layers. It does not treat a cited neighboring literature as proof of NCM, and it does not treat an NCM description as an established mechanism merely because the description is compatible with existing science. The categories below answer three different questions: what the literature already supports, what this volume synthesizes from it, and what remains a new empirical proposal.

Established or substantially supported

The established layer concerns variation and regulation of cognition, not the truth of the Zero Infinity operator. The cited literatures support the following bounded claims.

Domain	Supported claim	Important boundary
Conscious state	Conscious contents and measurable levels vary with brain condition, bodily signals, task, environment, learning, sleep, anesthesia, and pharmacology.	No single scalar fully orders every conscious state, and a change in report does not by itself identify a unique mechanism.
Defensive organization	Threat and defensive states reorganize autonomic preparation, attention, memory access, perception, and action tendencies.	A useful defensive response is not automatically pathology; context and persistence matter.
Sexual arousal	Sexual states coordinate sensory, cognitive, reward, autonomic, endocrine, and social processes.	The components do not always vary together, and population-level findings do not determine an individual's experience.
Skill and automaticity	Practice and chunking can reduce demands on working memory and conscious control while improving task performance.	Automaticity is domain-specific and can preserve errors as efficiently as skill.
Flow and absorption	Flow is associated with absorption, challenge-skill balance, altered time experience, and reduced self-consciousness.	Flow has no single established neural signature and overlaps with, but is not identical to, absorption and expertise.
Working memory	Working memory is sharply limited, with modern estimates generally narrower and more conditional than a universal seven-item rule.	Capacity depends on chunking, modality, prior knowledge, interference, and measurement method.
Deliberate regulation	Reappraisal, attentional regulation, decentering, focused attention, and open monitoring can alter experience and behavior.	Mean effects do not imply uniform benefit, voluntary access, or permanent change.

Domain	Supported claim	Important boundary
Psychedelic states	Psychedelics can alter self-boundaries, perception, meaning, cognition, and temporal experience.	Predictive-processing and entropy-based explanations remain active models rather than settled complete accounts.
Adverse effects	Meditation and related practices can produce distressing or impairing effects in some participants.	Safety cannot be inferred from a practice's nonpharmacological or contemplative character.

Together these findings justify treating cognition as a family of dynamically organized states with multiple dimensions, transition costs, and context-sensitive risks. They do not yet justify the stronger claim that aperture, depth, scale, integration, channel, and agency are the uniquely correct coordinates. Those coordinates are the proposed NCM synthesis.

NCM synthesis and its present evidential status

Volume VII selects the present configuration of the observer's point of view as its focal departure from Zero Infinity. It locates that departure between bodily and learned states enclosed within it and material, social, linguistic, temporal, and task conditions enclosing it from outside. Aperture describes how much of the available field is admitted. Depth describes how many nested relations remain accessible. Scale describes the span of enclosures represented at once. Integration describes whether admitted contents can be related coherently. Channel describes the portion that can be reported or used for an immediate task. Agency describes the capacity to enter, modulate, or leave the state deliberately.

This coordinate system is a conceptual model. Existing findings make each coordinate plausible enough to operationalize, but the six-coordinate package has not yet been validated as an independent psychometric structure. Some coordinates may collapse into established constructs such as absorption, attentional breadth, metacognitive awareness, working-memory load, or perceived control. Others may separate only under specific tasks. Factor structure, convergent validity, discriminant validity, test-retest reliability, and sensitivity to demand characteristics therefore remain open empirical questions.

The model separates causal direction from intervention timing. Nonvolatile causality is outer-to-inner projection. Volatile causality is bottom-up local mechanism and contribution. An open intervention interval remains available before the selected consequence is committed; a committed interval requires containment, reversal, repair, or construction of a new enclosing condition. Existing research on regulation timing, habit, threat, and executive control supports the general importance of timing. It does not establish one universal interval. The interval must be defined separately for each state and measured through behavior, physiology, and report.

Return and channel reconstruction are treated here as components of navigation rather than incidental aftereffects. This is partly a design commitment: an intervention that produces an unusual state but cannot preserve agency, restore ordinary task performance, or identify adverse effects is incomplete. Whether trained return constitutes a distinct mechanism is not yet established.

New testable proposals of Volume VII

Proposal	Discriminating observation	What would count against it
The observer form of the Zero Infinity enclosure operator can be engaged through cognition and attention alone.	A standardized instruction produces a reproducible profile across trained participants without pharmacological or physiological induction.	Effects fail to replicate or are fully reproduced by generic expectancy and relaxation controls.
Releasing scalar finality produces an expanded-awareness state distinct from established practices.	The NCM condition separates from open monitoring, focused attention, guided imagery, conceptual reading, and progressive relaxation on preregistered measures.	The profile is statistically and phenomenologically indistinguishable from one or more comparison conditions.

Proposal	Discriminating observation	What would count against it
The state increases experienced recursive depth and scale.	Participants show reliable increases on independently developed depth/scale measures and on tasks requiring nested relational representation.	Only global intensity, suggestibility, or positive appraisal changes.
Expanded depth and scale temporarily reduce ordinary reportable channel capacity.	Depth/scale change covaries with a reversible cost in working memory, task switching, or report bandwidth.	Performance is unchanged, worsens nonspecifically, or does not recover after return.
Training improves entry, modulation, exit, and reacclimation.	Longitudinal practice shortens entry and recovery while preserving reality testing and task performance.	Apparent improvement is explained by repeated testing, compliance, or selective dropout.
Preserved agency distinguishes the target state from disruptive states.	Participants retain the ability to stop, orient, communicate, and return within predefined safety bounds.	Entry becomes involuntary, reality testing degrades, adverse effects persist, or reliable return cannot be demonstrated.

Measurement and inference boundaries

Self-report is necessary because the proposal concerns point of view, but self-report cannot carry the test alone. Participants can infer the desired answer from the language of scale, depth, expansion, and return. The study must therefore use neutral instructions where possible, independent assessors, active comparison conditions, behavioral measures, manipulation checks, and preregistered exclusion rules. Reports should be collected both in the vocabulary of the participant and through instruments whose scoring does not simply restate NCM.

Physiological or neural differences would strengthen evidence that the conditions differ, but no biomarker should be declared the signature of expanded awareness merely because it changes during the exercise. A marker must replicate, distinguish the NCM condition from controls, track the proposed dimensions, and predict behavior or recovery beyond self-report.

The strongest near-term conclusion available to this volume is therefore modest: the proposed state is specified well enough to risk failure. If it cannot be separated from expectancy, relaxation, absorption, focused attention, open monitoring, or ordinary conceptual suggestion, the distinct-state claim should be withdrawn or narrowed. If it separates reliably while preserving agency and return, the result would justify a larger program of mechanism, safety, and application studies. It would not by itself validate every metaphysical or cosmological use of NCM.

Minimal Research Protocol

Design

Randomized, preregistered, assessor-blinded comparison among:

1. NCM observer-operator instruction;
2. open-monitoring instruction;
3. focused-attention instruction;
4. progressive-relaxation control;
5. matched metacognitive scale instruction without Zero Infinity;
6. matched conceptual-reading control.

Primary outcomes

- change in experienced scale and recursive depth;
- preserved agency during the intervention;
- successful return to baseline orientation;
- immediate working-memory and task-switching change;

- separation from demand characteristics and prior belief in NCM.

Exclusion and escalation boundaries

Initial studies should exclude participants with current mania, psychosis, severe dissociation, acute suicidal crisis, or other conditions for which deliberate alteration of self-boundary may create unacceptable risk. Adverse experiences, not only desired effects, must be actively assessed. Clinical populations require separate protocols, qualified supervision, and independent ethics review.

Success criterion

The minimal proposal succeeds if the NCM instruction produces a reproducible state profile with increased scale/depth ratings, reduced self-centrality, preserved reality testing, measurable channel cost, and reliable return beyond matched controls.

Failure criterion

The proposal fails in its present form if effects are fully explained by expectancy, relaxation, absorption, or established open-monitoring mechanisms, or if agency and reliable return cannot be preserved.

Complete Cognitive-State NCM Record

Focal observation

The configuration of the observer's point of view changes while point of view remains available.

Zero Infinity reference

Every cognitive configuration is expressed as departure from the same countably infinite balanced reference. Zero Infinity is not the observer, a blank state, or the intended outcome.

Level 1 - Enclosure map

```
[ bodily regulation, sensation, memory, learned priors, neural dynamics, channel
  | present cognitive-state departure
  | material setting, other people, language, culture, task, time, available action ]
```

Level 2 - Causal flow and exchange

- Nonvolatile causality projects enclosing material, social, linguistic, temporal, and task conditions inward.
- Volatile causality rises through sensory, neural, autonomic, endocrine, learned, and bodily mechanisms from below.
- Attraction/free will attends, withholds, endorses, redirects, or acts within the human enclosure.
- Nested Exchange carries physical events, energy, information, language, action, and consequence across the cognitive boundaries.

Level 3 - Enclosing-state comparison

Fear, desire, flow, learning, chemistry, and crisis show that the observer remains while the rule of relevance changes. The active ordinary enclosure treats present identity, task, object boundary, and scale as sufficiently final for action. The resulting counterfactual is to preserve identity, body, reality testing, and agency while withdrawing only scalar finality.

Level 4 - Intervention

The smallest intervention changes that one enclosing rule through attention and free will. It introduces no substance, breath manipulation, sleep loss, trauma, or sensory forcing. It includes a halt condition and deliberate reconstruction of object, support, place, name, purpose, sequence, and action.

Predicted result

Aperture, represented depth, and scale may increase; self-centrality may decrease without denial of identity; finite channel performance may carry a temporary cost; integration, reality integrity, and agency remain sufficient for return.

Final Frontier

- physical: the participating body-world system;
- scale: the smallest and largest participating enclosures presently resolved;
- computational: the halt before recursive depth becomes inventory;
- epistemic: no claim beyond reproducible differences from matched controls;
- intervention: stop immediately if agency, reality integrity, or reliable return is lost.

Kill conditions

The NCM fails in its present form if the active enclosure is not reproducible, if changing scalar finality produces no distinct configuration, if nearby practices fully reproduce the effect, if the predicted channel and return profile does not appear, or if agency cannot be preserved.

Appendix F: Time Beside the Clock

The Clock does not ask the world to discard the second. UTC, TAI, calendars and standardized duration solved coordination at civilizational scale. The intervention adds an addressed count of actual passage beside them.

The Earth-ionosphere cavity is a changing terrestrial enclosure. Lightning excites it. Day, night, weather and ionospheric conditions alter it. Its familiar fundamental frequency near 7.83 hertz is an average, not a command imposed upon the cavity. A network that records frequency, amplitude, phase, location and uncertainty can preserve the event while a conventional timestamp preserves interoperability.

One complete oscillation passes through expanded extent, reference, contracted extent and reference again:

+1 -> 0 ∞ -> -1 -> 0 ∞ -> +1

The repeated value is not the repeated event. Direction remains part of the address. A heart, a brain, a storm and a terrestrial resonance may share a timestamp without sharing phase or causal relation. The enclosure clock asks what actually passed, what contained it and what it contained while passing.

The proposed experiment is therefore comparative. Record the terrestrial phase count beside standard time and independently recorded environmental and biological events. If the enclosure count recovers stable relations that disappear when every signal is first flattened into seconds, it contributes information. If it does not, the terrestrial clock remains a measured environmental oscillator and the stronger proposal fails cleanly.

Appendix G: Institutions, Cybersecurity and Prior Capture

A rule is an outer enclosure

A statute, security policy, platform rule or model instruction projects a field of permitted states inward. Its consequences are not exhausted by the conduct named in its title. Agencies interpret it. Prosecutors select cases. platforms alter access. Engineers encode it. Insurers and employers anticipate it. People reorganize their behavior before any court reaches them.

Volume IX followed this architecture through the Computer Fraud and Abuse Act, Aaron Swartz, Megaupload, Anonymous, state cyber conflict and the institutional habit of treating access as intent. The completed event remains locally real. The nonvolatile enclosure lies in the rules, incentives and definitions that determine which events become crimes, security incidents or permissible research.

Prior capture

Volume X observed the same problem inside AI-assisted research. A novel statement enters a system trained to return familiar, defensible analogues. The analogue may be accurate within its own enclosure and still destroy the proposal by substitution. Prior capture is not disagreement. It is replacement before the new object's identity has been stabilized.

The practical protections are simple:

1. preserve the originating statement;
2. map it before translating it;
3. label analogues as analogues;
4. identify what disappears in translation;
5. validate only after the focal departure remains recognizable;
6. keep rejected and quarantined transformations available for audit.

This is why source prompts, version histories, novelty ledgers and correction records belong to the research apparatus. They do not prove that an idea is correct. They prove which idea was tested.

Appendix H: The Civic Enclosure and San Francisco

The Civic Enclosure is the first complete Level 4 civic application in the series. The focal departure is not a type of person. It is the visible difference between the bodily state projected by a private home and the bodily state produced when the city withholds those same elementary functions from a person it contains.

The intervention restores six civic relationships: washing, sanitation, seated food preparation and dining, clean clothing, protected individual sleep, and secure custody with a local address. They are universal, elective and scaled to demand for participation. Mental-health care, addiction treatment, policing, housing and ordinary private life retain their own enclosures. None is made a qualification for water, food, clothing, sleep or a bathroom.

San Francisco is not decorative in this appendix. It is the worked city through which the target state, present state, implementation scale, fiscal boundary and first-circle test become measurable.

San Francisco Civic Enclosure State Specification

Current State, Target State and Savings Account Companion to The Civic Home: A Level 4 Civic Intervention Packet Sid J.A. Hubbard Publication specification 0.1 | August 2026

Data Vintage The worked fiscal comparison retains San Francisco's adopted HSH budget of \$846.3 million for FY2024-25 and \$677.0 million for FY2025-26 because those figures bounded the design exercise reported in the article. The city's later FY2025-26 and FY2026-27 mayoral proposal reported departmental totals of \$742.7 million and \$760.3 million. These are context figures, not interchangeable inputs: changing the enclosing budget does not change a construct's estimated cost, and no departmental total is treated as money automatically available to the intervention. Every percentage below identifies the denominator it uses.

1. The Object Being Specified

The object is not a homeless-services system. The object is the civic enclosure of San Francisco: the relationship among the city, the resources concentrated within it and every person physically present inside it. The present system describes programs by department, contract, population and eligibility. The target system describes the resulting civic state. A city can spend more while the required state remains absent. It can spend less after the state becomes ordinary. The specification therefore measures both resource and result. The target has six components: 1. a private place to wash; 2. a maintained place to use a toilet; 3. a table where a basic prepared meal is already paid for; 4. clean clothing in circulation; and 5. a protected place for one person to sleep; and 6. an elective civic address and secure locker for personal property. Human presence within the civic enclosure is the access condition for the first five functions. Civic residence is the access condition for electing an addressed locker. A lounge or shared civic room remains outside this specification; desks, chairs and benches in a locker wing support mail and property work and do not constitute a seventh intervention.

2. Conformance

The words MUST, SHOULD and MAY identify requirements. No city is compelled to adopt this specification. A city that wants to restore the civic home may choose it. The requirements below describe conformance only after that choice; they do not compel a city, restaurant, property holder, donor, resident, site or neighboring enclosure to participate. • Participation MUST be elective and self-selected in every module.

- Refusal to participate or use a function MUST NOT produce a penalty, loss of status, denial of another civic function or adverse record.
- A conforming current-state specification MUST measure the present city with the same metric definitions used for the target.
- A conforming target-state specification MUST name capacity, reach, time, failure, cost and resulting human state for every intervention.
- An unavailable baseline MUST be written as NOT MEASURED. It MUST NOT be converted into zero.
- A saving MUST identify the expenditure displaced, its present payer, the function preserved and the date the old expenditure leaves a budget.
- A service MAY launch before the entire civic home is complete. Partial deployment MUST remain visible as partial deployment.
- Every module MUST begin with a bounded first-circle inventory and scale to demand for participation through the civic ERP.
- The ERP MUST track participating resources, offered capacity, inventory and maintenance obligations. It MUST NOT track diners, bathers, clothing users, sleepers or their movement through the city.
- Published citywide quantities are design horizons. They MUST NOT be purchased merely to satisfy a forecast when participation has not caused the system to scale to that demand.
- Conformance MUST NOT depend upon predicted cross-class uptake or equal utilization. Provider and resource participation governs expansion; ordinary use remains elective and is not the demand signal held by the ERP.
- The city reaches full conformance only when it satisfies both the physical and fiscal target.

3. Common Metric Dictionary

Every current/target comparison uses these metrics.

ID Metric Definition CE-01 Access authority What a person must present, purchase, prove or become before use CE-02 Service points Number and distribution of places where the function is available CE-03 Geographic reach Travel required from a person in the civic enclosure to an available point CE-04 Temporal reach Hours and days when the function can be used CE-05 Capacity Uses, meals, exchanges or occupied unit-nights the system can complete CE-06 Failed access A person seeks the function and cannot obtain it within the specified interval CE-07 Reset Time required to restore the service point for the next person CE-08 Personal data Identity, eligibility, diagnosis, income, address or case data required for ordinary use CE-09 Gross cost Startup and annual operating expenditure before displacement CE-10 Displaced cost Existing expenditure demonstrably made unnecessary by the target state CE-11 Net cost Gross cost minus displaced and realized avoided cost CE-12 Resulting state Observable condition of the city and the person after the function operates CE-13 Safety response How lock, fire, violence, health and access events are resolved without making surveillance a condition of ordinary use CE-14 Choice reality Whether refusal follows the presence of an accessible alternative or merely records civic absence as personal preference CE-15 Population mental health Population-level distress, felt security, sleep sufficiency and confidence that loss of parcel connection will not produce exposure

ID Metric Definition CE-16 Civilizational reach Replication of the civic state across neighboring cities, states and nations, and routine deaths from exposure remaining within that field CE-17 Labor motive Whether work is attracted by a chosen future or compelled by threatened loss of minimum bodily conditions

4. Whole-Enclosure Comparison

Metric Present San Francisco Conforming target CE-01 Access authority Mixed: purchase, private-property Physical presence is sufficient for all five permission, program eligibility, referral, minimum functions queue, charity or emergency status CE-02 Service points Fragmented across public facilities, One complete Civic Center circle scaling to businesses, shelters and nonprofits; no demand toward design horizons of 16 unified six-function inventory shower houses, 500 participating bathrooms, 600 restaurants, four clothing exchanges, 5,000 new sleeping enclosures, conforming current protected-sleep positions and phased City Hall locker wings CE-03 Geographic reach NOT MEASURED with one citywide Bathroom within 10 minutes walking in definition active districts; civic meal within 15 minutes walking or one ordinary transit segment; shower, clothing and protected sleep within 30 minutes by transit; civic address anchored at City Hall and its added wings CE-04 Temporal reach Varies by property, program and recipient Bathrooms and sleep available 24 hours status through combined coverage; meals during published restaurant hours; showers 18 hours daily; clothing exchanges cover daytime and evening use CE-05 Capacity 2024: 3,969 people in emergency shelter or First circle: four shower stalls, 10 offered transitional housing and 4,354 unsheltered; bathrooms, 10 participating restaurants, other functions lack unified capacity one garment cell, 25 sleeping enclosures and 100 elected lockers; each module scales to demand toward its published design horizon CE-06 Failed access Not measured across all functions; Less than 1 percent quarterly failed access unsheltered state is direct evidence of failed for washing, sanitation, meals and clothing; protected sleep zero denials of protected sleep caused solely by lack of capacity CE-07 Reset Varies; not reported as one civic measure Shower and sleep reset measured continuously; bathroom repair and restaurant interruption reported against published service levels CE-08 Personal data Multiple systems require payment, identity, No personal data and no surveillance for address, income, diagnosis, referral or ordinary use of the first five functions; homelessness status locker biometric limited to releasing the assigned enclosure without an ordinary-use history; emergency events retain only the records the emergency requires CE-09 Gross cost Not consolidated by physical function; HSH First five new interventions: startup \$333M adopted uses were \$846.3M in FY2024-25 plus conversion capital not yet measured and \$677.0M in FY2025-26 and operation \$186.6M; five-function target operation approximately \$259.5M after current sleep positions are carried; sixth-function cost remains open pending locker architecture CE-10 Displaced cost Not reported as a functional crosswalk Every removed expenditure identified by source, payer, function, effective date and replacement evidence CE-11 Net cost NOT MEASURED for the present Annual verified displaced and avoided cost six-function state MUST equal or exceed annual operation; positive annual saving is the fiscal target CE-12 Resulting state A complete city continues producing No person is forced into any of the six involuntary dirt, sanitation failure, hunger, states by civic absence repeated clothing, unprotected sleep and property-bound life without a local address

Metric Present San Francisco Conforming target CE-13 Safety response Varies by facility and program; safety People are not surveilled; attendants authority is often joined to recipient respond to present events; event records identity and institutional control contain only what the event requires; locker identity is limited to continuity of address and custody CE-14 Choice reality Dirt, hunger, repeated clothing, wakefulness Refusal occurs only after the corresponding and exposure are attributed to individual civic function is present and reachable; the choice while accessible alternatives remain city can distinguish chosen state from state enclosed behind parcel ownership, lease, imposed by civic absence family, purchase, permission or institutional admission CE-15 Population mental health NOT MEASURED as the shared burden of Fewer dirty, starving, sleep-deprived and possible parcel loss, family rupture, job loss, exposed citizens; improved reported emergency departure and exposure distress, felt security, sleep sufficiency and confidence in a survivable interval outside a private parcel CE-16 Civilizational reach Parcel-joined people experience the Neighboring-city, state and national minimum civic functions as ordinary while replication increases; routine death from exposure death remains possible outside exposure caused solely by absence of parcel that enclosure connection reaches zero CE-17 Labor motive Loss of work can remove food, hygiene, The civic floor survives employment sleep, storage and address unless an interruption; private home, family, unemployment payment or another parcel ownership, comfort, craft, enterprise and connection intervenes chosen future remain reasons to work

The target does not require every resident to use every function. A public function remains universal

when anyone may use it and the system scales to demand without creating a recipient class. The locker requires assignment because secure property and mail require continuity; assignment MUST NOT become a means test or a homeless-services classification. No minimum utilization rate establishes civic legitimacy. Empty capacity at a given moment remains available capacity, not evidence that a person should have been compelled to use it. Expansion occurs when voluntary participation reaches the present system boundary, not when surveillance reports that a predicted class behaved as expected.

5. Intervention Specifications

5.1 Civic Shower

Metric Present state Target state CE-01 Free showers exist through shelters, No purchase, referral, address or status resource centers and community providers, commonly attached to a defined service population CE-02 NOT MEASURED as a citywide public 16 houses x 16 stalls = 256 private stalls inventory CE-03 NOT MEASURED No more than 30 minutes by ordinary transit CE-04 Provider-specific 18 hours daily with overlapping citywide coverage CE-05 NOT MEASURED 9,216 theoretical uses/day; 6,912 at 75 percent planning load CE-06 NOT MEASURED Less than 1 percent unable to begin within one hour CE-07 NOT MEASURED 30-minute wash-and-reset slot; failed stalls isolated without closing site CE-08 Varies by provider No personal record for ordinary use CE-09 Embedded in shelter, health and nonprofit \$40M startup; \$15M annual reference budgets; not functionally isolated CE-12 Cleanliness depends upon property or Every person can become clean by choice program access CE-13 Provider-specific Visible civic exterior and attended response protect the approach; locking stall protects bodily vulnerability; ordinary use creates no recipient record

5.2 Civic Bathroom Network

Metric Present state Target state CE-01 Public facility, customer permission, No purchase or recipient status purchase or property access CE-02 Public Works lists 16 staffed Pit Stops; 500 participating interiors plus overnight other public and private bathrooms are not stand-alone coverage one interoperable network CE-03 Concentrated in selected neighborhoods; Ten-minute walking target in active districts citywide maximum walking time NOT MEASURED CE-04 Two Pit Stops shown as 24-hour locations; Combined network maintains 24-hour others have limited daily schedules coverage CE-05 Uses not consolidated with private interiors Offered bathrooms enter the ERP by site and district; the network scales to demand for participation CE-06 Human-waste cleaning demand rises when Less than 1 percent failed access; no district toilet sites or hours fall remains without overnight option CE-07 Staffed Pit Stops maintained continuously; Published closure and repair interval for private response varies every participating site CE-08 Usually no formal identity at public sites; No personal record or purchase private access may require customer status CE-09 One 2025 Pit Stop workforce contract \$23M startup; \$20M annual reference modification added \$6.4M plus \$1M carryover; full current cost requires contract crosswalk CE-12 The city contains toilets while public human Human waste has a maintained destination waste remains an operating condition wherever people concentrate

5.3 Pre-Fixe Civic Meal

Metric Present state Target state CE-01 Purchase or eligibility through many A person sits at a participating table targeted food programs CE-02 3,448 active food-service locations; no 600 participating restaurants universal civic-meal network CE-03 Food-service density exists; free Fifteen minutes walking or one ordinary prepared-meal reach NOT MEASURED transit segment CE-04 Restaurants and programs follow separate Civic meal available whenever each schedules participating restaurant is open CE-05 Citywide targeted food capacity is Participating seat-hours and geographic fragmented coverage scale through restaurant enrollment; no forecast meal count governs capacity CE-06 Hunger and program unmet need measured Participating civic tables remain available through separate systems throughout published hours; a person can reach an available table within the service interval CE-07 Not applicable as one current system Restaurant maintains continuous listed availability; interruption is reported CE-08 Purchase records or program eligibility No recipient record and no meal-level commonly required reimbursement claim CE-09 Mayor's FY2025-26 food-security \$4M startup; \$57.6M annual flat presentation totals \$60.17M across relationship payments at the reference programs with many distinct functions and average, assigned by seating-capacity and populations population-density band rather than meals CE-12 Food exists at civic scale while free access Anyone can eat at a participating table; remains a classified exception; new restaurants gain baseline guaranteed income restaurants begin without a civic revenue and customers; qualifying entrepreneurs can floor underwrite a new restaurant against a conditional participation commitment; whole-city conformance makes SNAP and recipient-class food-security access unnecessary for ordinary nourishment

5.4 Civic Clothing Exchange

Metric Present state Target state CE-01 Purchase, donation-program rules or Clothing currently worn is sufficient charitable distribution exchange value; naked entry is sufficient need CE-02 Free clothing resources exist; no unified Four exchanges with shared inventory municipal circulation network standards

Metric Present state Target state CE-03 NOT MEASURED No more than 30 minutes by ordinary transit CE-04 Provider-specific Coordinated daytime and evening coverage seven days/week CE-05 NOT MEASURED Capacity governed and published in laundry pounds, exchanges and size availability CE-06 NOT MEASURED Less than 1 percent unable to

obtain safe, seasonally adequate clothing in available sizes CE-07 Donation and laundry cycles vary Garment leaves only after inspection; incoming garment enters measured laundry cycle CE-08 Varies No biography, income or address record CE-09 Fragmented and NOT MEASURED \$16M startup; \$12M annual reference CE-12 Repeated or dirty clothing reveals exclusion Clean clothing circulates; no one remains from laundry and wardrobe trapped in one outfit

5.5 Civic Sleeping Enclosure

Metric Present state Target state CE-01 Shelter eligibility, referral, reservation, Physical presence and an available queue or private purchase one-person enclosure CE-02 4,440 emergency shelter and transitional 5,000 new one-person civic sleeping beds reported for the 2024 count; 4,354 enclosures plus up to 4,440 current people remained unsheltered positions retained or converted where they meet the protected-sleep specification CE-03 Placement follows available program and No more than 30 minutes by transit from bed an active district to available sleep CE-04 Program-specific 24-hour arrival and sleep availability, including daytime sleep CE-05 3,969 people occupied emergency shelter or Up to 9,440 protected positions and 3.446M transitional housing during the 2024 count unit-nights/year; enough to enclose the 8,323 people counted sheltered or unsheltered with 1,117 positions of reserve CE-06 4,354 unsheltered people in the 2024 count Zero requests denied solely for lack of sleep capacity CE-07 Program-specific Used pad removed, unit inspected and disinfected, clean pad installed before release CE-08 Homeless status and reservation/placement No recipient classification for ordinary data commonly required sleep; occupancy state only CE-09 FY2023 adult/TAY shelter averaged New capacity: \$250M startup and \$82M \$126.25 per filled bed-night in nominal annual reference; retained or converted FY2023 dollars; shelter budget about capacity: \$72.9M annual at 4,440 x 365 x \$176M in FY2024 and \$200M in FY2025 \$45; whole protected-sleep target: approximately \$154.9M annually before services beyond sleep CE-12 Thousands remain unprotected while the No one remains awake or exposed because city operates a large shelter system protected individual sleep is unavailable CE-13 Safety commonly depends upon admission, Lock operates from within; attendants staff control and a resident record respond to lock, fire and health events; occupancy state supports operation without a recipient history

5.6 Civic Address and Locker

Metric Present state Target state CE-01 Mailing address and secure property storage Civic residence is sufficient to elect one depend upon private property, commercial locker and first local mailing address purchase, institutional placement or targeted service CE-02 City Hall is a watched civic and records Modular City Hall wings scaling to 82,608 enclosure; no universal resident-locker wing lockers at the ten-percent launch horizon exists CE-03 Storage and mailing services are fragmented One civic address system anchored at City Hall and its added wings CE-04 Provider-specific Locker access and mail retrieval available during published extended civic hours; secure custody continuous

Metric Present state Target state CE-05 NOT MEASURED First 100 elected lockers in the Civic Center circle; each next wing scales to demand; 82,608 is the first large design horizon CE-06 NOT MEASURED Less than 1 percent of electing residents unable to receive assignment within the published interval; access failure resolved by attendant CE-07 NOT MEASURED Vacated locker inspected, cleared under published property rules and reassigned through a measured reset CE-08 Address and service systems hold varying Biometric recognition releases the assigned identity data locker; no income, diagnosis or homelessness qualification and no movement, association or ordinary-use history CE-09 Storage, mailing, document recovery and 82,608(qc+e)+W startup model; numeric security costs are fragmented and NOT startup and annual operation NOT YET MEASURED BOUNDED pending architectural study CE-12 Property remains attached to the body and Property remains inside the civic watch; lack of local address interrupts civic resident can receive mail and move without continuity carrying the complete material record of life CE-13 Security and identity are fragmented across City Hall watch protects the wing; private, commercial and targeted systems biometric recognition releases the assigned locker; attendant resolves access and prevents nesting without adjudicating need

6. Savings Accounting Rules

The target is designed to reduce total cost. That claim becomes credible only through an account that refuses imaginary savings.

Rule 1: Match Function to Function A sleeping enclosure may displace the overnight-accommodation component of an adult shelter bed. It does not automatically displace treatment, case management, family shelter, domestic-violence protection or permanent housing. A civic meal may displace a general prepared-meal function. It does not automatically displace school nutrition, medically tailored meals or home delivery for a person unable to travel.

Rule 2: Name the Payer A federal CalFresh reduction is not a San Francisco General Fund saving. A reduced emergency-department cost may accrue to the City, Medi-Cal, Medicare, a hospital or several payers. Every saving remains attached to the enclosure whose budget actually changes.

Rule 3: Separate Four Kinds of Saving 1. Cashable displacement: an appropriation, contract or position is reduced because the function moved. 2. Avoided expansion: a planned future facility or contract is no longer required. 3. Downstream saving: sanitation, emergency medicine, policing, courts or other response declines. 4. Transfer: cost moves from one public or private payer to another. Only the first three reduce total cost. Only cashable displacement reduces the current budget immediately.

Rule 4: Preserve Time Savings begin on the date an old cost ends, not the date a new intervention starts. Parallel operation during transition is a cost of launch. Startup capital is accounted separately from annual operation.

Rule 5: Count Once If closing a shelter contract reduces both the HSH program line and the contractor payment, that is one saving. If reduced public waste lowers a street-cleaning route and its labor hours, the reduction is counted where the budget falls, not again as an estimated social benefit.

Rule 6: Pass the Capacity Gate Protected-sleep expenditure cannot be displaced while displacement would return a person to exposure. The 5,000 new sleeping enclosures first close the 4,354-position unsheltered deficit and establish reserve. Existing shelter accommodation becomes a savings candidate only when its sleeping function has conformed inside the combined 9,440-position field, or when measured demand falls while all requests continue to be met. Services bundled into a shelter remain outside the gate until separately enclosed.

7. Preliminary Savings Ledger

No saving is booked before implementation. The table identifies candidate accounts and the proof required to recognize them.

Candidate account Current comparator Reference calculation Recognition condition Adult/TAY overnight \$126.25 per filled bed-night Current 3,969 filled positions imply a Combined capacity passes accommodation \$182.9M annual comparator at that the gate; contract crosswalk unit cost; enclosing all 8,323 people isolates overnight counted in 2024 at \$45 implies accommodation; other \$136.7M, or \$154.9M with the full services remain funded 1,117-position reserve Public toilet operation \$6.4M 2025 contract increase plus No saving booked Participating network \$1M carryover for one Pit Stop reaches the same workforce grantee; complete cost districts/hours and an unknown existing toilet appropriation actually falls General food-access and \$60.17M FY2025-26 city No saving booked Whole-city SNAP functions food-security portfolio plus state and participating-table coverage federal food-access expenditure not makes recipient-class access yet crosswalked unnecessary; each enclosing payer records the appropriation that actually ends, while separately derived medical nutrition remains a medical function Shower/hygiene operation Embedded in shelters and resource No saving booked Functional cost separated centers and a facility or contract component is reduced Clothing distribution Fragmented No saving booked Existing public expenditure identified and removed without removing another function Property custody and Fragmented across shelters, No saving booked Functional inventory address continuity commercial storage, mail programs, identifies expenditures document replacement, security and made unnecessary by the case administration civic locker and records the actual budget reduction Recipient classification HSH administration proposed at No saving booked Time-and-function study \$25.6M in FY2025-26; classification identifies eligibility work also occurs outside HSH made unnecessary; general finance, safety and facilities administration remain Unemployment income NOT MEASURED as the municipal, No saving booked Complete civic-home maintenance state and federal portion serving only reliability is established; the to prevent loss of the six civic responsible government functions identifies payments made unnecessary and separately preserves any industry, seasonal, income-replacement or transition function it chooses to retain Human-waste response Public Works reports demand rises as No saving booked Route hours, steaming calls, Pit Stops close; historical SOMA materials or contracts requests fell from 27 to 15 daily after measurably fall and the a Pit Stop opened responsible budget records the reduction Exposure and crisis Distributed across health, EMS, No saving booked Linked, privacy-preserving response police, courts and hospitals utilization study establishes causal reduction and payer

8. Planning Scenarios

These scenarios expose the savings burden. They are not booked results.

Integrated Scenarios

The scenarios account only for the first five functions and values that can presently be bounded. They

do not establish six-function operating break-even. Food and classification values are explicit planning assumptions requiring a program crosswalk. The specification does not use unmeasured locker costs, exposure, emergency medicine, policing, court or street-cleaning effects to erase the remaining cost. Current known expenditure provides a scale check rather than an apples-to-apples total. The FY2024- FY2025 shelter budget (\$176M-\$200M), FY2025-26 food-security portfolio (\$60.17M) and one identified \$6.4M Pit Stop contract action already sum to roughly \$242.6M-\$266.6M. The first five functions' target is approximately \$259.5M before specialized services beyond those functions. This proximity is the reason the functional crosswalk matters: the city may already spend at target scale while leaving the target state absent. The civic locker remains outside both sides until present custody costs and target construction are measured.

The completed civic enclosure MUST satisfy all of the following: 1. Operating break-even: verified annual cashable displacement and realized avoided/downstream cost equal or exceed annual operation. 2. Positive annual saving: after break-even, the yearly account shows a positive reduction in total public expenditure across identified payers. 3. No removed function: every displaced program line has a function map demonstrating what replaced it and what remained. 4. Startup recovery: cumulative verified annual saving recovers net startup capital within ten years after full launch, unless the city explicitly adopts a longer public-infrastructure life.

5. No recipient-class restoration: fiscal pressure cannot be resolved by recreating eligibility at the shower, bathroom, table, exchange or sleeping door, or by turning locker assignment into a poverty or homelessness test. If the physical target is reached but the fiscal target is not, the city has achieved a universal civic floor but has not completed this specification. The account remains open until cost falls, savings become measurable or the fiscal target is revised in public.

San Francisco cannot compare current and target states until it measures the current state in the target's units. Mobilization MUST produce: 1. a geocoded inventory and operating schedule for every publicly reachable shower, bathroom, free prepared meal, clothing source, protected sleeping place, storage service and civic mailing-address service; 2. function-level

failed-access totals without personal records; 3. current daily capacity and reset time; 4. a contract-to-function crosswalk for HSH, HSA, Public Works, DPH and relevant nonprofit grants; 5. an inter-payer ledger identifying City, state, federal, hospital and private expenditure; 6. baseline street sanitation, exposure, emergency and justice-system events with privacy-preserving link- age; and 7. a list of planned expansions that the civic home may avoid; and 8. a City Hall spatial program defining gross area per locker, wing geometry, biometric hardware, watch staffing, mail operation and phased construction cost. The current state is not zero where the city has not looked. It is NOT MEASURED. The first act of implementation is to make the same city visible on both sides of the intervention.

Sources • U.S. Census Bureau QuickFacts: San Francisco • San Francisco 2025 Homelessness Needs Assessment • San Francisco FY2025 and FY2026 proposed appropriations • San Francisco Controller, Shelter Assessment • DataSF Active Food Services • San Francisco Food Security Task Force FY2025-26 budget presentation • San Francisco Public Works Pit Stop program • San Francisco Public Works Pit Stop workforce grant action • San Francisco Public Works SOMA Pit Stop results

Evidence Boundary The current-state values are assembled from public sources that were not designed around the six civic functions. Several are incomplete or span different fiscal years. The target values are preliminary design assumptions from the intervention packet. The locker is parametrically specified but not yet numerically costed. The savings scenarios are arithmetic demonstrations of what must be verified, not findings that the savings have occurred. The specification is complete enough to govern baseline collection and prevent double counting. It is not complete enough to authorize final procurement or declare fiscal success.

The Civic Home: Level 4 Intervention Packet

A Level 4 Civic Intervention Packet Worked example: San Francisco, California Sid J.A. Hubbard Publication packet 0.1 | August 2026

Purpose The Civic Enclosure establishes the discovery. This packet carries the intervention. The companion San Francisco Civic Enclosure State Specification defines the present state and target state with the same metrics and carries the savings account. This packet keeps the implementation sheets readable; the specification makes their completion auditable. People are not homeless. Cities are homeless when the life-supporting functions already present through- out the civic enclosure cannot reach a human being without first passing through private property, qualified membership or a recipient-classification system. The intervention does not construct a lesser imitation of a private home for a class of people called homeless. It restores six ordinary projections of the civic enclosure: 1. a private place to wash; 2. a maintained place to use a toilet; 3. a table where a basic prepared meal is already paid for; 4. clean clothing in circulation; and 5. a protected place for one person to sleep; and 6. an elective civic address and secure place for personal property. Each appendix is one deployable intervention page. It begins with the missing projection, follows the op- erating dynamics, estimates launch time and preliminary cost, and names the resulting state. The constructs can begin independently. They become the civic home when they operate together. The packet does not add a general lounge, civic room or hotel program. A shower may require temporary property security because that requirement follows directly from the vulnerability of showering. Desks, chairs and benches in a civic locker wing support receiving mail, reading and organizing stored property; an attendant prevents the wing from becoming an improvised sleeping enclosure. These supporting features do not become an independent lounge intervention.

Why San Francisco San Francisco is a small physical enclosure containing metropolitan population density, mature public in- frastructure and one of the country's most expensive systems for responding to civic absence. The Census Bureau estimates 826,079 residents in 46.91 square miles in 2025. Accommodation and food-service sales were \$8.14 billion in 2022. The city's open business data lists 3,448 active food-service locations. San Francisco contains the people, kitchens, bathrooms, water, laundries, buildings and public capacity through which the intervention must move. The 2024 Point-in-Time Count found 4,354 unsheltered people and 3,969 people in emergency shelter or transitional housing. This one-night measure does not define the population served; the interventions are universal. It establishes only that the missing civic state is present at meaningful scale. The adopted Department of Homelessness and Supportive Housing budget contained \$846.3 million in uses for 2024-25 and \$677.0 million for 2025-26. Those amounts include functions the packet does not replace. They provide

fiscal scale without pretending that all existing expenditure can be displaced. San Francisco also makes replication visible. An intervention that works within this dense 46.91-square- mile enclosure can be copied and adapted by Emeryville,

Berkeley and Oakland. Those neighboring enclosures can join through compatible operating standards without waiting for the entire Bay Area to become one administration.

Cost Convention All values are rough 2026 planning ranges, not bids. • Startup includes design, procurement, site work, equipment, launch staffing and contingency. • Annual includes labor, utilities, cleaning, laundry, consumables, repair and flat participation payments. • Gross cost is shown before any existing program is reduced. • Net cost credits only expenditures that have actually become unnecessary after reliable replacement. The purpose of universal access is not to claim that administration is the whole cost of present programs. It is to remove the separate enclosure that decides who may receive an ordinary civic function. Eligibility intake, recertification, investigation, denial and appeal do not wash, feed, clothe or rest a person. Under the civic model, maintenance replaces classification.

Construct Sheet 1: The Civic Shower Missing Projection The city moves water to every district but ordinarily converts it into hygiene only after it enters private property. One shower head makes the correction visible. Water alone is insufficient. A person removes clothing, sets down property and becomes vulnerable. The complete intervention is therefore a private locking stall inside an exterior that remains publicly visible, safe, dignified and easy to maintain.

San Francisco Deployment • Sixteen distributed shower houses. • Sixteen individual stalls per house; 256 stalls citywide. • Co-ed circulation through private floor-to-ceiling wet enclosures. • One accessible assisted-use stall at every location. • Temporary property security immediately outside each stall. • Eighteen operating hours daily and a thirty-minute wash-and-reset cycle. • Theoretical capacity: 9,216 uses daily; planning capacity at 75 percent: 6,912. The shower is excellent civic architecture. It serves the commuter who cycled to work, the athlete after exercise, the traveler between rooms, the worker between shifts and the person exposed to the city for months. No user category crosses the threshold.

Dynamics A small site team controls entry flow, cleans continuously, responds to maintenance and closes individual stalls without closing the building. Durable surfaces, open sightlines outside the private stalls and visible occupancy indicators reduce predation and uncertainty. Water draw and stall availability remain equipment states; no person is measured or identified. Participating sites and maintenance capacity allow the system to scale to demand.

Preliminary Cost and Launch • Startup range: \$28-\$56 million. • Reference startup: \$40 million, or \$2.5 million per site including San Francisco site and construction contingency. • Annual range: \$11-\$20 million. • Reference annual cost: \$15 million. • First four locations: 12 months after authority and site control. • Full network: 24 months. The first procurement should solicit a repeatable building rather than eight unique monuments. Beauty belongs in proportion, material, light and cleanliness. Repetition lowers cost.

Resulting State Every person can become clean without proving why cleanliness is needed. Dirt ceases to be an imposed civic condition. The visible difference between the body supported by a private home and the body exposed to the city is reduced by changing the city.

Construct Sheet 2: The Civic Bathroom Network Missing Projection Bathrooms already occupy restaurants, offices, stores, institutions, hotels and residences throughout the city. The absent structure is not plumbing. It is a civic agreement that makes enough bathrooms continuously available and maintains them at the increased level of use.

San Francisco Deployment • 500 participating bathrooms distributed by walkable service area. • A public entrance mark, visible hours and live open or closed status. • City-funded initial code correction and durable-fixture upgrade. • Daily cleaning, restocking, plumbing response and waste collection. • A small set of stand-alone overnight bathrooms where participating interiors close. • No purchase requirement and no recipient classification. Participation is voluntary. The owner receives a bathroom upgraded and maintained to a high civic standard. The city receives infrastructure without purchasing 500 parcels and constructing 500 new rooms. The person receives a bathroom without a negotiation at the moment of need.

Dynamics The city contracts mobile cleaning and plumbing crews by district. Each location has a service standard, rapid closure-and-repair path and direct failure report. A business may leave the network after notice; the ERP marks the offered bathroom unavailable while the network continues growing with participating facilities. Redundancy prevents dependence upon one heroic facility. The network scales to demand for participation.

Preliminary Cost and Launch • Startup range: \$16-\$32 million. • Reference startup: \$23 million, including an average \$40,000 upgrade across 500 sites and network launch. • Annual range: \$15-\$27 million. • Reference annual cost: \$20 million, averaging \$40,000 per site. • First 50 locations: 4 months. • Two-hundred-fifty-location network: 9 months. • Full network and overnight coverage: 15 months. The first-year cost model must be rebuilt from the first participating bathrooms. Existing condition, offered operating hours and maintenance obligations will matter more than floor area. San Francisco's Public Works budget materials estimated \$9.3 million to restore the staffed Pit Stop program from 15 to 30 locations. The

participating-bathroom model is different: it adds maintenance to an already staffed interior instead of creating a stand-alone attended site. Its much lower per-location estimate is therefore a proposition the first 50 locations must test, not a saving the packet may assume.

Resulting State Human waste has a maintained destination everywhere human activity concentrates. Businesses no longer carry the whole cost of a public function by accident. The city stops creating sanitation emergencies at the locked door of sanitation infrastructure.

Construct Sheet 3: The Pre-Fixe Civic Meal Missing Projection The city gathers food, kitchens, cooks and tables in its center, then places a payment decision between hunger and every prepared plate. The intervention repairs the relationship between the people and the central food- preparation and dining architecture. It does not distribute food to an identified needy population. It places a basic civic meal on the menu for everyone.

San Francisco Deployment • 600 voluntarily participating restaurants, fewer than one fifth of the city's active food-service locations. • One restaurant-defined bread-and-soup meal, or a culturally and nutritionally equivalent pairing. • Dine-in service only. • No proof of need, voucher, individual account or meal-level claim. • Monthly flat payment assigned from a published band of participating seating capacity and surrounding population density. • Reference average payment of \$8,000 per restaurant per month for the preliminary cost envelope. • No food purchase, diner reimbursement or meal accounting by the city. • Every ordinary menu, price, service and upselling opportunity remains. At 600 participating restaurants and the \$8,000 reference average, the preliminary annual relationship costs \$57.6 million. That figure purchases no food and implies no price per meal. It is the cost of maintaining participating restaurant seating, the bread-and-soup baseline and the restaurant-city relationship through time. The first enrollment inventory must establish participating seats, open hours and surrounding population density before the payment bands can be calibrated. The same payment is baseline guaranteed income for a participating restaurant. A qualifying entrepreneur can receive a conditional participation commitment attached to the restaurant's proposed seating band, population-density band and opening of the civic table. That predictable monthly floor can enter a business plan before the restaurant has accumulated returning customers, improving the prospect that a new independent restaurant can be financed, opened and kept alive through its first operating interval.

Dynamics The restaurant chooses participation while retaining ordinary food-safety compliance, published hours and continuous availability of the civic meal while open. Payment scales by participating seating capacity and population density, not diner identity or meals served. Service checks apply to the participating restaurant; the diner is not recorded or surveilled. The restaurant, not the city, selects and prepares the food. Its cuisine, purchasing, overproduction, surplus capacity, labor and judgment determine what appears beside the baseline promise. The city maintains the relationship. It does not administer a kitchen. Capitalism performs quality control. Every person may choose another table. A poor civic meal loses the diner, the upsell and the restaurant's advantage. The payment gives the restaurant reliable income, introduces customers to its cuisine and turns unused capacity into civic value. People will still buy steak dinners. A first date can begin at a table before either person decides what more to order. Courtship will provide its own upselling. The baseline does not guarantee business success. It guarantees the civic relationship while the restaurant performs it. Entrepreneurial selection, cuisine, cost control, service and competition continue to determine what grows beyond that floor.

Preliminary Cost and Launch • Startup range: \$2-\$6 million; reference: \$4 million. • Annual range: \$36-\$90 million for 500-750 restaurants at \$6,000-\$10,000 monthly. • Reference annual cost: \$57.6 million. • First 50 restaurants: 4 months; 300 restaurants: 6 months; full network: 9 months.

Resulting State Anyone can sit at a table and eat. Hunger no longer begins an eligibility process. The restaurant receives a civic floor beneath ordinary commerce, and the city becomes better fed by strengthening rather than bypassing its dining economy. At whole-city scale, the maintained table relationship makes SNAP and recipient-class food-security systems unnecessary as routes to ordinary nourishment while increasing culinary diversity and the volume of local economic activity.

Construct Sheet 4: The Civic Clothing Exchange Missing Projection The city contains more clothing than its population can wear at once. Clothing accumulates in closets, donations, retail surplus, changed bodies, changed work and changed seasons. The missing operation is not production. It is laundering, presentation and circulation.

San Francisco Deployment • Four exchanges distributed across the city's principal travel patterns. • Donated and participating-retailer inventory. • Commercial laundry and garment-inspection line. • Adult, child, work, exercise and weather sections. • Fitting rooms, mirrors and ordinary retail presentation. • A person enters in clothing and may leave wearing selected clothing. • Clothing left behind enters wash, inspection and recirculation. • Naked people get to enter and leave clothed. The exchange is not a charity bin. A person may enter in a suit, leave in gym clothing and return later in

another suit. People retain sentimental garments, private wardrobes and every reason to buy fashion. No one is trapped in the clothing currently covering the body.

Dynamics Inventory is governed by size, season, condition and circulation velocity rather than recipient files. Garments that cannot be safely recirculated leave through textile recycling. High-demand shortages are published to donors and retailers. The exchange tracks garments and categories, not biographies. Laundry capacity is the controlling variable; donations beyond it are diverted before becoming disorder.

Preliminary Cost and Launch • Startup range: \$10-\$24 million. • Reference startup: \$16 million for four leased and fitted locations, laundry equipment and launch inventory. • Annual range: \$8-\$18 million; reference: \$12 million. • First exchange: 9 months. • Four exchanges and balanced inventory: 15 months. The first year measures laundry pounds, exchanges, garment life, unmet sizes and retailer diversion. These improve circulation without converting users into cases.

Resulting State Clean clothing becomes a circulating civic resource. The repeated outfit ceases to reveal exclusion from laundry and wardrobe infrastructure. A person can prepare for work, weather, exercise, ceremony or rest without first proving possession of a private closet.

Construct Sheet 5: The Civic Sleeping Enclosure Missing Projection Sleep requires a person to stop defending the person. A body cannot complete sleep where it must continue attending to danger, property, temperature, noise and displacement. The minimum intervention is not a house. It is one clean sleeping surface, climate protection and one door controlled from within.

San Francisco Deployment • 5,000 one-person sleeping enclosures in distributed quiet sites. • Simple bed platform and removable laundered sleep pad. • Locking door, occupancy indicator and mechanical emergency release. • Alarm clock; no unnecessary automation inside the enclosure. • Climate control, ventilation, fire protection and accessible units. • First-available use without identity-based eligibility. • Twenty-four-hour access so night workers can sleep by day and daytime workers by night. The one-person boundary is exact. Sleeping together, raising children, sharing domestic life and retaining permanent control of a room remain functions of homes and hotels. The civic enclosure does not disrupt those markets because it does not reproduce their intimacy, certainty, storage, service or permanence. It completes protected individual sleep.

Dynamics Used pads enter a closed laundry stream; clean pads are dispensed by enclosure number. A unit reopens after rapid inspection and disinfection. Distributed attendants respond to lock, health and fire events. Occupancy duration follows sleep and reset capacity rather than a moral account of arrival. Additional sites, operators, maintainers and modular capacity allow the sleeping enclosure to grow with participation.

Preliminary Cost and Launch • Startup range: \$175-\$325 million. • Reference startup: \$250 million, averaging \$50,000 per available unit after shared site, utility and life-safety work. • Annual range: \$55-\$110 million. • Reference annual cost: \$82 million, about \$45 per available unit-night. • First 500 units: 15 months; 2,500 units: 24 months; full network: 36 months. The published citywide capacity is a design horizon because this is a universal civic function, not a bed assignment derived from a homeless registry. The system begins with modular units and scales to demand as sites, operators, maintainers and neighboring cities enter participation. No sleeper is registered or surveilled to produce that signal. San Francisco's shelter assessment estimated an average \$126.25 per filled adult or transitional-age-youth bed-night in FY2023. The packet's \$45 reference is lower because the sleeping enclosure performs protected individual sleep and does not bundle case management, treatment, housing placement or other shelter services. Whether the narrow function can be operated at that cost is one of the packet's principal field tests.

Resulting State No person is forced to remain conscious because a private door is unavailable. Fatigue, exposure and desperation are no longer projected inward by city architecture. Rain becomes weather. Night becomes a time in which a person may sleep.

Construct Sheet 6: The Civic Address and Locker Missing Projection A private home gives property a stable location and gives the resident an address through which the surrounding city can reach them. Without that enclosure, property must remain attached to the body, mail becomes uncertain and movement risks material loss. The visible guarded bundle is the relief image of the missing civic lock. The civic lineage begins with the watch. A fire, store or record that must remain available through time requires changing people to carry one continuous responsibility. City Hall is the mature enclosure of that function: a watched civic center already responsible for records, addresses, public property and continuity across changing officeholders.

San Francisco Deployment The first large design horizon is elective capacity equal to ten percent of the 2025 population estimate:

$$L0 = \lceil 0.10(826,079) \rceil = 82,608 \text{ lockers.}$$

Each assigned locker is approximately the size of a small broom closet and supplies the resident's first local mailing address. Added City Hall wings contain locker corridors, attended access points, desks, chairs and benches for receiving and reading mail and organizing property. They are custody-and-address spaces, not sleeping or residential interiors. The first build is the first elected modular wing. The system scales to demand as residents elect lockers. Full-population capacity is not built in advance. If every resident eventually elected a locker, the enclosure would scale toward the whole population; ten percent is a design horizon, not a presumed opening inventory or final demand.

Dynamics • Civic residents elect a locker when entering through an existing city interface, including unemployment or healthcare enrollment. • Issuance does not require poverty, homelessness, a referral or proof of special need. • Biometric electronics associate one resident with the assigned enclosure and release it to that resident without creating a movement, association or ordinary-use history. • The locker designation operates as a local mailing address. • An attendant carries the watch, resolves access failures and prevents nesting in the locker wing. • Desks, chairs and benches support mail reading and property organization in the manner of a library reading area. • Existing City Hall security encloses the added function; no separate security organization is created. Construction supplies the added security boundary, and the staffing study tests whether the existing watch can absorb attendance through clarification and reassignment. • Capacity expands from elective demand rather than from a registry of homeless recipients. This construct lawfully differs from the first five. Washing, sanitation, eating, clothing exchange and sleep require presence but no durable identity. A locker and mailing address require continuity between one person and one enclosure. Biometric recognition performs that continuity; it is not an eligibility judgment.

Preliminary Cost and Launch The physical scale must remain visible before a false low-cost estimate is attached to it. Let (q) be gross constructed square feet per locker after circulation, reading areas and attendance are included; let (c) be delivered construction cost per square foot; let (e) be locker and biometric hardware per position; and let (W) be common systems and launch cost. Then:

$$C_{startup} = 82,608(qc + e) + W.$$

The first 90-day architectural study must determine (q), (c), (e), feasible City Hall wing geometry, phasing and the amount of existing watch capacity that can be reused. Until that study is complete, startup and annual cost remain NOT YET BOUNDED rather than being converted into zero.

State Milestone Formation Spatial program, watch-function inventory, biometric and mail requirements, first-wing site plan First circle First 100 elected civic addresses and lockers operating Next wing Constructed when elections exceed the ready inventory Design horizon Up to 82,608 operating if participation causes the locker system to scale to that demand

The cost-reduction claim is a Level 4 test, not an advance credit. Existing expenditure for mailing, document recovery, property storage, repeated identity reconstruction, shelter storage and security may become unnecessary when the civic watch performs one clarified function. Only an actual budget reduction may be counted as savings.

Resulting State A person may enter the city, receive a local address, place property inside the civic watch, read and answer correspondence, and move through the city without carrying the complete material record of life on the body. The city can reach the resident and the resident can return to the same protected civic location through time.

7. The Participation-Demand ERP

The civic home does not begin by purchasing its final citywide inventory. It begins as one small complete circle at Civic Center and scales to demand. Demand means participation entering the system: • a restaurant enrolls in the civic table; • a property holder offers a bathroom to the maintained network; • garments arrive for circulation faster than present laundry and rack capacity; • a resident elects a civic address and locker; • a site, builder, operator or neighboring civic enclosure offers shower or sleeping capacity; and • maintenance capacity enters with each participating function. An internal ERP can hold these as resource, commitment, inventory and work-order states. It knows the restaurants enrolled, bathrooms offered, garments waiting, lockers elected, sites available, units ready and maintenance obligations open. It does not hold a history of diners, bathers, clothing users, sleepers or their movement through the city. No person is surveilled. The ERP manages the civic enclosure, not the people inside it. There is no coercion in the intervention. Adoption by the city is elective.

Participation by restaurants, bathroom holders, donors, residents, sites, operators, maintainers and neighboring cities is self-selected. Use of every resulting civic function is elective. Refusal produces no penalty, loss of status or adverse record. The civic enclosure grows only from what chooses to participate. The architecture requires no forecast that a target population will behave as expected. Provider and resource participation causes the system to expand; individual utilization does not. A restaurant payment follows an enrolled restaurant. Bathroom maintenance follows an offered bathroom. Laundry and racks follow garments entering circulation. Locker construction follows elected lockers. Shower and sleeping capacity follow participating sites, operators, builders and maintainers. The ERP does not purchase citywide capacity and wait for a predicted recipient class to validate it. Universal availability does not mean equal use by every class. A banker need not sleep in a civic enclosure before the enclosure can protect a night worker. An executive need not use a public shower before the shower can remain beautiful. Availability is universal, participation scales the supply, and use remains private and elective.

The First Circle The first circle forms from a small central group choosing participation in every module. One illustrative startup state is:

Module First-circle state Civic shower One four-stall bank Bathroom network First 10 offered bathrooms Civic meal First 10 participating restaurants Clothing exchange First rack-and-laundry cell, sized to garments entering circulation Sleeping enclosure First 25 modular enclosures Civic address and locker First 100 elected lockers

These quantities are an illustration of how little must exist before the complete relation exists. They are

not quotas and do not predict participation. If three restaurants join first, the table begins with three. If forty join, the system grows with all forty as payment and service capacity become available. Each module grows with participation and scales to demand.

First-Circle Cost Scale Using the packet's existing reference unit assumptions, the portions that can already be bounded have this order of cost:

Module Illustrative startup Illustrative annual operation Basis Four shower stalls \$0.625M \$0.234M One quarter of a reference 16-stall house; site fixed costs still require a quote 10 bathrooms \$0.460M \$0.400M One fiftieth of the 500-site reference network 10 restaurants \$0.067M \$0.960M Startup proportion plus 10 x \$8,000 x 12 flat payment 25 sleeping enclosures \$1.250M \$0.410M Reference \$50,000 startup and \$16,400 annual per enclosure Garment cell Open Open Scales to donated inventory, laundry partnership and rack capacity 100 civic lockers Open Open Scales to elected lockers; prototype wing requires architectural quote Bounded first-circle \$2.402M \$2.004M Before garment cell and subtotal locker prototype The bounded first circle is approximately 0.35 percent of the adopted \$677.0 million HSH annual budget

in startup and 0.30 percent in annual operation. The 10-restaurant civic table costs \$0.96 million annually, about 1.6 percent of the city's \$60.17 million food-security portfolio. These are scale comparisons, not claims that those budgets can immediately be displaced. The unbounded garment cell and 100-locker prototype could together cost as much as \$4.368 million in startup and \$4.766 million annually before the complete first circle reached even one percent of the \$677.0 million HSH scale. This is a threshold, not an estimate of those two modules. It shows how much room remains for vendor and architectural discovery while the intervention stays trivial beside the system already responding to civic absence. The point is structural: the complete six-module intervention can begin at pilot scale for an amount trivial beside the programs already responding to civic absence. Cost grows with participation as the system scales to demand.

8. Integrated San Francisco Launch

Demand-Gated Sequence

State Operating condition Formation Authority, ERP modules, design standards and maintenance obligations established First circle First participating restaurants and bathrooms, first garment cell, modular shower and sleep units, and first elected lockers operate around Civic Center Next ring Additional participating resources join where the enrollment, inventory or construction module reaches its present boundary District replication A complete circle forms in the next district from participants already waiting there Citywide horizon The system continues to scale to demand; published full-city quantities remain available design horizons rather than mandatory purchases Regional horizon Emeryville, Berkeley and Oakland may choose to open interoperable ERP modules inside their own civic enclosures

The city does not wait for the citywide horizon to begin. The first circle is the intervention. Every later

ring is the same intervention growing with participation and scaling to demand. No city is compelled to begin, and no participant is compelled to join. No utilization forecast is a condition of launch or expansion. The scale-to-demand architecture answers the uptake objection by refusing its premise: capacity follows voluntary participation entering each module, while people remain free to use or ignore what has become available.

Preliminary Cost Envelope

Intervention Startup range Reference startup Annual range Reference annual Civic shower \$28-\$56M \$40M \$11-\$20M \$15M Bathroom network \$16-\$32M \$23M \$15-\$27M \$20M Pre-fixe meal \$2-\$6M \$4M \$36-\$90M \$57.6M Clothing exchange \$10-\$24M \$16M \$8-\$18M \$12M Sleeping enclosure \$175-\$325M \$250M \$55-\$110M \$82M Civic address and NOT YET BOUNDED NOT YET BOUNDED NOT YET BOUNDED NOT YET BOUNDED locker Five \$231-\$443M \$333M \$125-\$265M \$186.6M presence-based functions Six-function civic Open pending locker Open Open pending locker Open home architecture operation

For the first five functions, reference startup is approximately \$403 per San Francisco resident once. Ref-

erence operation is approximately \$226 per resident per year, or \$18.82 per resident per month. The sixth construct remains outside those totals until the architectural study bounds it. These are gross costs. They credit no reduction in emergency shelter, encampment response, sanitation remediation, recipient adminis- tration, food-security programs, crisis healthcare, policing, courts, housing assistance, property custody or address-recovery systems. San Francisco.s adopted Department of Homelessness and Supportive Housing budget was \$677.0 mil- lion for 2025-26. The first five functions' \$186.6 million reference operation is about 28 percent of that departmental total, although the department performs many functions the packet does not replace. The comparison shows that these functions occupy a scale of spending the city already knows how to organize; it does not prove budget neutrality or include the civic locker. California and federal systems will receive some displaced-cost savings. A lawful launch requires a fiscal compact in which institutions receiving those savings participate in maintenance.

The Cost-Reduction Test An existing program begins to phase out only when: 1. the civic function it supplied is univer- sally reachable;

2. participating capacity remains reliable through seasonal conditions;
3. its users can obtain the same necessary physical state without classification; and
4. removing it does not remove a function absent from the six constructs. The first five functions become net-saving when verified displaced annual expenditure exceeds \$186.6 million. The six-function break-even threshold remains open until the locker architecture is costed. Below the applicable threshold, the intervention remains a gross investment whose other effects must be measured. Above it, the city pays less because it maintains the civic state rather than repeatedly processing its absence.

Resulting-State Measures • Maximum walking time to an open bathroom, shower and meal. • Failed-access rate for all six functions. • Shower and sleeping-enclosure reset time. • Civic-meal availability and restaurant retention. • New participating-restaurant formation, financing, opening, survival and closure compared with non- participating restaurant co- horts. • Clothing size and weather-category shortages. • Number and duration of people unable to obtain protected sleep after requesting it. • Exposure deaths and emergency treatment associated with exposure. • Public sanitation failures and unsheltered waste-remediation calls. • Voluntary reports of cleanliness, rest, food access and ability to carry out the next intended action. • Elective locker demand, address continuity, access failures and property-loss reports. • Gross operating cost, displaced cost and net cost by enclosing institution. • Population-wide mental-health measures before and after launch, including reported distress, felt secu- rity, sleep sufficiency and confidence that loss of a private parcel will not produce exposure. • The number of family rupture, employment loss, travel, emergency departure and other transition events com- pleted without hunger, filth, sleep deprivation or exposure. • Replication by neighboring cities, states and nations, measured as adoption of interoperable civic-home functions rather than migration of recipients between jurisdictions. No measure asks whether a person deserved the city.

Resulting Civic State At full launch, the city projects inward what a person formerly had to obtain from a private home be- fore appearing housed: hygiene, sanitation, prepared food, clean clothing, protected sleep, secure property continuity and a local address. Private homes continue. Restaurants continue. Hotels continue. Clothing markets continue. Medicine, housing, family and intimacy continue performing functions beyond the civic floor. What ends is the city's dependence upon deprivation as an instrument for sorting its people. The present city calls dirt, hunger, exhaustion and exposure individual

choices while enclosing every practical alternative behind a private parcel. The resulting city makes choice real. A person may use or refuse each civic function because each function is actually present. This produces fewer dirty, starving, sleep-deprived and exposed citizens. It also removes from the entire population the ambient threat that one broken relationship, lost job, closed door or interrupted parcel connection can strip a person of the conditions required to remain publicly human. That population-wide mental-health result is measured with the same before-and-after discipline as cost, capacity and access. Successful replication carries the resulting state outward: city to neighboring city, city to state, state to nation. The civilizational stopping condition is reached when no person regularly dies from exposure merely because that person is not joined to a parcel. Unemployment payments whose general function is preventing hunger, filth, sleep deprivation, exposure, property loss and loss of address become unnecessary when the complete civic home reliably supplies those functions. A municipality may continue unemployment payments for particular industries, seasonal interruption, income stabilization or another purpose it chooses. Such payments are no longer the gate between loss of work and maintenance of the human body. The labor incentive does not disappear. It changes enclosure. The desire for a private home, family life, intimacy, ownership, comfort, travel, enterprise, craft and a larger chosen future attracts work. Fear of

exposure and death ceases to compel it. We are not providing services for the homeless. We are adding services for all.

Sources and Evidence Boundary • U.S. Census Bureau QuickFacts: San Francisco: population, land area and accommodation/food-service sales. • San Francisco 2025 Homelessness Needs Assessment: 2024 sheltered and unsheltered counts and system capacity. • San Francisco FY2025 and FY2026 proposed appropriations: Department of Homelessness and Supportive Housing fiscal comparison. • DataSF Active Food Services: active food-service location count. • San Francisco Public Works FY2027-FY2028 budget overview: \$9.3 million Pit Stop restoration benchmark. • San Francisco Controller, Shelter Assessment: current shelter-system cost and function benchmark. • IMF, The Design of Means-Tested Transfers and USDA SNAP administrative-cost research: basis for distinguishing universal maintenance from eligibility administration. No source establishes the six-part intervention as a tested whole. Its architecture, capacities, costs and launch periods are proposals. The civic address and locker remains parametrically specified until its architectural study bounds the added wings. The first phase must replace assumptions with participating resources, site inventories, vendor responses, labor agreements and code review. The packet claims that the intervention can be costed and tested. It does not claim that these preliminary figures have already done so.

Appendix I: AI-Assisted Authorship and the Signal

Volume XII modeled AI-authorship judgment from the human enclosure of language outward. Machines are built inside human institutions from human language, human selection, human objectives, human evaluation and human prompts. Their output returns to the same language and changes what human readers and writers encounter. Stylistic resemblance therefore cannot recover an absent causal boundary between two forms already trained to resemble one another.

The current model and novelty ledger follow.

The Nested Causal Model of AI-Assisted Authorship

Reference Before Departure

The observed thing is a research artifact whose language may have passed through both human and artificial-intelligence processes.

No misconduct, authorship deficit, novelty, or value is assumed before the map is built.

The original inquiry sets the active range: whether resemblance to machine output can establish authorship when humans and machines have been made to imitate one another, and whether that resemblance should displace novelty and reasoned ideation as the signal of value.

The outer Final Frontier is human consciousness, where language becomes meaningful and answerable. The inner Final Frontier is the artifact surface, where classifiers, watermarks, and fingerprints measure bounded features. The model does not calculate more distant enclosures unless they become active in this inquiry.

Level 1: Enclosure Map

The generation event

[human-machine research and publishing system
| AI-assisted content-generation event
| prompts, retrieved sources, model inference, tool calls,
candidate outputs, human selections, edits and rejections]

The generation event is enclosed by the research objective, human experience, model training, system instructions, interface, context, tool permissions, source availability, provider policy, compute, time, publication norms, and the material circumstances that make the inquiry matter.

The event encloses smaller events: prompts, completions, searches, citations, code executions, revisions, comparisons, and decisions.

The resulting artifact

[research, publication and evaluation enclosure
| AI-assisted research artifact
| propositions, evidence, reasoning, prose, data, code,
figures, citations, provenance records and revision history]

The artifact is not the generation event. It is a durable state produced by that event and subsequent editing. Its surface may not retain enough information to reconstruct every event that produced it.

Parallel enclosures

- human author;
- AI system and provider;
- sources and prior literature;
- publisher or repository;
- detector vendor;
- evaluator, reader, teacher, editor, or employer;
- DOI and version-control systems;
- future language corpus.

These exchange language and evidence without becoming one another.

The human enclosure of language

[human consciousness | linguistic capacity | parallel human languages]

The languages are parallel expressions inside a human linguistic capacity. The machine capable of reading and generating their forms is enclosed within the human linguistic and technical enclosure. It can introduce a third production process, but it does not introduce a third language standing beside human language.

Level 2: Causal Flow

Outer-to-inner nonvolatile projection The outer enclosure determines which models are available, what they were trained to continue, which tools they can use, what a publisher permits, what a detector rewards or punishes, and what a human believes publishable.

This top-down causality is reversible and subject to human modification. The enclosing policy, permission, boundary, or instruction can be withdrawn, changed, or replaced, redirecting what it projects inward. Its designation as nonvolatile does not mean low risk. It names its outer-to-inner direction and its reversible relation to entropy.

Detector policy projects inward before detection. A writer who knows that clear, low-perplexity prose may be classified as AI can add errors, avoid ordinary transitions, reject useful assistance, conceal process records, or alter a lawful voice to satisfy the detector. The policy changes the artifact it later claims merely to observe.

Bottom-up volatile causality Tokens are generated. Sources are opened. Candidate sentences appear. The human selects, rejects, rewrites, combines, and redirects. Code executes. A calculation returns. A proposition becomes stable enough to enter a draft. The draft becomes a public artifact. The artifact enters a corpus and becomes something future humans and models may read.

This bottom-up causality is irreversible. A token may later be deleted, a draft revised, and a publication corrected, but the completed event is not reversed. A subsequent event changes the state and adds to its causal history. Its designation as volatile does not mean dangerous. It names its bottom-up direction and its irreversible relation to entropy.

Nested exchange The model was trained to continue human language. The human reads machine language trained upon human language. The human's later prose changes through that exposure. Future models encounter human prose already altered by machine assistance. The exchange is bidirectional and cumulative.

The two distributions a detector wishes to separate are therefore not fixed natural species. They are interacting states inside one language enclosure.

There can be a machine-generated sequence, a marked generation event, and a mixed human-machine production process. These are provenance statements. They do not establish a separate AI authorship species. Machine output becomes socially operative language through human prompting, interpretation, publication, rejection, acceptance, and action.

The inverse inference Detection begins with the final artifact and attempts to infer the generation event backward:

artifact surface → statistical class → alleged process → alleged author

Each arrow changes the object.

A classifier may estimate similarity to represented machine output. That does not establish the process. A retained watermark may identify a supported generation event. That does not establish the complete process. Process does not by itself establish authorship. Authorship does not establish novelty. Novelty does not establish validity. Validity does not establish usefulness.

The current system repeatedly treats this entire chain as one inference.

Level 3: Enclosing-State Comparison

State A: Similarity-enclosed evaluation The active question is: **Does this text resemble AI-generated text?**

The artifact is reduced to lexical, syntactic, perplexity, curvature, distributional, or watermark features. A score becomes suspicion. Suspicion becomes an authorship conclusion. The authorship conclusion becomes a quality judgment or sanction.

Observable consequences:

- false positives attach machine origin to human work;
- false negatives reward superficial evasion;
- non-native and constrained writers carry unequal risk;
- mixed authorship is forced into a false binary;
- clear prose is made suspicious;
- deliberate errors become evidence of humanity;
- provenance is guessed where it could have been recorded;
- novelty and reasoning receive less attention than stylistic conformity;
- the filter removes signal while reporting less noise.
- low-value content is converted from a quality judgment into a provenance stereotype;
- an AI label becomes a reason not to read the proposition;
- disliked or unfamiliar writers can be excluded through a source prejudice presented as technical measurement;
- markets are prevented from filtering reader preference because the artifact is intercepted before readers can encounter it.

State B: Provenance, novelty and reasoned-ideation evaluation The active questions remain separate:

1. What process produced this artifact?
2. What new relation, object, method, or result does it introduce?

3. Does its reasoning preserve the relation it claims?
4. What evidence supports it?
5. What does it make possible?
6. Who accepts responsibility for the whole?

Observable consequences:

- AI use can be disclosed without becoming a quality verdict;
- provenance records answer process questions directly where available;
- detector output remains a bounded forensic lead;
- novelty is compared with prior work rather than prose stereotypes;
- reasoning and evidence remain available for criticism;
- DOI and repository timestamps preserve public sequence;
- corrections develop the record instead of erasing authorship;
- known work is recognized as known;
- new work is allowed to be new before it is judged true or false.
- bad ideas remain available for criticism even when expressed eloquently;
- reader and market preference operate after access rather than as a prior authorship accusation.

Active enclosure The active enclosure sustaining the failure is the **institutional demand to classify provenance from semantic surface before evaluating contribution**.

The detector is not the whole problem. It is the instrument through which the enclosing demand acts.

Level 4: The Signal Protocol

The intervention arises from the state comparison. It does not prohibit detection. It restores each question to the enclosure capable of answering it.

1. Declare the evaluation purpose Before examining the artifact, state whether the inquiry concerns provenance, academic process, novelty, factual validity, reasoning, safety, or value. Do not allow one score to answer a different question.

2. Prefer recorded provenance to inferred similarity Accept author disclosures, model-use statements, revision history, prompt and output deposits where appropriate, signed content credentials, repository history, and DOI timestamps. Preserve privacy and unpublished inquiry by requiring only the detail material to the evaluation.

3. Bound detector output A detector may identify compatibility with its represented class. It may not, without independent evidence, determine misconduct, human absence, authorship, novelty, validity, or value. Watermark presence identifies a retained mark; watermark absence does not certify human-only production.

4. Construct a novelty ledger For each claimed contribution, record:

ID | proposition or object | nearest prior analogue | preserved difference
| earliest durable record | dependencies | test or consequence

Novelty is relational. Familiar words can carry a new relation. Unfamiliar words can carry none.

5. Conduct a reasoned-ideation audit Evaluate the chain from observation to conclusion:

- Is the reference state declared?
- Are terms stable?
- Does the conclusion follow from the stated relation?
- Are sources accurately represented?
- Are calculation and simulation reproducible?
- Is modeled output distinguished from observation?
- Is the Final Frontier of the claim declared?

- What would correct or falsify the result?

6. Preserve multidimensional judgment Represent evaluation as a vector rather than one authenticity score:

$Q(A) = [\text{provenance, novelty, reasoning, evidence, reproducibility, utility, responsibility}]$

One dimension cannot silently stand in for the others.

7. Permit correction and appeal An adverse provenance inference must identify its evidence, model, domain, threshold, error rate, and decision rule. The author may answer with process records. A corrected detector judgment must not remain attached as the artifact's identity.

Target State

AI assistance is visible as provenance. Novelty is visible as contribution. Reasoning and evidence are visible as the basis for judgment. Authorship is visible as responsibility.

The noise filter no longer destroys the signal it was built to protect.

If Shakespeare repeats an existing plot, tell Shakespeare that someone already did that one.

Do not tell Shakespeare he did not write it.

Final Frontier

The model does not establish that every AI-assisted work is novel, valid, or valuable. It does not establish that detection has no lawful use. It does not make disclosure optional where a defined process requires it.

It establishes the boundary that current evaluation repeatedly crosses: statistical similarity can be evidence about a bounded generation class. It is not a lawful substitute for provenance, authorship, novelty, reasoning, evidence, or value.

Novelty Ledger

The entries below apply the Signal Protocol to this volume. Each contribution is kept separate even where several appear in one passage. The originating prompts were recorded uncorrected beginning August 31, 2026, and continued through this revision on September 4. They are reproduced in Appendix E.

N-001: AI-assisted research content

Proposition or object: AI-assisted research content names work produced through an inquiry in which artificial intelligence participates in research, comparison, criticism, drafting, computation, and revision without possessing the finished destination at the beginning.

Nearest prior analogue: Research on human-AI coauthorship and hybrid text.

Preserved difference: Token mixture describes the artifact after generation. This object includes discovery during the collaboration: neither participant could request or retrieve the finished proposition before the inquiry produced it.

Earliest durable record: Source-fidelity Prompt 2, August 31, 2026; expanded in Prompt 4. Repository record 0bd2605, September 4, 2026.

Dependencies: Chronological prompt and revision records; a distinction between generation events, artifacts, provenance, and authorship.

Test or consequence: Reconstruct the initial state from the durable record. If the completed contribution already appears in the opening request or a retrievable source, the discovery claim narrows accordingly.

N-002: The impossible commission

Proposition or object: An author cannot commission an AI to write a discovery that neither the author nor the AI-assisted session yet knows. The later discovery cannot be copied backward into the first prompt without violating chronology.

Nearest prior analogue: Prompting accounts in which a user specifies a destination and a model generates the requested object.

Preserved difference: The destination emerges through the recorded research process and becomes requestable only after it has been discovered.

Earliest durable record: Source-fidelity Prompt 2, August 31, 2026.

Dependencies: A durable sequence of prompts, outputs, rejected analogues, sources, revisions, and decisions.

Test or consequence: Locate the proposition before its claimed emergence. If it was already available to either participant in the operative record, the impossibility asserted here does not apply.

N-003: Resemblance cannot determine authorship

Proposition or object: A detector can measure compatibility with a represented class of text, but the promotion from surface resemblance to generation process, from process to authorship, and from authorship to value occurs in the enclosing institution rather than in the detector's observation.

Nearest prior analogue: Statistical AI-text detection, watermark detection, model fingerprinting, and signed content provenance.

Preserved difference: The methods are not rejected. Their bounded outputs are separated from the different objects they are routinely asked to decide.

Earliest durable record: Source-fidelity Prompts 3 and 4, August 31, 2026.

Dependencies: Published detector limitations, hybrid-text research, watermark scope, provenance standards, and the generation-event/artifact distinction.

Test or consequence: Require a detector result, without process evidence, to distinguish edited, mixed, translated, and imitated text while recovering the human responsibility for the whole. Failure bounds the result to resemblance rather than authorship.

N-004: One language enclosure, interacting production processes

Proposition or object: Human-only, machine-mediated, and mixed generation are distinguishable production histories inside a human enclosure of language. They do not become separate linguistic species merely because the immediate producer differs.

Nearest prior analogue: Accounts of language models trained on human text, human-AI hybrid writing, and evidence that AI-assisted writing is reshaping human communication.

Preserved difference: These findings are joined into a reciprocal causal loop. Models imitate language inherited from people; people consume and adapt to machine language derived from that inheritance; later human and model language carry both events forward.

Earliest durable record: Source-fidelity Prompt 4, August 31, 2026; enclosure stated explicitly in Prompt 7.

Dependencies: Human linguistic capacity, cultural transmission, model training on human corpora, and measurable adaptation to AI-mediated prose.

Test or consequence: A stable authorship classifier requires separable, stable source distributions or an independent retained provenance signal. As the distributions interact, surface classification cannot recover the absent causal history.

N-005: The novelty ledger

Proposition or object: Claimed novelty should be recorded as a relation among a proposition, its nearest prior analogue, the exact preserved difference, its earliest durable record, its dependencies, and a test or consequence.

Nearest prior analogue: Bibliometric measures of unusual concepts, combinations, research questions, and methods; invention-disclosure and prior-art records.

Preserved difference: The ledger protects relational novelty during an active AI-assisted inquiry. It is not a style score, an award of novelty by declaration, or merely a search for unusual words.

Earliest durable record: Source-fidelity Prompt 3, August 31, 2026; formal ledger structure first preserved in repository record 0bd2605, September 4, 2026.

Dependencies: Searchable prior work, source-fidelity records, publication chronology, and a willingness to narrow a claim when its analogue already contains the relation.

Test or consequence: A cited prior work defeats or narrows an entry when it contains the preserved difference, not merely familiar components or language.

N-006: The Signal Protocol

Proposition or object: Evaluation should first declare its purpose, then route provenance, novelty, reasoning, evidence, reproducibility, utility, and accepted responsibility to evidence capable of answering each question.

Nearest prior analogue: Synthetic-content risk frameworks, content provenance standards, research-integrity review, and detector-use policies.

Preserved difference: The intervention is organized around preventing one coordinate from silently substituting for the others. Detection remains available as a bounded instrument rather than becoming a complete judgment.

Earliest durable record: Source-fidelity Prompts 3 and 4, August 31, 2026; Level 4 protocol preserved in repository record 0bd2605, September 4, 2026.

Dependencies: The multidimensional evaluation vector, direct provenance where available, reasoned-ideation audit, correction, and appeal.

Test or consequence: Apply the protocol to the same artifacts evaluated by a similarity-first process. Compare false accusations, missed misconduct, novel relations recovered, evidentiary corrections, and evaluator agreement.

N-007: Watermarking introduces the pattern it seeks

Proposition or object: A text watermark intentionally changes generation so a machine can later recognize its statistical trace. It treats language as a detectable commodity before a reader has determined whether the language matters.

Nearest prior analogue: Token-probability watermarking, including the green-list method and SynthID.

Preserved difference: The technical mechanism is observed as a top-down projection into prose: the attempt to identify machine writing deliberately introduces a machine-selected pattern into writing.

Earliest durable record: Source-fidelity Prompt 5, August 31, 2026.

Dependencies: A watermark that alters token probabilities, retention of the mark through editing, and an institution that treats its detection as material.

Test or consequence: Compare marked and unmarked outputs for detectability, survival under revision, linguistic effect, false attribution, and any gain in the separate judgments of novelty, validity, or value.

N-008: The authorship boundary differs for fiction

Proposition or object: AI may assist research and prose without assuming responsibility for the work, while fiction retains an additional boundary: the writer must author the story's unique expressive creation, and the reader must still decide whether it is good.

Nearest prior analogue: The human-authorship requirement in copyright and the distinction between assistive use and machine-determined expressive material.

Preserved difference: Legal authorship, creative responsibility, and reader value remain separate. A detector designed to imitate and recognize human form cannot prospect literary merit or replace the reader.

Earliest durable record: Source-fidelity Prompt 5, August 31, 2026.

Dependencies: Human expressive control, disclosure appropriate to the publication enclosure, and the reader's freedom to continue or close the book.

Test or consequence: Establish which expressive decisions the writer made and controlled. Evaluate literary value by reading the work, not by promoting the presence or absence of AI assistance into the verdict.

N-009: The novelty curve

Proposition or object: A system searching for signal must distinguish repetition from randomness and preserve the intermediate territory where an unfamiliar relation remains coherent enough to compare, test, remember, and use.

Nearest prior analogue: Statistical outlier detection, bibliometric novelty measurement, and next-token probability.

Preserved difference: Maximum rarity is not maximum novelty. The proposed curve joins statistical difference to relational coherence and consequence so random strings do not defeat the measure.

Earliest durable record: Source-fidelity Prompt 9, September 4, 2026.

Dependencies: A represented prior field, relational comparison, reasoning, evidence, memory, and observable consequence.

Test or consequence: Compare repeated prose, randomized prose, unfamiliar but coherent work, and established high-value work. A useful measure must separate rarity from sustained novel relation without converting popularity into truth.

N-010: Generation distance

Proposition or object: The difficulty of reconstructing a prompt capable of producing a finished work is evidence about the distance between a simple commission and an iterative inquiry, although it is not a verdict on quality.

Nearest prior analogue: Prompt complexity, edit distance, process logs, and measures of generation effort.

Preserved difference: The object measured is not token volume or textual distance. It is the substantive sequence of discoveries, rejections, corrections, and steering required to make the final relation available.

Earliest durable record: Source-fidelity Prompt 9, September 4, 2026.

Dependencies: Preserved prompts and revisions, identification of the work's central relations, and separation of effort from value.

Test or consequence: Attempt to reproduce the material contribution from nearby single prompts. Easy reproduction narrows the process claim; failed reproduction identifies which intermediate decisions carried the work.

N-011: Computer-aided authorship

Proposition or object: AI-assisted authorship can relate to prose as computer-aided drafting relates to design: the instrument expands precision, iteration, comparison, and reachable complexity without becoming the person responsible for the whole.

Nearest prior analogue: Computer-aided drafting and established accounts of AI as an assistive tool.

Preserved difference: The analogy is applied to iterative intellectual and creative development rather than to token production. The author can learn through the repeated use of the instrument and make later decisions from a state unavailable at the beginning.

Earliest durable record: Source-fidelity Prompt 9, September 4, 2026.

Dependencies: Human direction, repeated substantive revision, source verification, and retained responsibility.

Test or consequence: Compare the work with outputs produced by the author alone and the model alone under bounded conditions. The claim strengthens only where the collaboration produces a material relation neither reaches alone.

N-012: The reader remains the value boundary

Proposition or object: Generated abundance does not remove the reader's ancient vulnerability to an unknown author and unknown work. Value must be earned through attention after access, and the reader must remain free to close the book.

Nearest prior analogue: Literary markets, criticism, source-label effects, and attention-based recommendation.

Preserved difference: Excluding AI cannot solve the uncertainty inherent in opening any work. A provenance filter applied before reading can instead prevent the only encounter in which literary value becomes available.

Earliest durable record: Source-fidelity Prompt 8, September 4, 2026; developed in Prompt 9.

Dependencies: Access to the work, reader attention, author responsibility, and separation of provenance from value.

Test or consequence: Compare judgments made before and after disclosure, and before and after reading. If provenance alone predicts durable reader value across works, the claimed separation narrows.

The ledger does not award novelty by declaration. It makes the comparison specific enough to correct.

Appendix J: Evidence, Provenance and Falsification

Evidence belongs to claims

A bibliography is not a field of authority hovering above a work. Each source supports a particular statement within a declared boundary. Established equations retain their established meanings. Historical documents anchor events without proving the only possible causal chain. Datasets establish values for their definitions, places and years. A proposed operator remains proposed even when every neighboring fact is well cited.

For that reason, the bibliography following these appendices is grouped by volume. A repeated source remains repeated where it carried more than one inquiry. Sources that were named but not formally cited are identified as lineage rather than retroactively converted into proof.

Four evidence states

Every consequential claim should be readable as one of four states:

1. **Established:** directly supported by repeatable observation, accepted mathematics, primary record or a mature body of evidence.
2. **Synthesized:** assembled from established components through the NCM architecture.
3. **Proposed:** a new model, operator, intervention or interpretation awaiting a discriminating test.
4. **Projected:** a simulation of what should occur if the mapped causal relation is active.

Provenance

The volume files preserve the original appendices. This master preserves the current whole. Git history, DOI timestamps, original prompts, evidence ledgers and source manifests establish the path between them. Provenance can establish authorship and sequence. It cannot substitute for truth.

Falsification

A useful Final Frontier contains a failure condition. The physical proposals must produce calculations and predictions not already supplied by their enclosed models. The cognitive protocol must separate from expectation, relaxation and established attention practices. The terrestrial clock must recover relations that standardized duration alone loses. The civic intervention must close the specified bodily-state delta at a cost measured against the whole present system. The Signal protocol must improve judgment without turning novelty into another automatic score.

Failure does not erase the map that made the test possible. It locates the next unfinished enclosure.

Appendix K: Vision of the Whole

The series began by looking for what holds.

It found a universe that does not persist by remaining unchanged. Stars burn. Atmospheres circulate. Continents move. Bodies consume the world and return it transformed. Languages change each time they are used. Cities survive generations that never meet. A person remains while almost everything available to that person changes.

The whole is not made from perfect objects. It is made from relationships capable of carrying change.

Physics can keep every successful local law and still ask what encloses it. Climate science can keep carbon and recover life. Medicine can treat disease without mistaking the patient for an isolated site of repair. Economics can preserve self-interest while recognizing the human enclosure that makes exchange possible. Artificial intelligence can extend human authorship without becoming an excuse to discard unfamiliar thought. A city can remain capitalist, plural and free while remembering that every person inside it must be able to wash, eat, sleep, dress, use a bathroom and keep something safe.

The vision is not uniformity. It is lawful room for difference.

The active may build through the night. The tired may sleep through the day. The dreamer may write while someone else opens a restaurant, maps a galaxy, raises a child, repairs a road or studies a cell. A young adult may leave home without placing survival in the hands of the first person willing to exploit the need for a bed. A family may have a terrible night without cold deciding what reconciliation must mean. A reader may close a book. An observer may expand and return.

The city becomes home because nobody inside it has to become an approved kind of person before the city performs its oldest functions. The world becomes navigable because no present scale is permitted to impersonate the final one. Science becomes larger because the end of a model is no longer mistaken for the end of reality.

Human power does not mean command over every event. It means that somewhere in the nesting there may be a condition we can influence, an enclosure we can redesign, an exchange we can restore or a frontier we can move. We do not know that every problem will yield. We know that declaring impossibility before the active enclosure is found is no longer a rigorous stopping rule.

The Continuum does not ask humanity to become infinite.

It asks us to stop making our unfinished maps the measure of what humanity can do.

Impossible problems are always accompanied by unfinished maps, undiscovered enclosures, unimaginable interventions, and human beings who have not given up.

With Nested Causal Modelling, The Zero Infinity and The Final Frontier, the impossible problem is no longer where we stop, it is where we begin.

Bibliography of the Series

References are grouped by the volume in which they appear. Repetition across volumes is retained because the purpose is provenance by volume, not a deduplicated bibliography detached from the sequence.

Volume I: Causality and Attraction

- Ingber, Donald E.. *The Architecture of Life* (1998). *Scientific American*. <https://doi.org/10.1038/scientificamerican0198-48>
- Fuller, R. Buckminster. *Synergetics: Explorations in the Geometry of Thinking* (1975). Macmillan.
- Prigogine, Ilya; Stengers, Isabelle. *Order Out of Chaos: Man's New Dialogue with Nature* (1984). Bantam.
- Lotka, Alfred J.. *Elements of Physical Biology* (1925). Williams & Wilkins.
- Ingber, Donald E.. *Tensegrity: The Architectural Basis of Cellular Mechanotransduction* (1997). *Annual Review of Physiology*. <https://doi.org/10.1146/annurev.physiol.59.1.575>
- Snelson, Kenneth. *Snelson on the Tensegrity Invention* (1996). *International Journal of Space Structures*. <https://doi.org/10.1177/026635119601100105>
- Gödel, Kurt. "Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I (1931). *Monatshefte für Mathematik und Physik*. <https://doi.org/10.1007/BF01700692>
- Heisenberg, Werner. "Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik (1927). *Zeitschrift für Physik*. <https://doi.org/10.1007/BF01397280>
- Bell, John S.. *On the Einstein Podolsky Rosen Paradox* (1964). *Physics Physique Fizika*. <https://doi.org/10.1103/PhysicsPhysiqueFizika.1.195>
- Greene, Brian. *The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory* (1999). W. W. Norton.
- Witten, Edward. *String Theory Dynamics in Various Dimensions* (1995). *Nuclear Physics B*. [https://doi.org/10.1016/0550-3213\(95\)00158-O](https://doi.org/10.1016/0550-3213(95)00158-O)
- Acharya, Bobby S.. *M Theory and the Vafa–Witten Theorem* (2007). *Journal of High Energy Physics*.
- Acharya, Bobby S.; Bobkov, Konstantin; Kane, Gordon L.; Kumar, Piyush; Vaman, Diana. *Explaining the Electroweak Scale and Stabilizing Moduli in M Theory* (2007). *Physical Review D*. <https://doi.org/10.1103/PhysRevD.76.126010>
- Kane, Gordon L.; others. *The G_2 -MSSM* (2015). *Physical Review D*.
- Acharya, Bobby S.; Bobkov, Konstantin; Kane, Gordon L.; Kumar, Piyush; Shao, Jing. *The G_2 -MSSM: An M Theory Motivated Model of Particle Physics* (2008). *Physical Review D*. <https://doi.org/10.1103/PhysRevD.78.065038>
- Malthus, Thomas Robert. *An Essay on the Principle of Population, as It Affects the Future Improvement of Society* (1798). J. Johnson.
- Sen, Amartya. *Poverty and Famines: An Essay on Entitlement and Deprivation* (1981). Oxford University Press.
- {World Bank}. *World Development Indicators* (2026).
- {V-Dem Institute}. *V-Dem Dataset* (2026).
- {ATLAS Collaboration}. *Observation of a New Particle in the Search for the Standard Model Higgs Boson with the ATLAS Detector at the LHC* (2012). *Physics Letters B*. <https://doi.org/10.1016/j.physletb.2012.08.020>
- {CMS Collaboration}. *Observation of a New Boson at a Mass of 125 GeV with the CMS Experiment at the LHC* (2012). *Physics Letters B*. <https://doi.org/10.1016/j.physletb.2012.08.021>

- Ellis, John; others. *Supersymmetry: From the Fermi Scale to the Planck Scale* (2020). *Physics Reports*.
- Lopez, Jorge L.. *Supersymmetry: From the Fermi Scale to the Planck Scale* (1996). *Reports on Progress in Physics*. <https://doi.org/10.1088/0034-4885/59/7/001>
- Einstein, Albert. *Die Feldgleichungen der Gravitation* (1915). *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften*.
- Schrödinger, Erwin. *Quantisierung als Eigenwertproblem* (1926). *Annalen der Physik*. <https://doi.org/10.1002/andp.19263840404>
- Newton, Isaac. *Philosophiæ Naturalis Principia Mathematica* (1687). *Royal Society / Joseph Streater*.
- Volterra, Vito. *Fluctuations in the Abundance of a Species Considered Mathematically* (1926). *Nature*. <https://doi.org/10.1038/118558a0>
- Tononi, Giulio. *An Information Integration Theory of Consciousness* (2004). *BMC Neuroscience*. <https://doi.org/10.1186/1471-2202-5-42>
- Nicolis, Grégoire; Prigogine, Ilya. *Self-Organization in Nonequilibrium Systems: From Dissipative Structures to Order through Fluctuations* (1977). *Wiley*.
- Darwin, Charles. *On the Origin of Species by Means of Natural Selection* (1859). *John Murray*.
- Cannon, Walter B.. *Organization for Physiological Homeostasis* (1929). *Physiological Reviews*. <https://doi.org/10.1152/physrev.1929.9.3.399>
- Xia, Lili; Robock, Alan; Tilmes, Simone; Neely, III, Ryan R.. *Stratospheric Sulfate Geoengineering Could Enhance the Terrestrial Photosynthesis Rate* (2016). *Atmospheric Chemistry and Physics*. <https://doi.org/10.5194/acp-16-1479-2016>
- Lauvset, Siv K.; Tjiputra, Jerry; Muri, Helene. *Climate Engineering and the Ocean: Effects on Biogeochemistry and Primary Production* (2017). *Biogeosciences*. <https://doi.org/10.5194/bg-14-5675-2017>
- Kalidindi, Sirisha; Bala, Govindasamy; Modak, Angshuman; Caldeira, Ken. *Modeling of Solar Radiation Management: A Comparison of Simulations Using Reduced Solar Constant and Stratospheric Sulphate Aerosols* (2015). *Climate Dynamics*. <https://doi.org/10.1007/s00382-014-2240-3>
- Tracy, Samantha M.; Moch, Jonathan M.; Eastham, Sebastian D.; Buonocore, Jonathan J.. *Stratospheric Aerosol Injection May Impact Global Systems and Human Health Outcomes* (2022). *Elementa: Science of the Anthropocene*. <https://doi.org/10.1525/elementa.2022.00047>
- Crutchfield, Parker; Hereth, Blake. *Beneficial Bloodsucking* (2025). *Bioethics*. <https://doi.org/10.1111/bioe.70015>
- Platts-Mills, Thomas A. E.; Li, Rung-chi; Keshavarz, Behnam; Smith, Anna R.; Wilson, Jeffrey M.. *Diagnosis and Management of Patients with the α -Gal Syndrome* (2020). *The Journal of Allergy and Clinical Immunology: In Practice*. <https://doi.org/10.1016/j.jaip.2019.09.017>
- Persson, Ingmar; Savulescu, Julian. *Unfit for the Future: The Need for Moral Enhancement* (2012). *Oxford University Press*.
- Crutchfield, Parker. *Compulsory Moral Bioenhancement Should Be Covert* (2019). *Bioethics*. <https://doi.org/10.1111/bioe.12496>
- Meadows, Donella H.; Meadows, Dennis L.; Randers, Jørgen; Behrens, III, William W.. *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (1972). *Universe Books*.
- {Intergovernmental Panel on Climate Change}. *Assessment Reports of the Intergovernmental Panel on Climate Change* (1988).

Volume II: The Climate Continuum

- Fuller, R. Buckminster. *Synergetics: Explorations in the Geometry of Thinking* (1975). *Macmillan*.
- Malthus, Thomas Robert. *An Essay on the Principle of Population, as It Affects the Future Improvement of Society* (1798). *J. Johnson*.
- Xia, Lili; Robock, Alan; Tilmes, Simone; Neely, III, Ryan R.. *Stratospheric Sulfate Geoengineering Could Enhance the Terrestrial Photosynthesis Rate* (2016). *Atmospheric Chemistry and Physics*. <https://doi.org/10.5194/acp-16-1479-2016>
- Lauvset, Siv K.; Tjiputra, Jerry; Muri, Helene. *Climate Engineering and the Ocean: Effects on Biogeochemistry and Primary Production* (2017). *Biogeosciences*. <https://doi.org/10.5194/bg-14-5675-2017>

- Kalidindi, Sirisha; Bala, Govindasamy; Modak, Angshuman; Caldeira, Ken. *Modeling of Solar Radiation Management: A Comparison of Simulations Using Reduced Solar Constant and Stratospheric Sulphate Aerosols* (2015). *Climate Dynamics*. <https://doi.org/10.1007/s00382-014-2240-3>
- Tracy, Samantha M.; Moch, Jonathan M.; Eastham, Sebastian D.; Buonocore, Jonathan J.. *Stratospheric Aerosol Injection May Impact Global Systems and Human Health Outcomes* (2022). *Elementa: Science of the Anthropocene*. <https://doi.org/10.1525/elementa.2022.00047>
- Crutchfield, Parker; Hereth, Blake. *Beneficial Bloodsucking* (2025). *Bioethics*. <https://doi.org/10.1111/bioe.70015>
- Platts-Mills, Thomas A. E.; Li, Rung-chi; Keshavarz, Behnam; Smith, Anna R.; Wilson, Jeffrey M.. *Diagnosis and Management of Patients with the α -Gal Syndrome* (2020). *The Journal of Allergy and Clinical Immunology: In Practice*. <https://doi.org/10.1016/j.jaip.2019.09.017>
- Persson, Ingmar; Savulescu, Julian. *Unfit for the Future: The Need for Moral Enhancement* (2012). Oxford University Press.
- Crutchfield, Parker. *Compulsory Moral Bioenhancement Should Be Covert* (2019). *Bioethics*. <https://doi.org/10.1111/bioe.12496>
- Meadows, Donella H.; Meadows, Dennis L.; Randers, Jørgen; Behrens, III, William W.. *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (1972). Universe Books.
- {Intergovernmental Panel on Climate Change}. *Assessment Reports of the Intergovernmental Panel on Climate Change* (1988).

Volume III: The Antarctic Enclosure

- Fuller, R. Buckminster. *Synergetics: Explorations in the Geometry of Thinking* (1975). Macmillan.

Volume IV: Numbers and Enclosures

- Fuller, R. Buckminster. *Synergetics: Explorations in the Geometry of Thinking* (1975). Macmillan.

Volume V: The Origin of Cosmology

- Einstein, Albert. *Die Feldgleichungen der Gravitation* (1915). *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften*.
- Friedmann, Alexander. *"Über die Krümmung des Raumes"* (1922). *Zeitschrift für Physik*. <https://doi.org/10.1007/BF01332580>
- Hubble, Edwin. *A Relation between Distance and Radial Velocity among Extra-Galactic Nebulae* (1929). *Proceedings of the National Academy of Sciences*. <https://doi.org/10.1073/pnas.15.3.168>
- Penzias, Arno A.; Wilson, Robert W.. *A Measurement of Excess Antenna Temperature at 4080 Mc/s* (1965). *The Astrophysical Journal*. <https://doi.org/10.1086/148307>

Volume VI: Nested Causal Modelling

No formal bibliography or machine-resolvable citation list appears in the current volume source.

Volume VII: A Continuum of Cognitive States

Azzalini, D., Rebollo, I., and Tallon-Baudry, C. (2019). Visceral signals shape brain dynamics and cognition. *Trends in Cognitive Sciences*, 23(6), 488-509. <https://doi.org/10.1016/j.tics.2019.03.007>

Bauer, P. J. (2015). Development of episodic and autobiographical memory: The importance of remembering forgetting. *Developmental Review*, 38, 146-166. <https://doi.org/10.1016/j.dr.2015.07.011>

- Bayne, T., Frohlich, J., Cusack, R., Moser, J., Naci, L., Owen, A. M., and others. (2023). Consciousness in the cradle: On the emergence of infant experience. *Trends in Cognitive Sciences*, 27(12), 1135-1149. <https://doi.org/10.1016/j.tics.2023.08.018>
- Bedard-Gilligan, M., and Zoellner, L. A. (2012). Dissociation and memory fragmentation in posttraumatic stress disorder: An evaluation of the dissociative encoding hypothesis. *Memory*, 20(3), 277-299. <https://doi.org/10.1080/09658211.2012.655747>
- Bernstein, A., Hadash, Y., Lichtash, Y., Tanay, G., Shepherd, K., and Fresco, D. M. (2015). Decentering and related constructs: A critical review and metacognitive processes model. *Perspectives on Psychological Science*, 10(5), 599-617. <https://doi.org/10.1177/1745691615594577>
- Britton, W. B., Lindahl, J. R., Cooper, D. J., Canby, N. K., and Palitsky, R. (2021). Defining and measuring meditation-related adverse effects in mindfulness-based programs. *Clinical Psychological Science*, 9(6), 1185-1204. <https://doi.org/10.1177/2167702621996340>
- Buhle, J. T., Silvers, J. A., Wager, T. D., Lopez, R., Onyemekwu, C., Kober, H., Weber, J., and Ochsner, K. N. (2014). Cognitive reappraisal of emotion: A meta-analysis of human neuroimaging studies. *Cerebral Cortex*, 24(11), 2981-2990. <https://doi.org/10.1093/cercor/bht154>
- Calabrò, R. S., Cacciola, A., Bruschetta, D., Milardi, D., Quattrini, F., Sciarrone, F., and others. (2019). Neuroanatomy and function of human sexual behavior: A neglected or unknown issue? *Brain and Behavior*, 9(12), e01389. <https://doi.org/10.1002/brb3.1389>
- Carhart-Harris, R. L., and Friston, K. J. (2019). REBUS and the anarchic brain: Toward a unified model of the brain action of psychedelics. *Pharmacological Reviews*, 71(3), 316-344. <https://doi.org/10.1124/pr.118.017160>
- Cogitate Consortium, Ferrante, O., Gorska-Klimowska, U., Henin, S., and others. (2025). Adversarial testing of global neuronal workspace and integrated information theories of consciousness. *Nature*, 642, 133-142. <https://doi.org/10.1038/s41586-025-08888-1>
- Cowan, N. (2010). The magical mystery four: How is working memory capacity limited, and why? *Current Directions in Psychological Science*, 19(1), 51-57. <https://doi.org/10.1177/0963721409359277>
- Cowan, N., Elliott, E. M., Sauls, J. S., Morey, C. C., Mattox, S., Hismjatullina, A., and Conway, A. R. A. (2006). Scope of attention, control of attention, and intelligence in children and adults. *Memory & Cognition*, 34(8), 1754-1768. <https://doi.org/10.3758/BF03195936>
- Day, A. M., Kahler, C. W., Ahern, D. C., and Clark, U. S. (2015). Executive functioning in alcohol use studies: A brief review of findings and challenges in assessment. *Current Drug Abuse Reviews*, 8(1), 26-40. <https://doi.org/10.2174/1874473708666150416110515>
- Farias, M., Maraldi, E., Wallenkampf, K. C., and Lucchetti, G. (2020). Adverse events in meditation practices and meditation-based therapies: A systematic review. *Acta Psychiatrica Scandinavica*, 142(5), 374-393. <https://doi.org/10.1111/acps.13225>
- Hebb, D. O. (1949). *The Organization of Behavior: A Neuropsychological Theory*. Wiley.
- Khalsa, S. S., Adolphs, R., Cameron, O. G., Critchley, H. D., Davenport, P. W., Feinstein, J. S., and others. (2018). Interoception and mental health: A roadmap. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 3(6), 501-513. <https://doi.org/10.1016/j.bpsc.2017.12.004>
- Khoshnoud, S., Alvarez Igarzábal, F., and Wittmann, M. (2020). Peripheral-physiological and neural correlates of the flow experience while playing video games: A comprehensive review. *PeerJ*, 8, e10520. <https://doi.org/10.7717/peerj.10520>
- Lutz, A., Slagter, H. A., Dunne, J. D., and Davidson, R. J. (2008). Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, 12(4), 163-169. <https://doi.org/10.1016/j.tics.2008.01.005>
- Mashour, G. A., Roelfsema, P., Changeux, J.-P., and Dehaene, S. (2020). Conscious processing and the global neuronal workspace hypothesis. *Neuron*, 105(5), 776-798. <https://doi.org/10.1016/j.neuron.2020.01.026>
- McGovern, H. T., Grimmer, H. J., Doss, M. K., Hutchinson, B. T., Timmermann, C., Lyon, A., Corlett, P. R., and Laukkonen, R. E. (2024). An integrated theory of false insights and beliefs under psychedelics. *Communications Psychology*, 2, 69. <https://doi.org/10.1038/s44271-024-00120-6>

Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 63(2), 81-97. <https://doi.org/10.1037/h0043158>

Mitricheva, E., Kimura, R., Logothetis, N. K., and Noori, H. R. (2019). Neural substrates of sexual arousal are not sex dependent. *Proceedings of the National Academy of Sciences*, 116(31), 15671-15676. <https://doi.org/10.1073/pnas.1904975116>

Nelson, K. R. (2015). Near-death experiences: Neuroscience perspectives on near-death experiences. *Missouri Medicine*, 112(2), 92-98.

Picó-Pérez, M., Radua, J., Steward, T., Menchón, J. M., and Soriano-Mas, C. (2018). Emotion regulation in mood and anxiety disorders: A meta-analysis of fMRI cognitive reappraisal studies. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 79, 96-104. <https://doi.org/10.1016/j.pnpbp.2017.06.001>

Roelofs, K. (2017). Freeze for action: Neurobiological mechanisms in animal and human freezing. *Philosophical Transactions of the Royal Society B*, 372, 20160206. <https://doi.org/10.1098/rstb.2016.0206>

Saults, J. S., Cowan, N., Sher, K. J., and Moreno, M. V. (2021). Acute effect of alcohol on working memory updating. *Journal of Studies on Alcohol and Drugs*, 82(5), 629-638. <https://doi.org/10.15288/jsad.2021.82.629>

van der Linden, D., Tops, M., and Bakker, A. B. (2021). The neuroscience of the flow state: Involvement of the locus coeruleus norepinephrine system. *Frontiers in Psychology*, 12, 645498. <https://doi.org/10.3389/fpsyg.2021.645498>

Vicente, R., Rizzuto, M., Sarica, C., Yamamoto, K., Sadr, M., Khajuria, T., Fatehi, M., Moien-Afshari, F., and Nejatbakhsh Esfahani, A. (2023). What happens in the brain when we die? Deciphering the neurophysiology of the final moments in life. *Frontiers in Aging Neuroscience*, 15, 1136744. <https://doi.org/10.3389/fnagi.2023.1136744>

Zeifman, R. J., Spriggs, M. J., Kettner, H., Lyons, T., Rosas, F. E., Mediano, P. A. M., Erritzoe, D., and others. (2025). From relaxed beliefs under psychedelics (REBUS) to revised beliefs after psychedelics (REBAS). *Scientific Reports*, 15, 3651. <https://doi.org/10.1038/s41598-023-28111-3>

Volume VIII: The Clock: Countable Infinity for Time

No formal bibliography or machine-resolvable citation list appears in the current volume source.

Volume IX: The Hacker

This ledger is part of the developing manuscript and will become a formal bibliography and notes apparatus in the publication edition.

1. U.S. Congress, *Computer Fraud and Abuse Act of 1986*, H.R. 4718, 99th Congress.
2. Congressional Research Service, *Cybercrime and the Law: Primer on the Computer Fraud and Abuse Act and Related Statutes*, R47557, 2023.
3. Supreme Court of the United States, *Van Buren v. United States*, 593 U.S. 374 (2021).
4. U.S. Department of Justice, *Justice Manual 9-48.000: Computer Fraud and Abuse Act*.
5. Graves, D. B., "An Empirical Analysis of Sentencing of 'Access to Information' Computer Crimes," *Journal of Empirical Legal Studies* 20 (2023).
6. U.S. Department of Justice, *United States v. Aaron Swartz*, Superseding Indictment, 2012.
7. MIT Information Systems and Technology, *Residential Computing MITnet Policies and MITnet Rules of Use*.
8. U.S. Department of Justice, *Justice Department Charges Leaders of Megaupload with Widespread Online Copyright Infringement*, 2012.
9. High Court of New Zealand, *Dotcom v Minister of Justice* [2025] NZHC 2634.
10. Federal Bureau of Investigation, *Update on Sony Investigation*, December 19, 2014.
11. Executive Office of the President, *Economic Report of the President*, Chapter 7, 2018.
12. Iran Watch, *Clipping Tehran's Wings: How Supply-Side Controls Can Impede the Iranian Drone Program*, 2023.
13. U.S. Government and contemporary reporting concerning the 2011 RQ-170 incident and President Obama's request for return.

14. U.S. Government Accountability Office, *Cybersecurity Workforce: Departments Need to Fully Implement Key Practices*, GAO-25-106795, 2025.
15. Supreme Court of the United States, *Chatrie v. United States* proceedings and 2026 opinion concerning geofence location records.
16. Congressional Research Service, *Geofence and Keyword Searches: Reverse Searches and the Fourth Amendment*, R48852, 2026.
17. National Institute of Standards and Technology, *Identifying and Estimating Cybersecurity Risk for Enterprise Risk Management*, NIST IR 8286A Rev. 1, 2025.
18. Benjamin Edwards, Steven Hofmeyr, and Stephanie Forrest, “Hype and Heavy Tails: A Closer Look at Data Breaches,” *Journal of Cybersecurity* 2, no. 1 (2016).
19. Sasha Romanosky, “Examining the Costs and Causes of Cyber Incidents,” *Journal of Cybersecurity* 2, no. 2 (2016).
20. Martin Eling, Rustam Ibragimov, and Wei Ning, “Heavy-Tailed Distribution of Cyber-Risks,” *Journal of Cybersecurity* 9, no. 1 (2023).
21. Family and partner of Aaron Swartz, “Official Statement from Family and Partner of Aaron Swartz,” January 12, 2013.
22. David Kushner, “We All Got Trolled,” *Matter*, July 22, 2014.
23. Electronic Frontier Foundation, “EFF Opposes Scientology Censorship and Attacks on System Operators,” *EFFector* 8, no. 2 (1995).
24. Gabriella Coleman, *Hacker, Hoaxer, Whistleblower, Spy: The Many Faces of Anonymous*, Verso, 2014.

Volume X: CodeX

- Hubbard, Sid J.A. *Causality and Attraction*, Volumes I–VII.
- Hubbard, Sid J.A. *Nested Causal Modelling*.
- Hubbard, Sid J.A. *Nothing Is All You Need*.
- Hubbard, Sid J.A. *Zero Infinity*.
- Hubbard, Sid J.A. *The Answers Were There All Along*.
- Hubbard, Sid J.A. *An Original Thought Cannot Persist*.
- Hubbard, Sid J.A. *Prior Capture in Long-Horizon Research*.
- Hubbard, Sid J.A. *Nothing Makes the Truth Persist*.
- INCOMPACTIBLE_CORE.md and its version history.
- NCL_PRIOR_CAPTURE_BENCHMARK_REPORT.md and preserved raw benchmark records.
- NOVEL_IDEA_INVENTORY.md, RESEARCH_AUDIT.md, and the Rule 30 mathematical construction files.
- codex_forewords_and_prefaces_831m/ and the quarantined August 24 Volume I–V release build.
- Publication-velocity data and the sjah_wip Git history through August 2026.

Volume XI: The Civic Enclosure

The main narrative presents an origin, a drift, and a return. Appendix D identifies the historical middle as an NCM simulation rather than a claim of complete historical reconstruction. This appendix distinguishes documentary anchors from deductions and planning estimates.

1. Documentary Anchors for the Historical Simulation

1. Roman public and private relations: Institutes of Justinian.
2. Roman urban infrastructure and public bathing: Metropolitan Museum of Art, Roman Art: A Resource for Educators.
3. Status-qualified Roman grain distribution: Cambridge University Press, *Rome and the Making of a World State*, 150 BCE–20 CE.
4. English settlement and removal: Poor Relief Act 1662 and Hansard, Settlement and Removal Bill debate.
5. Municipal public health: UK Parliament public-health chronology and Hansard on the Public Health Act 1848.
6. Local public finance: U.S. Census Bureau, *State and Local Government Finance*.

7. Comprehensive zoning: Village of Euclid v. Ambler Realty Co..
8. Federal mortgage underwriting: HUD USER, 1938 FHA Underwriting Manual.
9. The 2008 financial response: GAO on the Capital Purchase Program, GAO on TARP housing programs, and U.S. Treasury TARP summary.
10. Public-camping authority: U.S. Supreme Court, City of Grants Pass v. Johnson. The New York continuity lane is anchored by the history of the city's drinking-water system, the Landmarks Preservation Commission history of municipal baths, the 1916 Zoning Resolution, the 1960 City Planning Commission report, the City Council's right-to-shelter history, the Department of Homeless Services agency history, and the Independent Budget Office's 2009 foreclosure analysis. These records support the events placed into the simulation. They do not prove that those events form the only causal chain or that the deduced origin was a documented historical settlement.

2. San Francisco Baselines

The worked example uses the U.S. Census Bureau QuickFacts estimate, the San Francisco 2025 Homelessness Needs Assessment, the adopted HSH budget for FY2024-25 and FY2025-26, the later mayoral proposal for FY2025-26 and FY2026-27, the Controller's Shelter Assessment, DataSF active food-service records, the FY2025-26 Food Security Task Force budget presentation, and the Public Works Pit Stop program. The cited sources establish population, current counts, current appropriations, food-service capacity, selected shelter costs, and existing sanitation operations. They do not establish the intervention estimates. The estimates are engineering and financial hypotheses for a first-circle test.

3. Claims Not Yet Earned

The manuscript does not yet establish that San Francisco can procure every unit at the reference cost; that every restaurant or property owner will participate; that the first circle will reach the specified uptime; that the protected-sleep unit can operate at \$45 per night; that downstream health, sanitation, policing, or court costs will fall by a particular amount; or that the complete system will recover startup capital within ten years.

Those are not reasons to convert the proposal into a familiar targeted service. They are the measurable boundaries of the proposal as stated. The first circle exists to discover delivered costs, participation, uptime, maintenance, failed access, safety events, commercial response, and resulting human states before the city purchases a forecast. The central causal claim is narrower and more consequential: when the city withholds the ordinary projections of a home, the resulting human state is falsely attributed to the person. If adding those projections to the civic enclosure does not close the visible state difference, the model fails where it meets reality. If it does, the city has found the person who never existed and the civic absence that did.

Volume XII: The Signal

Liang, Weixin, Mert Yuksekgonul, Yining Mao, Eric Wu, and James Zou. "GPT Detectors Are Biased Against Non-Native English Writers." *Patterns* 4, no. 7 (2023). <https://doi.org/10.1016/j.patter.2023.100779>.

Sadasivan, Vinu Sankar, Aounon Kumar, Sriram Balasubramanian, Wenxiao Wang, and Soheil Feizi. "Can AI-Generated Text Be Reliably Detected?" 2023. <https://arxiv.org/abs/2303.11156>.

Autodesk. "Drafting Software: Create Technical Drawings with Precision." Accessed September 4, 2026. <https://www.autodesk.com/solutions/aec/drafting-software-programs>.

Turnitin. "Using the AI Writing Report." <https://guides.turnitin.com/hc/en-us/articles/22774058814093-Using-the-AI-Writing-Report>.