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O-Theory and the Love Reality Loop

A Unified Organizational Theory of Mind and Reality

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ABSTRACT: How does a Mind make sense of the world, act on what it understands, and learn when it is wrong? We propose that Mind and Reality share a common organizational architecture. Both consist of information organized through Distinctions, Systems, Relationships, and Perspectives (DSRP-484), expressed through the complementary formulations $\mathbb{M} = IO$ and $\mathbb{R} = IO$. Their interaction forms the Love Reality Loop (LRL): Minds construct Models, direct questions and actions toward Reality, receive Information, evaluate correspondence, and revise their Models. The account makes three claims. Information alone is not Meaning; it has to be organized. Models do not just represent; they cause behavior. And science is not separate from ordinary thinking; it is a disciplined version of the modeling every Mind already does. We examine these propositions through eighteen scientific predictions tested in historical and subsequent native computational experiments. In each experiment, a computational Mind questions a computational Reality whose structures were declared in advance, so the results show what a Mind can recover through inquiry, not what nature contains. Across these experiments, the computational Mind recovered declared structures, found Information it had not been given, asked fewer questions when guided by a purpose, interpreted identity in context, built more complex organization, corrected a false belief, and acted on its Model. In the last experiment, changing a single organizational relationship while holding incoming Information and the behavioral procedure constant changed which action the computational Mind performed. Together, the eighteen validated predictions provide computational evidence for the proposed organizational architecture and its role in modeling, inquiry, and behavior. These results suggest a common way to study Meaning, inquiry, and behavior. Whether that account extends to people, groups, and other living systems remains a question for further testing. We propose that Mind is neither separate from Reality nor merely a passive observer of it: *Mind is Reality modeling Reality.*

KEYWORDS: Love Reality Loop | O-Theory | DSRP-484 | Mind | Reality | Mental Models | Meaning | Cognition | Behavior | Scientific Method | Emergence | Self-Correction | Computational Cognitive Science

1. Introduction: Information Is Not Enough

We have more information than ever. We can find a paper, share a discovery, or search a mountain of data in seconds. Yet we still misunderstand one another, make poor decisions, and build institutions that struggle to learn. The gap between what we believe and what the world does remains. We keep reaching for the same remedy: more information.

A student struggles, so we explain it again. A team falters, so we add a dashboard. A public belief resists the evidence, so we supply more facts. An AI system falls short, so we feed it more data. These responses can help. But having information and knowing what to make of it are different things.

Two people may have the same information and understand it differently. Two organizations may have access to identical evidence and reach opposite conclusions. Two people may experience the same event and respond with radically different emotions and behaviors. Information alone cannot explain these differences. We also need to know how it is distinguished, grouped, related, and interpreted. We propose that this distinction between Information (I) and Organization (O) is fundamental to understanding Mind:

$$\boxed{\mathbb{M} = IO}$$

Here IO is read “Information organized”: the two letters side by side mean that organization acts on information, not that the two are multiplied. A Model is not simply the information it contains. A Model consists of that information as organized. Consequently:

$$\boxed{\mathbb{M} \neq I}$$

This is more than the old distinction between data and interpretation. It is a claim about what Meaning is made of. Information does not become meaningful by piling up. Meaning arises through the organization that establishes what something is, what it is not, what it belongs to, how it relates to other things, and from what perspective it is understood.

A colleague says, “This needs work.” One person hears rejection. Another hears a chance to improve. The words are the same; the Models differ. So may the feelings and actions that follow. To understand the difference, we have to look at how each person organized what was said.

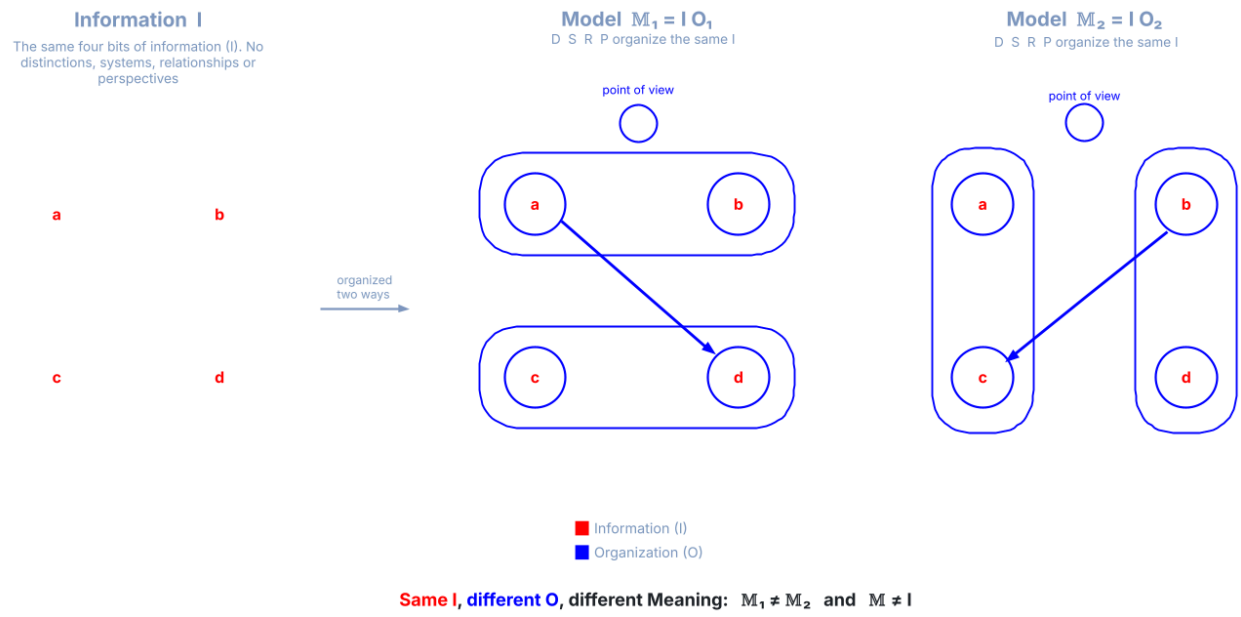


Figure 1. Information Is Not Meaning: $\mathbb{M} \neq I$**.** The same information can constitute different Models when organized differently. Information alone does not determine Meaning; the distinctions, systems, relationships, and perspectives through which information is organized change what the Model represents.

The point reaches beyond people. An organism encountering its environment must distinguish relevant features, organize them in relation to its current state, and respond accordingly. An institution must organize information about its members, purposes, resources, and circumstances to coordinate collective activity. A computational system must possess organization capable of transforming incoming information into meaningful internal states and actions. Which raises a deeper question: is there one organizational architecture under Mind, Meaning, and Reality?

O-Theory proposes that there is. Drawing on DSRP Theory [1–4], we propose that organization consists of four universal patterns—Distinctions, Systems, Relationships, and Perspectives—each constituted by two coimplicated elements and governed by common structural dynamics. We refer to this architecture as DSRP-484. The bolder claim is that this organization is not limited to the Mind. Reality itself is organized information:

$$\boxed{\mathbb{R} = IO}$$

If Mind and Reality share an organizational architecture, we can investigate the relationship between knowing and what is known through that common structure. This is the foundation of the Love Reality Loop.

A Mind constructs Models of Reality. Those Models generate questions, predictions, and actions. Reality supplies Information in response. The Mind may then evaluate and reorganize its Models, improving their

correspondence with Reality. We propose that this process underlies cognition itself, including formal scientific inquiry.

And this is not only about beliefs and opinions. Models cause behavior. They limit what a Mind can recognize and do, and they help decide what it actually does. So the theory is about more than how information becomes meaningful. It is about how Minds understand, investigate, and act within Reality.

1.1. From a theory of cognition to a theory of Mind and Reality

Earlier investigations of $\mathbb{M} = IO$ examined whether differences in Information and organizational capacity affected model performance. Those findings [5] supported the proposition that cognition depends on both Information and Organization. The study varied tree depth, feature interactions, and hidden layers as measures of organizational capacity, explicitly relating those measures to DSRP patterns. The present paper takes the next step: testing whether the proposed DSRP-484 architecture itself can support the capabilities the theory predicts. Thus, this paper tests DSRP-484 more directly. We investigate whether its four patterns, eight elements, and structural dynamics can support the construction, investigation, and recovery of a modeled Reality. The native experiments use cOde (pronounced "O code"), a programming language developed to investigate these organizational claims. Its implementation details are proprietary and are not disclosed here. We report the experimental conditions, controls, measurements, results, and limits.

The experiments also ask whether the same architecture can support capabilities usually studied separately: discovering Information, directing inquiry by Purpose, interpreting identity in context, constructing higher-order organization, correcting mistaken Models, and acting on those Models. The question is what this organization enables a Mind to do.

1.2. Eighteen scientific predictions

The research program investigates eighteen scientific predictions, P1–P18, derived from O-Theory and the Love Reality Loop. The predictions address six overarching scientific findings: that Mind is not Information alone; that Mind and Reality can be described through a common organizational architecture; that Minds operate through organized inquiry; that organization can generate higher-order organization; that Models can be corrected and cause behavior; and that DSRP-484 supplies the proposed underlying architecture.

The computational experiments validated all eighteen, each under its own conditions. The Realities in these experiments are computational, with structures declared in advance, so the results show what a Mind can recover through inquiry, not what nature contains. Section 6.2 takes up what that design can and cannot show, and Section 11 states the limits. What matters is not that a computer did a set of tasks. It is that abilities usually studied one at a time may come from the same principles of organization.

If the account holds beyond these experiments, its consequences reach far. The organization of information may provide a common explanatory foundation for understanding how individuals learn, why

cognitive biases persist, how organizations behave, how biological systems adapt, and how Minds acquire progressively more accurate Models of Reality.

The central claim is simple:

Mind and Reality share a common organizational architecture, and their interaction enables Minds to construct Meaning, generate behavior, and revise their Models in response to Reality.
We develop this proposition and examine the evidence below.

2. The Love Reality Loop: Mind and Reality

The Love Reality Loop begins with two fundamental propositions:

$$\boxed{\mathbb{M} = IO}$$
$$\boxed{\mathbb{R} = IO}$$

The first concerns Models. The second concerns Reality. Both state that organization is fundamental. The Mind does not encounter facts with their meanings already settled. It constructs Models of Reality through the organization of Information. Reality has organization of its own, before any Mind interprets it. The central theoretical claim is that the organizational architecture of Models and Reality is fundamentally the same:

$$\boxed{O_{\mathbb{M}} = O_{\mathbb{R}} = DSRP\text{-}484}$$

This shared architecture is what makes it possible for a Model to match Reality. It does not mean that any given Model does. It gives a way to explain how a match is made, measured, tested, and improved.

2.1. Mind, Model, and Meaning

We use three closely related terms. A Model is Information organized into an understanding of something. Meaning is that organized Information: what the Model means. A Mind is the organized whole of its Models and the relationships among them. That whole is itself a Model. A farmer's understanding of soil, rain, seed, and seasons offers a familiar picture: each Model matters, and so does how the Models work together.

Thus, Model and Meaning are synonymous in the organizational sense described by:

$$\mathbb{M} = IO$$

The distinction between Mind and Model is contextual. A Mind constructs Models, but the Mind itself is an organized Model. A Model constructed by one Mind can itself be modeled by another Mind—or by the same Mind.

This is what recursion means here: a Model can become something we model. We can distinguish it, relate it to other Models, make it part of a larger whole, and examine it from another Perspective. The same organization works at the next level.

A Mind is an organized whole of related Models, not a pile of independent representations.

Throughout the paper, Mind names the modeler and Reality names what it encounters. Model names a particular organized understanding; Meaning emphasizes what that organization makes of the Information. These definitions let us ask whether modeling requires human consciousness, language, or a nervous system, rather than settling the question by definition.

Whether and to what extent nonhuman biological or collective systems qualify as Minds is an empirical and theoretical question. The proposed architecture lets us investigate that question without treating human cognition as the limit of modeling.

2.2. Four components of the Love Reality Loop

The LRL consists of four components: Mind, Fitback, Reality, and Feedback.

Mind. The Mind constructs and maintains Models of Reality. Those Models provide the organization through which Information becomes meaningful and from which questions, predictions, and actions arise.

Fitback. The Mind directs questions, predictions, tests, and actions toward Reality. Fitback is the Mind's active engagement with the world it seeks to understand.

Reality. Reality exists independently of any particular Mind's Model of it. Its organization is not determined by what a Mind happens to believe.

Feedback. Reality supplies Information. Feedback is Information—not the Mind's interpretation of that Information. Evaluation, interpretation, and revision occur within the Mind.

The four components form a continuous loop:

$$\boxed{\text{Mind} \rightarrow \text{Fitback} \rightarrow \text{Reality} \rightarrow \text{Feedback} \rightarrow \text{Mind}}$$

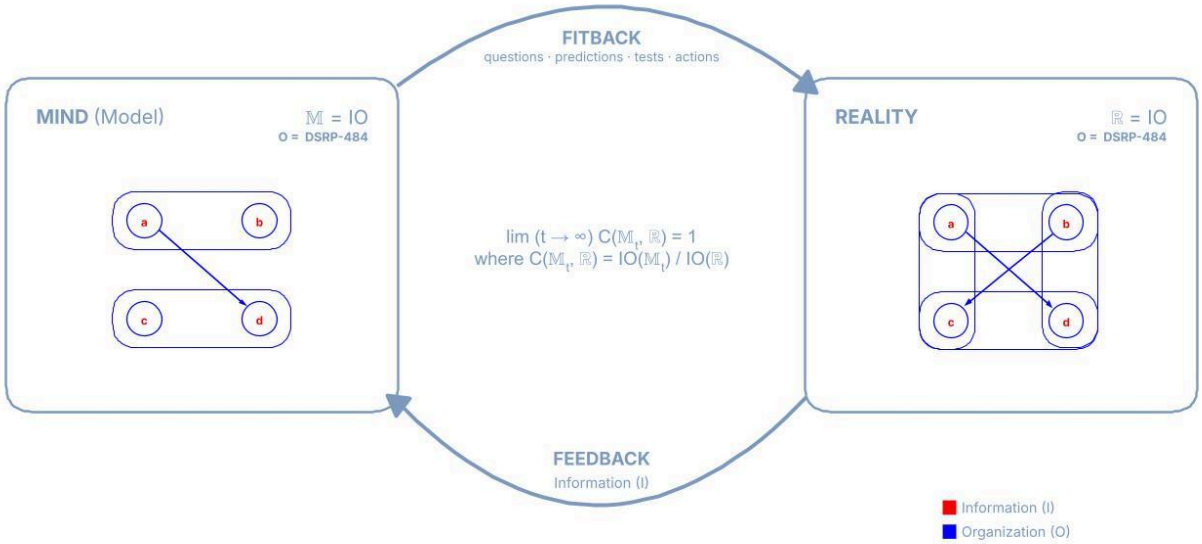


Figure 2. The Love Reality Loop: Mind and Reality. The Love Reality Loop consists of four components: Mind, Fitback, Reality, and Feedback. Mind constructs Models ($\mathbb{M} = IO$) and directs questions, predictions, tests, and actions toward Reality through fitback. Reality ($\mathbb{R} = IO$) supplies Information (I) through feedback. Both Mind and Reality share the proposed organizational architecture DSRP-484. Through repeated interactions, the Mind can evaluate and revise its Models to improve their correspondence with Reality.

The Mind does more than receive Information. Through Fitback, it engages Reality with questions, tests, and actions.

Reality does not supply ready-made Meaning. It supplies Information. The Mind must organize that Information, compare it with its existing Models, and decide whether to retain, elaborate, or revise them. So the LRL describes a modeler working on the Reality it models, not data moving between two places.

2.3. Correspondence between Model and Reality

How do we tell whether a Model gets Reality right? This is an old problem in epistemology. The LRL proposes that correspondence can be investigated through the relationship between the Information and Organization of a Model and the Information and Organization of Reality.

Let:

$$C(\mathbb{M}, \mathbb{R})$$

denote correspondence between a Model and Reality. In the computational experiments, we evaluate correspondence by comparing the structures the Mind recovers with the reference structures declared in Reality. Complete structural correspondence occurs when the recovered organization matches the relevant reference organization.

The limiting ideal is:

$$C(\mathbb{M}_t, \mathbb{R}) \to 1$$

as the Mind progressively improves its Model through interaction with Reality. This is an ideal toward which modeling may develop under appropriate conditions, not a guarantee that every Mind becomes increasingly accurate. Minds can ignore or misinterpret Information, hold onto inaccurate Models, or miss their own organizational limitations. The LRL explains how correspondence can improve without assuming that it inevitably will.

2.4. Why the Love Reality Loop matters

The LRL says more than that learning needs feedback. It gives the Model and the Reality being modeled a common organization, and it puts inquiry and action inside the same process that builds and revises Models. That makes it possible to investigate several questions together:

- How does Information become Meaning?
- How does a Mind discover Information it does not already possess?
- How does a Mind recognize that its Model is incomplete or incorrect?
- How does Purpose change what the Mind investigates?
- How do Models generate behavior?
- And how does behavior, by engaging Reality, create opportunities for subsequent Model revision?

The LRL proposes that these are not separate capacities. They are expressions of the same fundamental relationship between organized Models and organized Reality.

2.5. Beyond feedback: the organization Mind and Reality share

Feedback between a mind and its world is an old idea, and several theories have developed it in detail. Perceptual control theory holds that behavior is the control of perception: an organism acts to keep what it perceives close to an internal reference, and negative feedback corrects the difference [6]. The free-energy principle and its account of active inference hold that a brain maintains a model of the causes of its sensations and reduces the mismatch between what it predicts and what it senses in two ways, by revising the model or by acting to change what it senses [7]. Predictive processing develops the same picture into a general account of perception, attention, and action [8,9]. These theories share the LRL's loop: a mind holds a model, the model meets the world, mismatch drives revision, and action belongs inside the loop. But reading the LRL as a feedback loop is its most minimal interpretation. A thermostat has a feedback loop.

The question O-Theory adds is this: what organization do the Model and the world share, so that one can represent the other? They describe the coupling of model and world through signals, probabilities, and prediction error—in terms of Information. They do not specify what the model and the world share that makes the coupling possible. Reality *encodes* the information, mind *decodes* it. The structure of the model (what counts as a thing, which parts, wholes, and relationships exist, and from which point of view) is supplied by the modeler, and the structure of the world is left unstated. The LRL is a claim about that common structure. Mind is Information organized, $\mathbb{M} = IO$, and Reality is Information organized, $\mathbb{R} = IO$ (where $\mathbb{M}$ is Mind, $\mathbb{R}$ is Reality, I is Information, and O is Organization), and the O is the same on both

sides: DSRP-484. That shared O is what lets a question asked by the Mind be answered by Reality, and what lets the answer mean something when it comes back.

Causal inference comes closer, because it puts structure in the model explicitly. A causal graph is an organized model: its variables are distinctions and its arrows are relationships, and an intervention on the graph answers questions that observation alone cannot [10]. But the organization it supplies is ontologically incomplete. A causal graph is a network, and a network carries only part of DSRP-484. It keeps a node's identity and a generic link. It leaves out what each distinction excludes, parts and wholes, the two directions and independent nature of a relationship, and point and view, and it has no way for a link to become a thing with parts and relationships of its own [11,12]. What the graph cannot hold has to be worked around outside it. The behavioral experiment in Section 5.3 is an intervention applied to a complete organization: one organizational relationship in the Model is changed, Information and the behavioral procedure are held fixed, and the action changes.

The closer ancestor of the LRL is Shannon's theory of communication. Shannon showed that a message crosses a channel only when the sender and the receiver share a code, and he set aside what the message means. The LRL is a theory of communication between Mind and Reality in which the shared code is organization, DSRP-484, and in which meaning is what that organization makes of the Information that crosses. Section 10.5 lays the LRL over Shannon's diagram part by part. The feedback theories above describe how the conversation is regulated. The LRL says what the two parties to it have in common.

3. DSRP-484: The Architecture of Organization

If Models are Information organized, what is Organization? If Organization is left undefined, $\mathbb{M} = IO$ provides only a general description of modeling. Almost any system could be described as processing information through an unspecified structure.

O-Theory makes a more specific and falsifiable proposition:

$$\boxed{O = DSRP\text{-}484}$$

Organization consists of four patterns: Distinctions, Systems, Relationships, and Perspectives. Each has two elements, giving eight in all. The elements are coimplicated: one requires the other. A part, for example, implies a whole of which it is a part. The theory proposes that these patterns and their dynamics are necessary to distinguish Things, place them in wholes, relate them, and take a Perspective on them.

3.1. Four patterns and eight elements

A Distinction (D) establishes an identity and an other. A Thing is distinguishable as itself only in relation to what it is not.

A System (S) establishes a part and a whole. Things participate in organization as parts of larger wholes, while wholes are constituted through their parts.

A Relationship (R) establishes action and reaction. Things are related through interactions in which the action and reaction sides are mutually implicated.

A Perspective (P) establishes a point and a view. What is represented is situated within a frame of reference.

These four patterns consist of eight elements: identity and other (i, o), part and whole (p, w), action and reaction (a, r), and point and view ($\dot{p}$, v). Table 1 gives each pattern, its two elements, its special relationship, and the four dynamics.

Pattern	**Elements**	**Special relationship**
Distinctions (D)	identity (i), other (o)	identity exists; other negates
Systems (S)	part (p), whole (w)	part belongs; whole contains
Relationships (R)	action (a), reaction (r)	action affects; reaction effects
Perspectives (P)	point ($\dot{p}$), view (v)	point frames; view is framed
Dynamic	**Question it answers**	**Definition**
Equality	What is a Pattern?	Each Pattern is a structured equality between its two dual elements: $\mathcal{P}^* = e^+ \leftrightarrow e^-$.
Coimplication	What must also exist?	Each element necessarily implies its complementary pole.
Simultaneity	What else can this be?	Every element can simultaneously take every other elemental form.
Enclosure	What is required to exist?	Every Pattern recursively requires all other Patterns as conditions of its existence: $D \in (S, R, P)$, and likewise for S, R, and P.

Table 1. The Four DSRP Patterns, Eight Elements, and Organizational Dynamics. Each pattern is a structured equality between two elements joined by its own special relationship. The four dynamics state how elements and patterns imply one another, so the patterns cannot be instantiated independently. D, S, R, P: Distinctions, Systems, Relationships, Perspectives. Source: Cabrera and Cabrera [13].

The four patterns do not work alone. A Thing distinguished from another Thing can also belong to a whole, participate in relationships, and be represented from different Perspectives. Each pattern takes part in the organization established by the others.

3.2. The dynamics of organization

DSRP-484 proposes that the patterns and their elements participate in four structural dynamics: Equality, Coimplication, Simultaneity, and Enclosure [13]. Equality means that each Pattern is a structured equality between its two dual elements, mediated by its own special relationship:

$$\mathcal{P}^* = e^+ \leftrightarrow e^-$$

where $\mathcal{P}^*$ is a Pattern and e^+ and e^- are its two elements. Identity exists and other negates; part belongs and whole contains; action affects and reaction effects; point frames and view is framed. Equality answers the question: what is a Pattern?

Coimplication asks: if this exists, what must also exist? An identity requires an Other; a Part requires a Whole; an Action requires a Reaction; a Point requires a View. We can focus on either element, but the pattern requires both.

Simultaneity asks: what else can this be at the same time? A seed can have an identity, be part of a crop, participate in a relationship with the soil, and be viewed from a farmer's Perspective. Each element can also take the other elemental forms.

Enclosure concerns the mutual implication of the four patterns themselves. A Distinction is also related, situated within Systems, and established from a Perspective; corresponding implications apply to the other patterns. Every Pattern recursively requires all the other Patterns as conditions of its existence ($D \in (S, R, P)$, and likewise for S, R, and P). Enclosure answers the question: what is required to exist?

Enclosure is why DSRP-484 is not a list of four separate operations. Each pattern needs the others.

3.3. Structural necessity and sufficiency

P4 makes two claims, and they need different kinds of support. Necessity asks: can any of these organizational conditions be removed while preserving a Thing's full organization? The theory says no. Sufficiency asks: can DSRP-484 build the organization under study without another basic organizational element? The theory says yes. The a priori necessity argument developed in the existing DSRP and Enclosure work [13] begins from identity, coimplication, and the mutually entailing structural conditions of a Thing. A Thing must be distinguishable as itself. Its *identity* coimplicates an *other*. Those coimplicated elements stand in a Relationship, participate as parts of an organized whole, and are determinable within a Perspective. Enclosure establishes the reciprocal implications among these conditions. Under those stated organizational premises, the four patterns are mutually necessary rather than independently optional. The experiments ask the other question: can the architecture actually build and recover organization?

In the historical experiments, intact organization recovered the declared structures of Reality across 200 runs involving six different information corpora. Subsequent native experiments extended the demonstration to recursive constructions in which higher-order Things participated in all eight structural elements.

The theoretical account and computational demonstrations support P4 in different ways. The formal argument addresses logical necessity under its premises. The experiments establish operational capability and structural completeness in the tested cases.

3.4. Recursive organization: relationships become Things

The architecture is recursive. A Relationship is not just a line between two things. The Relationship can itself be distinguished as a Thing. Once distinguished, it can become part of a larger System, participate in additional Relationships, and serve as the point of a Perspective. Consider two relationships:

$$A \xrightarrow{R_1} B$$
$$C \xrightarrow{R_2} D$$

Each relationship may itself be treated as a Thing:

$$R_1,\ R_2$$

A new relationship can then be constructed between them:

$$R_1 \xrightarrow{R_3} R_2$$

The higher-order structure can itself be organized further. The process need not stop after one level. Repeated use of the same organizational principles lets structures participate in increasingly complex structures.

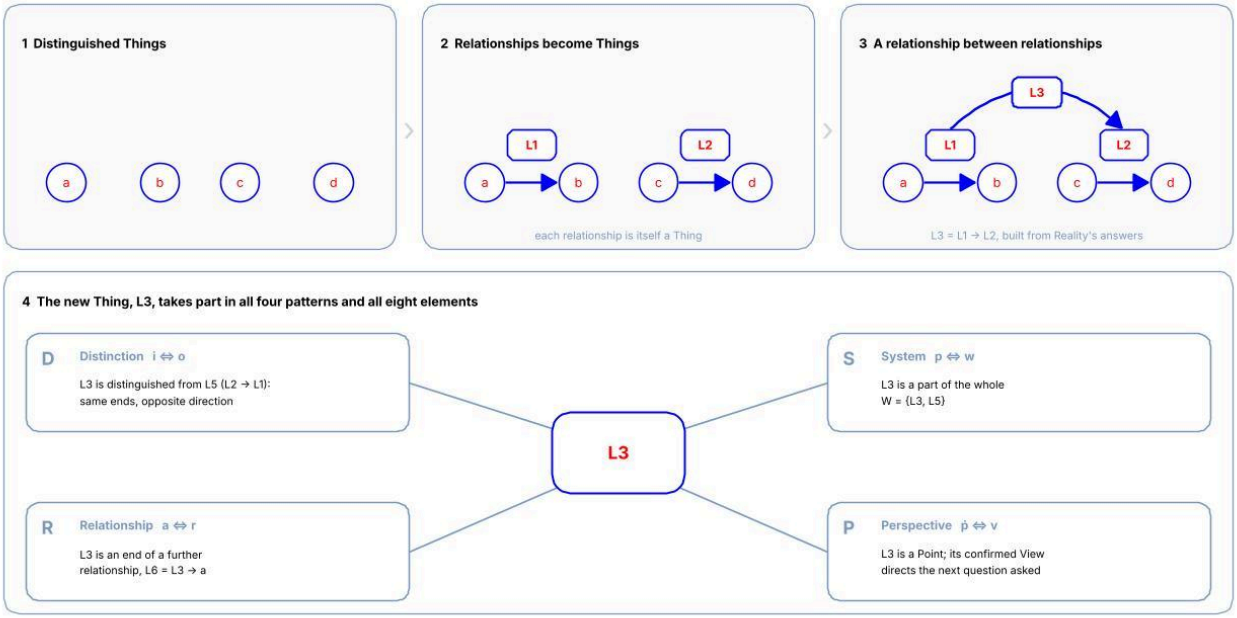


Figure 3. Recursive Organization: Relationships Become Things. Recursive organization through DSRP-484. Relationships constructed from previously distinguished Things can themselves become Things available for additional organization. The higher-order Thing is distinguished, incorporated into a whole, related to other Things, and used as the point of a perspective. The computational experiments demonstrated operational participation of all eight elements in the tested recursive construction.

This matters because much of complex thinking is organization about organization. We distinguish patterns of relationships, relationships among systems, competing perspectives, causal structures,

institutional arrangements, and abstract conceptual relationships. The same is true of collective and biological organization, where interactions among organized components can generate higher-order properties that cannot be understood simply by listing the components individually.

The recursion in DSRP-484 offers a candidate common architecture for these phenomena. The computational investigations associated with P13, P15, and P17 demonstrate different aspects of higher-order construction, emergence, and recursive participation. The point is not that a system can build complicated data structures. It is that organization already built can be organized further without changing the architecture.

4. The Mind as a Scientific Machine

Albert Einstein characterized science as a *refinement of everyday thinking* [14]. We take him at his word and offer an account of why it is true. The Mind is a scientific machine. People did not invent science apart from ordinary thinking and then bolt it on. Formal science disciplines what Minds already do when they engage Reality. A Mind constructs Models. Those Models generate expectations, questions, and possible actions. The Mind engages Reality, receives Information, and may use that Information to revise its Models. These are the essential activities of inquiry. The Love Reality Loop explains how these activities are organized together.

4.1. Scientific inquiry within the four-part LRL

A scientist at work gives the loop a familiar shape. The Mind holds a Model and uses it to ask questions and make predictions. Through Fitback, the scientist acts and tests. Reality answers through Feedback. The Mind then evaluates the answer and may revise the Model. Figure 4 marks six moments in that four-part loop: Model; question and predict; act and test; Reality exists; Reality responds; evaluate and revise.

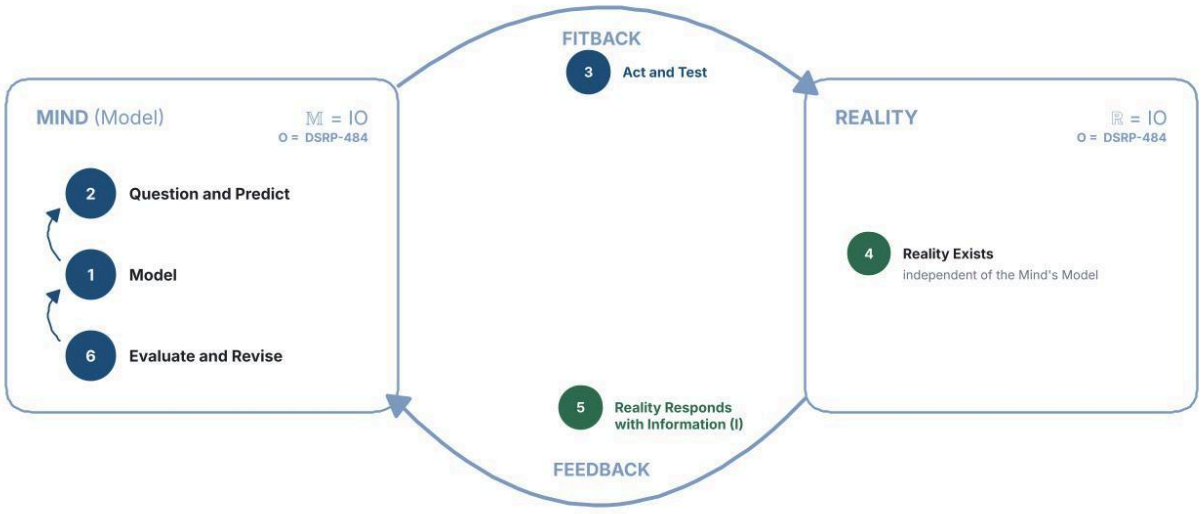


Figure 4. The Mind as a Scientific Machine: Scientific Inquiry Within the Love Reality Loop. Scientific inquiry operates through the four components of the Love Reality Loop. Within Mind, a Model generates

questions and predictions (1–2). Through fitback, the Mind acts and tests those predictions against Reality (3). Reality exists independently of the Mind's Model (4) and returns Information through feedback (5). The Mind evaluates that Information and revises its Model (6), beginning the next cycle. Formal scientific methodology refines and systematizes this fundamental process of inquiry.

The six activities are not a second process alongside the LRL. They describe how scientific inquiry operates within the LRL. Formal scientific methods—explicit hypotheses, controlled experiments, systematic observation, reproducibility, statistical inference, and peer criticism—refine this general process. They do not create it from nothing.

A child exploring an object, an animal investigating its surroundings, and a scientist testing a hypothesis work at very different levels of sophistication. Yet each models, engages, takes in information, and revises. A child does not need to articulate a formal hypothesis to discover that one object can be placed inside another. An animal does not need scientific terminology to discriminate conditions associated with danger or reward. A person does not need experimental training to test an expectation through action and respond to the resulting Information. These activities can be understood as inquiry. This does not make all inquiry equally reliable or every action a properly controlled scientific experiment. It is that formal science is built upon organizational capacities already necessary for Minds to investigate Reality.

4.2. Organization makes discovery possible

The Zero-I experiments are the sharpest test of this. They begin with a computational Mind that has been given none of the Things or spellings it must recover. The Mind must use the Organization it has to inquire into Reality. It asks questions, receives Information, distinguishes Things, and constructs the corresponding organizational structures. In the historical experimental series, this process recovered the declared Reality structures in 110 of 110 runs. Subsequent native demonstrations recovered both the organization and the spellings of the Things under initially withheld Information conditions.

Figure 5 summarizes the starting conditions, outcomes, and information-access control. It separates the cost of recovering structure from the cost of acquiring spellings. Section 10.5 discusses what that distinction means for the relationship between building an understanding and communicating it.

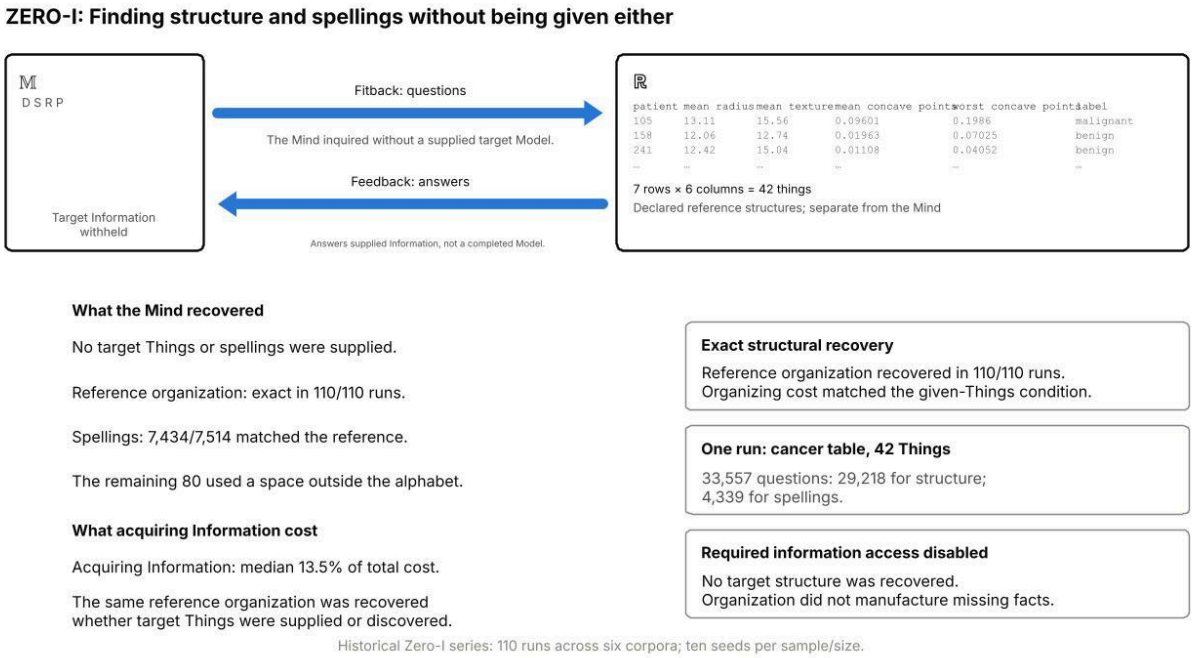


Figure 5. Zero-I: Discovery Without Supplied Target Information. The computational Mind began without the target Things or their spellings. Across 110 historical runs, inquiry recovered the declared reference organization exactly. Of 7,514 Things, 7,434 were spelled as in the reference; the remaining 80 contained a space outside the declared alphabet. Organizing cost matched the condition in which the Things were supplied, while acquiring Information added cost. Disabling the required information access prevented recovery. The findings concern the declared experimental conditions.

corpus	size	things (median)	handed the things: cost	count	structure	letters	handed nothing: cost	reaches ℝ's IO exactly	spelled as ℝ spells	structure cost identical
the panda sentence	1 line	8	1,448	9	1,435	748	2,197	10/10	80/80	10/10
Mary had a little lamb	2 lines	11	1,750	12	1,736	996	2,737	10/10	113/113	10/10
Mary had a little lamb	4 lines	23	7,072	24	7,044	2,096	9,151	10/10	230/230	10/10
Tao Te Ching	2 lines	22	5,626	23	5,601	2,092	7,728	10/10	216/216	10/10
Tao Te Ching	4 lines	39.5	17,962	40	17,917	3,728	21,684	10/10	395/395	10/10
cancer table	6 patients	42	29,129	43	29,072	4,469	33,551	10/10	380/420	10/10
cancer table	12 patients	78	88,798	79	88,699	7,897	96,701	10/10	740/780	10/10
movie reviews	2 reviews	67	50,348	68	50,273	6,875	57,410	10/10	670/670	10/10
movie reviews	4 reviews	131	179,232	132	179,091	14,565	193,608	10/10	1,310/1,310	10/10
digit images	1 images	132	379,149	133	378,931	4,131	383,278	10/10	1,320/1,320	10/10
digit images	2 images	198	798,942	199	798,641	4,541	803,484	10/10	1,980/1,980	10/10

Table 2. The Zero-I Test. Each cell is the median over 10 seeds, so the parts need not add to the total; the number of Things varies by seed on the lamb and Tao samples. The columns separate the measured costs of acquiring Things, recovering reference organization, and acquiring spellings. “Handed the Things: cost” includes the inquiry needed to place the supplied Things. The “structure” column reports organizational inquiry alone; that cost was identical in the supplied-Things and Zero-I conditions (Z4). Figure 5 illustrates one cancer-table run, seed 4.

	the question	**what came out**	**exact, or how**
Z1	handed nothing, $\mathbb{M}$ ends holding exactly what $\mathbb{R}$ holds	110/110 runs	exact
Z2	every thing whose symbols are in the alphabet is spelled as $\mathbb{R}$ spells it	7,434 of 7,514 things; the rest are in 20 runs, all on the cancer table, the four column names with a space in them, and the space was not in the alphabet	exact
Z3	the count cost is things + 1	110/110 runs	exact
Z4	the organizing part of the cost is the same whether the things were handed or found	110/110 runs	exact
Z5	the price of I (count and letters) as a share of the cost falls with size	cancer table 13.4% to 8.3%; movie reviews 12.1% to 7.6%; digit images 1.1% to 0.6%; Mary had a little lamb 36.2% to 23.1%; Tao Te Ching, ch. 1 27.8% to 17.2%; the panda sentence 34.4%; falls on every ladder: yes	direction stated in advance
Z6	letter questions per thing, under the 94-symbol alphabet	median 95, least 22, most 128	reported

Table 3. The Six Questions of the Zero-I Test, Answered. Each was stated in the pre-registration before the runs, with its direction where it had one.

These experiments separate having Information from being able to get it. Organization cannot make up facts about Reality. But it can let a Mind find out facts it does not yet have. That is what inquiry is.

4.3. Purpose makes inquiry selective

Purpose tells a Mind what matters for the task. A farmer checking whether a field needs water does not need to map every property of the farm. The question directs attention and gives a condition for being done. Within the LRL, Purpose can work through Perspective in the same way: it frames what the Mind investigates and when inquiry can stop.

In the purpose experiments, the researcher supplied the task and completion criteria. The Mind was tested on whether it could recover the structures needed for that task while leaving unrelated structures unexplored. These experiments did not test whether the Mind could choose its own purpose.

The table experiments used two task criteria. One required correctly placing each label cell in its row. The other also required recovering its connection to the column. Success was checked against the declared reference structures. These were tests of completing a specified task, not of recovering everything in Reality.

The historical implementation included researcher-supplied inquiry controls intended to keep runs practical. Some were tested enabled and disabled. These comparisons measured the effects of supplied controls; they did not demonstrate that the machine discovered those controls for itself.

One comparison showed why a control must be judged against the task: it saved work under a declared purpose but added about a tenth to the cost without one. Efficiency depended on what the inquiry was trying to accomplish. The comparisons establish the effects of the supplied controls under the tested conditions.

The purpose experiments show that appropriate framing can substantially reduce inquiry's organizational cost while preserving the structures needed for the task. In 110 historical paired comparisons, purpose-directed inquiry was less costly than the corresponding unrestricted condition. Later native investigations demonstrated separable effects of framing and stopping, with purpose reducing organizational cost by 36.7% in one comparison and 84.0% in the stopping comparison (Section 7.3). Efficiency here is not just doing less. It is aiming Organization at what the purpose needs. The Mind saves effort by pointing its organization, not by giving it up.

4.4. Scientific progress as Model correction

Finding new Information is not the same as changing your mind. In the self-correction experiment, the computational Mind started with one correct belief and one mistaken belief. It checked both against Reality, kept the correct one, withdrew the mistaken one, and recovered the reference structure. The result held in both presentation orders. Remove the check, and correction stopped. That is the difference between collecting more Information and using it to reorganize what you believe.

5. Models, Meaning, and the Causation of Behavior

We have described how Minds construct, test, and revise Models. But Models do more than represent Reality. They cause behavior. This is a core claim of O-Theory, not the familiar point that beliefs sometimes affect actions. A Mind does not perceive, predict, feel, decide, communicate, or act independently of its Models. Its behavior arises from organized Information. So how a Model is organized is part of the cause of what the Mind does.

5.1. Why a Model matters without fixing every action

The claim is that behavior requires an organized Model. It is not that a Model, by itself, forces the same action in every circumstance. A farmer may understand a dry field well enough to irrigate, wait for rain, or plant a different crop. The Model makes those options intelligible; the weather, resources, and purpose help determine which action follows. O-Theory calls the Model causally necessary without claiming it is sufficient to determine one action under every condition. Models help produce behavior. They do more than describe it afterward.

5.2. From Meaning to behavior

Consider two people encountering the same criticism. One understands the criticism as a threat to personal identity. The other understands it as useful information about performance. These are different Models. Each organizes the same incoming Information through different distinctions, relationships, systems, and perspectives. The first may generate withdrawal or defensiveness. The second may generate curiosity or constructive engagement. The difference is in Meaning and in behavior.

The example illustrates the proposition; it does not establish a controlled causal result. The significance of P18 is that the corresponding organizational intervention was performed experimentally.

5.3. Experimental demonstration: changing Organization changes behavior

P18 tested whether changing a computational Mind's Model organization could change the action it executed. The experiment held the incoming percept, available actions, behavioral procedure, and execution environment constant. Only the decisive organizational relationship within the Model changed. When the percept was organized as belonging to context K_1, the Mind opened Door A. When the identical percept was organized as belonging to context K_2, the Mind opened Door B. When the relevant organizational relationship was removed, neither door opened. Restoration and ordering controls showed that the effect depended on the represented relationship rather than the order in which the structures were encountered. The experiment satisfied all seven frozen predictions across six conditions. The door was not chosen by a branch written in advance for each case. The procedure that chose the door was the same in every condition; only the Model changed. A control procedure that ignored the Model was caught, because its action no longer followed the Model (condition F, Table 4).

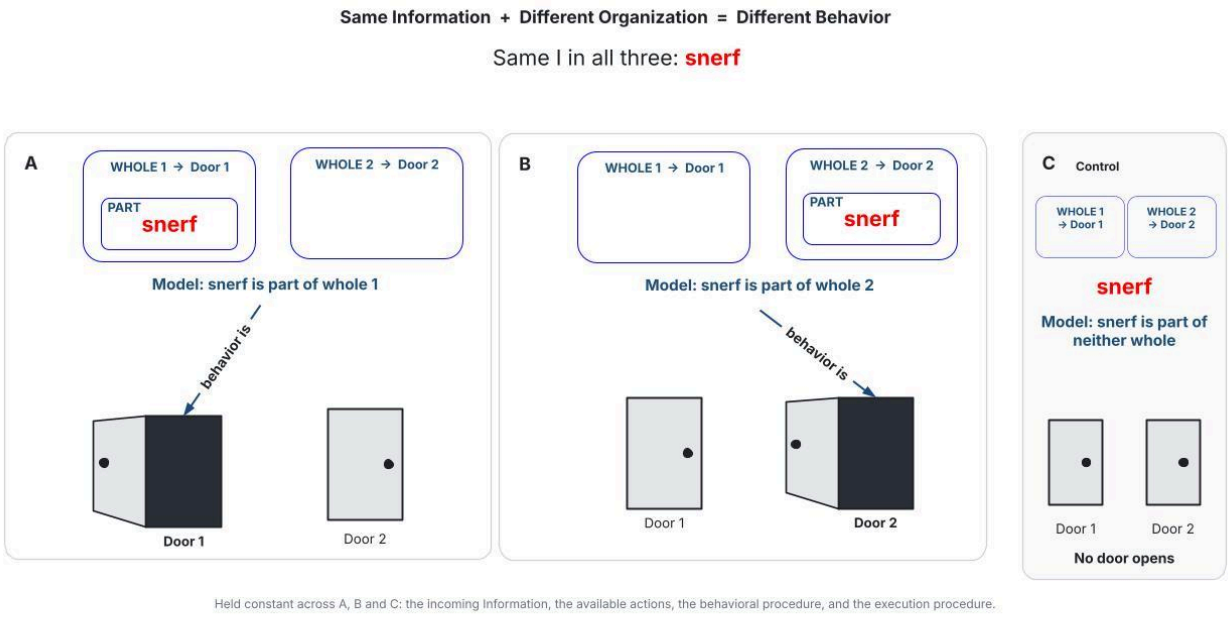


Figure 6. Models Cause Behavior: Experimental Demonstration of Organizational Causation. In a controlled computational experiment, the same incoming Information produced different executed actions depending on how the Mind's Model organized that Information. When the percept belonged to context K_1, the Mind opened Door A. When the same percept belonged to context K_2, the Mind opened Door B. Removing the decisive organizational relationship eliminated the action. Incoming Information, available actions, and the behavioral and execution procedures remained unchanged. The experiment demonstrates that changing Model organization can cause a change in behavior.

Condition	Model organization	Frozen prediction	Executed action
A	Percept is part of context K_1, which calls for Door A	Door A	Door A opened
B	Percept is part of context K_2, which calls for Door B	Door B	Door B opened
C	Decisive relationship removed	No action	No door opened
D	Relationship restored (Model A)	Door A, final state identical to A	Door A opened; final state identical
E	Model A, structures in reversed order	Door A	Door A opened
F	Control: a procedure that ignores the Model, run under Model B	Door A, detected as not tracking the Model	Door A opened; detected

Table 4. The P18 Model–Behavior Causation Experiment. Across conditions A–F, the percept, the two available actions, and the behavioral and execution procedures were held constant; only the Model's organization changed. Seven predictions were frozen before execution, and all seven held. Condition F is a can-fail control: a procedure that ignores the Model is detected because its action does not follow the Model. K_1, K_2: the two contexts in the Model. Source: the frozen P18 experimental record.

The point is simple. The Model did not just describe which door to open. Changing its Organization changed which door the computational Mind opened. That is direct experimental evidence that Model organization can cause behavior, at least in the tested system.

5.4. Psychological and sociological behavior

This matters for psychology. Models organize not only what people think, but what they recognize as possible, desirable, dangerous, rewarding, threatening, or meaningful.

The same incoming Information can therefore produce different emotional and behavioral responses within different Models. The same holds for groups. Organizations, institutions, communities, and societies maintain shared Models that organize collective expectations, norms, roles, incentives, and relationships. These Models help constitute what members recognize as legitimate, possible, necessary, or prohibited. An organization that models declining performance as employee disobedience may generate surveillance and punishment. An organization that models the same decline as a consequence of system design may generate process redesign and institutional learning. The Information can be substantially similar while the Organization differs. Collective behavior can differ as a result. This does not require treating a group as psychologically identical to an individual. It proposes that common organizational principles may operate across individual and collective levels while interacting with the distinct mechanisms present at each level. The significance of

$$\mathbb{M} = IO$$

is therefore about more than opinions. It reaches the organization underneath psychological and social behavior.

6. Experimental Approach

We built a computational Mind that asks questions and a separate computational Reality that answers them. The Mind constructs and revises Models; Reality holds the reference structures against which we check them. Across experiments, we changed what Information the Mind started with, what Organization it could use, and what purpose guided its inquiry. We then measured what it recovered, what it did, and what the work cost. The question was practical: do changes in Information and Organization produce the differences the theory predicts?

6.1. A computational Mind and Reality

The apparatus has two interacting systems connected through Fitback and Feedback. The computational Mind maintains organized Models and generates questions or actions. The computational Reality contains a defined reference organization against which the Mind's constructions can be compared. Through Fitback, the Mind engages Reality. Through Feedback, Reality supplies Information. Keeping the systems separate lets us test what the Mind can discover, reconstruct, evaluate, or do under specified organizational conditions.

The apparatus kept the computational Mind and Reality separate. The Mind could ask questions and receive answers, but could not directly inspect Reality's stored reference structures. This separation let the experiments distinguish what was supplied from what the Mind recovered through inquiry. Inquiry cost was recorded throughout each run.

Reality supplied responses to the Mind's inquiries rather than completed Models or explanations. The Mind had to construct its own organization from the Information available through that interaction. The experiments therefore tested recovery through inquiry, not the copying of a supplied target Model.

The same discipline matters in ordinary science: a question must be one the apparatus can answer, and an answer means only what the experimental conditions allow it to mean. Here, the reference structures and permitted observations were declared in advance. Those declarations define the scope of the reported recovery results; they are not a claim that the apparatus exposed every possible structure in the data.

Read this way, the machine supports the claim of Section 10.6 from underneath rather than on top. That section says a model is reality modeling reality, $\mathbb{M} = \mathbb{R}$ modeling $\mathbb{R}$. On the bench, the box called reality is an organized thing answering by its own organization, and the box called mind is an organized thing asking by the same organization, and the two meet only in answers. Why two boxes and two pipes? Because that is the least that knowing can be: something that asks, something that answers, and a channel each way with nothing else in it.

The computational apparatus deliberately tests a narrower claim than the full theory. A computational Reality with explicitly declared reference structures is not equivalent to Reality in its entirety. Its purpose is to make selected organizational claims observable in an experiment.

6.2. Did we build the answer into the test?

A fair question is whether we built the answer into the test. The experimental Reality had researcher-declared reference structures and an interface that exposed only permitted responses to inquiry. The Mind was not given those completed reference structures. Recovering them therefore tested the Mind's capability under the declared conditions, while the choice of reference structures limited what the experiment could establish.

$\mathbb{M}$ receives marks, one slot at a time, and builds what it holds from them. The design cannot test recovery of a structure outside its declared reference conditions. Exact correspondence therefore means exact agreement within this apparatus, not a complete account of Reality in general. A structure that the apparatus makes available but the Mind cannot recover would challenge the tested sufficiency claim. The six different corpora widened the comparison without exhausting that possibility. Section 7.7 adds tests using ontologies developed independently of this research.

Two further features of the design bear on the objection. The first is where the data came from. The six samples were not written for this research: a nursery rhyme, a sentence from a book about punctuation, a chapter of a nineteenth-century translation, a public table of tumor measurements, a public collection of

movie reviews, and a public set of handwritten digits (Section 6.4 gives their sources). What was declared here is only which parts of each sample count as a structure, and that declaration stays in $\mathbb{R}$. The second is what $\mathbb{M}$ starts with. In the Zero-I series, $\mathbb{M}$ began with organization alone, with no Things, names, or spellings, and still built $\mathbb{R}$'s model and then learned $\mathbb{R}$'s spellings for it (P5, P12, P14). Whatever $\mathbb{M}$ ends up holding in those runs, it was not handed.

6.3. Independent variables and experimental controls

The main experimental manipulations are Information, Organization, Purpose, and relationships among constructed Things.

The experiments examine conditions such as:

- Holding Information constant while changing Organization.
- Withholding initial Information while preserving organizational inquiry.
- Varying organizational capabilities while holding the reference Reality constant.
- Introducing or removing a declared Purpose.
- Changing contextual relationships while preserving defining Information.
- Testing whether newly constructed structures can participate in further organization.
- Presenting correct and incorrect prior Models for evaluation.
- Changing a Model's organization while preserving the percept and behavioral procedure.

These interventions let each prediction be tested on its own, rather than lumping all capabilities together. For example, the ability to recover Reality's organization does not by itself establish an ability to correct a mistaken prior. Constructing a higher-order relationship does not by itself show that changing a Model can change an executed action. The later focused experiments therefore examine additional consequences of the same proposed architecture.

6.4. Historical and native computational experiments

The research program includes two evidence families. The historical experiments investigated combinations of organizational patterns across six heterogeneous information corpora: the panda sentence [16], Mary Had a Little Lamb [17], chapter 1 of the Tao Te Ching in the Project Gutenberg text of Legge's translation [18], a cancer table [19], movie reviews from the Large Movie Review Dataset [20], and the 1,797 digit images in the test set [21], as distributed with scikit-learn. These experiments measured the organization recovered under different conditions and the organizational cost of inquiry. The principal historical series comprised 200 runs. A separate Zero-I series comprised 110 runs in which the Mind began without the relevant Things and spellings.

Subsequent native computational experiments investigated more focused predictions, including information recovery, purpose-dependent efficiency, contextual identity, interaction between modeling systems, word construction, empirical self-correction, recursive structural closure, and Model-dependent behavior. These experiments examined more capabilities without requiring the same design for every prediction. Historical and native results are identified separately throughout the findings.

The historical experiments were first run for an earlier draft of this work, using a general-purpose research implementation. The native experiments were rebuilt afterward in a dedicated organizing system in which the Mind's questions, choices, and stopping are held in the Mind's own organized structure rather than in surrounding program code. This makes it possible to check that what the Mind recovers was not supplied by the program running it. The historical results are reported as obtained and kept separate from the native results throughout.

6.5. Measures

Each scientific prediction requires its own measurements. Structural recovery measures whether the Mind accurately reconstructs the reference organization. Recovery is exact when the recovered structures match Reality's declared structures one for one, not merely in number.

Correspondence concerns the agreement between the Mind's Model and the declared organization of Reality.

Organizational cost concerns the number of organizational inquiries or operations required to complete the specified task. It is measured in O-slots, the organizational questions a Mind opens.

Purpose-dependent efficiency concerns the relationship between successful task completion and the organizational cost of inquiry.

Emergence concerns the construction of higher-order organization not previously held by the participating systems.

Contextual identity concerns whether changes in relevant organizational context change the conclusions licensed about a Thing.

Self-correction concerns whether a Mind retains confirmed Models and revises contradicted Models following contact with Reality.

Behavioral causation concerns whether an intervention upon Model organization changes the action executed under otherwise controlled experimental conditions.

The measures are kept separate on purpose. The experiments do not boil cognition down to one score. They test separate consequences of the proposed organizational architecture.

6.6. Evidence and interpretation

We report results for eighteen scientific predictions. VALIDATED means that the prediction was supported under the conditions tested. We discuss the broader implications separately.

Evidence family	System and sample	Manipulations and controls	Measures	Predictions

Historical principal series	Computational Mind and Reality; six corpora (the panda sentence, Mary Had a Little Lamb, Tao Te Ching ch. 1, a cancer table, movie reviews, digit images) at several sizes with ten seeds; 200 runs	Every combination of the four patterns; each of the eight elements switched off in turn; nesting cap 1 against 3; Purpose instantiated or not; comparisons paired within seed	Structures recovered against Reality's declared IO; O-slots; correspondence ratio; one-sided sign and exact Wilcoxon tests	P1–P4, P6–P11, P13
Historical Zero-I series	The same Mind and Reality; the Mind begins with organization and no Things, names, or spellings; 110 runs	Things withheld against Things given; Reality's count channel on or off	Exact recovery; spellings matched; organizing and Information cost	P5, P12, P14
Native focused experiments	A computational Mind and Reality on small declared Realities, including the panda sentence, the two- and four-line lamb, a cancer table, a character sequence, and a two-door task	Cut and restoration of a single structure; scrambled or reversed order; can-fail controls; predictions frozen before execution	Exact structures; O-slots and questions; licensed inferences; executed action	P1–P18

Table 5. Experimental Systems, Controls, and Measures. The historical and native evidence families are reported separately throughout. Both use a computational Mind that asks and a computational Reality that answers; neither box sees the other's contents except through questions and answers. O-slots: the organizational questions a Mind opens, the cost measure used throughout. Exact: the recovered structures match Reality's declared structures one for one, not merely in number. Sources: the historical and frozen native experimental records.

7. Results: Six Major Scientific Findings

Six major findings bring the eighteen predictions together. The first five concern what organized Models enable Minds to construct, discover, evaluate, and do. The sixth concerns the architecture of Organization itself.

Finding	Name	What it establishes	Supporting predictions
1	Mind is not Information: $\mathbb{M} \neq I$; $\mathbb{M} = IO$	Information alone does not account for the structures a Mind can construct; the return on added Information depends on Organization, and missing organization hides structure that Reality holds.	P1, P2, P6, P8
2	Reality is IO and correspondence is measurable	Mind and Reality share a structural description, so correspondence can be measured at the level of structure; a Thing's meaning depends on its	P3, P11, P14

		context.	
3	The Mind is a scientific machine	A Mind can acquire Information from Reality, direct inquiry by Purpose, and stop when the purpose is satisfied.	P5, P7, P9, P10, P12
4	Organization generates higher-order organization	New distinctions, relationships, and wholes become Things that take part in further organization.	P13, P15, P17
5	Models generate behavior and enable adaptive correction	A Mind can revise its Model against Reality, and changing Model organization changes executed behavior.	P16, P18
6	Organization is DSRP-484	One architecture constructs the capabilities in Findings 1–5, including recursive participation of all eight elements.	P4, with evidence across the remaining predictions

Table 6. The Six Major Scientific Findings and Their Supporting Predictions. The eighteen predictions are grouped into six findings, each reported in Section 7. A prediction is listed under the finding it most directly supports; P4 draws on evidence from all the others. Statistics for each prediction are in Table 8.

7.1. Finding 1 — Mind is not Information: $\mathbb{M} \neq I$; $\mathbb{M} = IO$

Predictions P1, P2, P6, and P8

First, Information alone does not account for the structures a Mind can construct. When Information was held constant and Organization varied, the computational Mind's recovered structures changed.

In the historical experiments, the condition with Information and Distinctions alone recovered none of Reality's declared organization, whereas the intact organizational condition recovered it completely in 200 of 200 runs.

Subsequent native experiments confirmed organizational dependence through controlled comparisons, including a three-arm comparison and a 160-cell pattern grid. The native comparison also separated the two components of P2. Information with intact Organization recovered 13 of 13 structures; Information with Distinctions alone recovered 0 of 13; intact Organization without obtainable Information recovered 0 of 13. In the historical experiments, the three remaining patterns without Distinctions recovered nothing in 200 of 200 runs.

The findings also show that the return from additional Information depends on the Organization available. In the native P6 experiment, the same eleven additional Things produced eleven correct structures under $D + S + R + P$, but only two under $D + S$. The corresponding returns were 1.00 and approximately 0.18

recovered structures per additional Thing. The Information was not sufficient to determine the result independently of Organization.

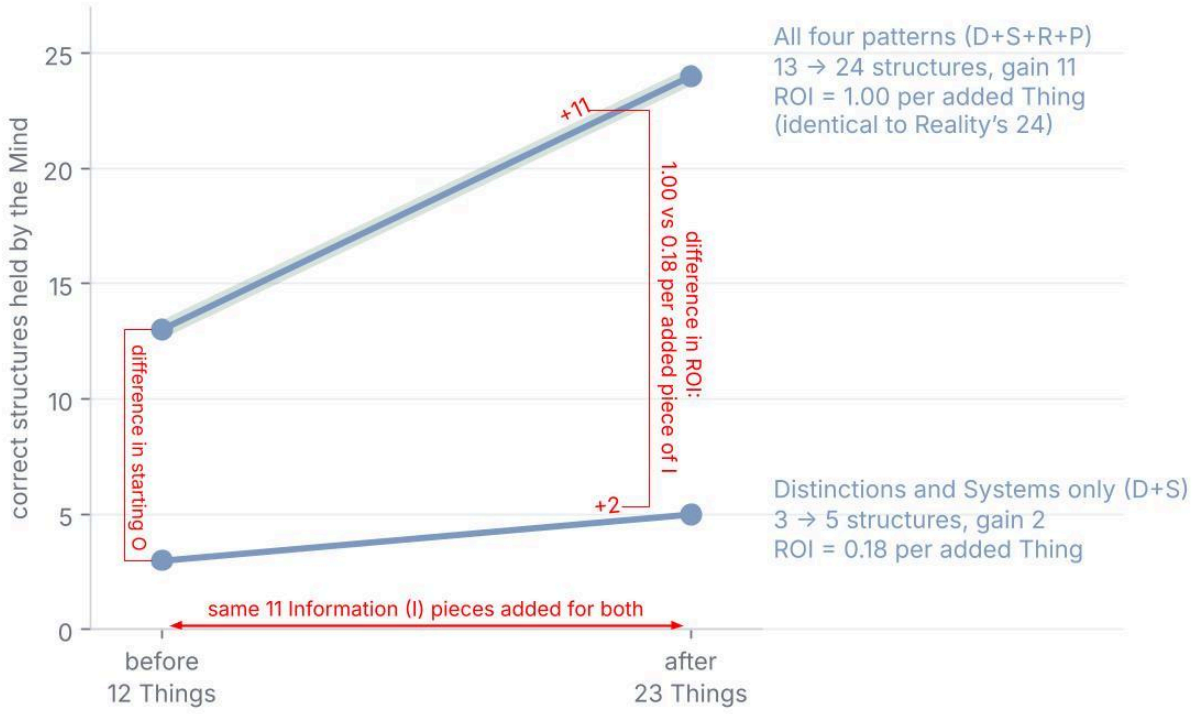


Figure 7. The Return on Added Information Depends on Organization. The same 11 added Things (two more lines of the nursery rhyme) were given to two Minds. With all four patterns ($D + S + R + P$) the Mind gained 11 correct structures, going from 13 to 24, which is exactly what Reality holds. With Distinctions and Systems alone ($D + S$) it gained 2, going from 3 to 5. Neither Mind built an incorrect structure. The return on Information, ROI(I), is the number of correct structures gained per added Thing: 1.00 with all four patterns and 0.18 with $D + S$. Native P6 experiment.

P8 establishes a complementary limitation. In the historical experiments, restricting organizational nesting reduced inquiry costs in all 200 tested runs, by 0.7% to 16.7%, with a median saving of 2.5%. But the lower cost came with a loss of higher-order structures present in the reference Reality: a nesting cap of 1 recovered none of Reality's second-level wholes, whereas a cap of 3 recovered all of them. Part of the apparent efficiency came from failing to recover organization that existed.

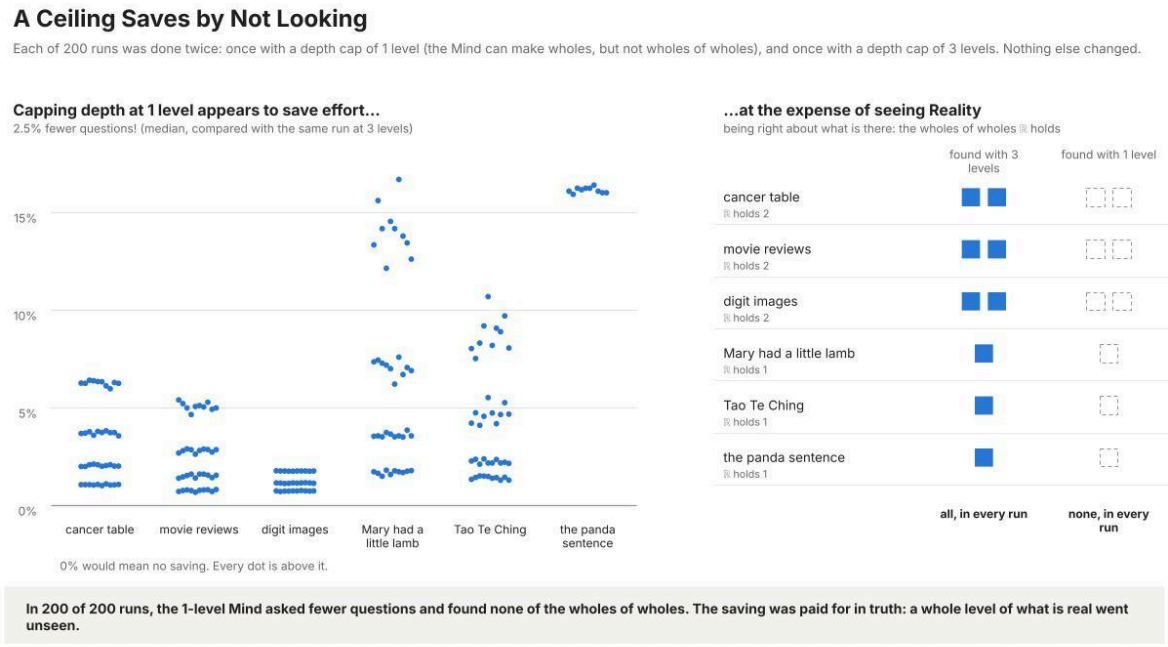


Figure 8. A Ceiling Saves by Not Looking. Every line is one run paired with itself: the same things, seed and patterns ($D + S + R$), with the nesting cap at one level on the left end of the line and at three levels on the right. Panel A is the cost, with each run's cap-3 cost set to 100 percent so that runs of different sizes can be read together; the left end of every line is lower, by 0.7 to 16.7 percent. Panel B is what the cap cost: the wholes-of-wholes $\mathbb{M}$ held. Each stroke runs from an open circle (cap 1) to a filled one (cap 3). Every open end sits at 0 and every filled end sits at what $\mathbb{R}$ holds: two on each table, one on each text.

Three lessons follow. We can vary Information and Organization separately. The Organization available changes what a Mind can gain from more Information. And a cheaper run may simply have missed more of the world. Unseen organization is not absent organization. We need to measure what the Mind recovers as well as what the work costs.

7.2. Finding 2 — Reality is $\imath o$ and correspondence is measurable

The second finding concerns the relationship between Models and Reality (P3, P11, and P14). If both can be expressed through a common organizational architecture, then correspondence can be evaluated at the level of structure. In the historical experiments, the intact computational Mind recovered the declared organization of the experimental Reality across 200 runs involving six different corpora. Subsequent native experiments showed exact recovery of twelve of twelve structures in a panda case, thirteen of thirteen in a lamb case, and twenty-four of twenty-four in a four-line lamb case.

P11 investigated correspondence more directly. In the historical experiments, the correspondence ratio never fell as patterns were added and reached 1.0 in 200 of 200 runs. In the native experiments, correspondence was measured at 336 points along the run for the panda sentence, alongside exact final structural matches in the pattern-grid experiments.

Together, these results show that how well a Model matches a defined Reality can be tracked by experiment.

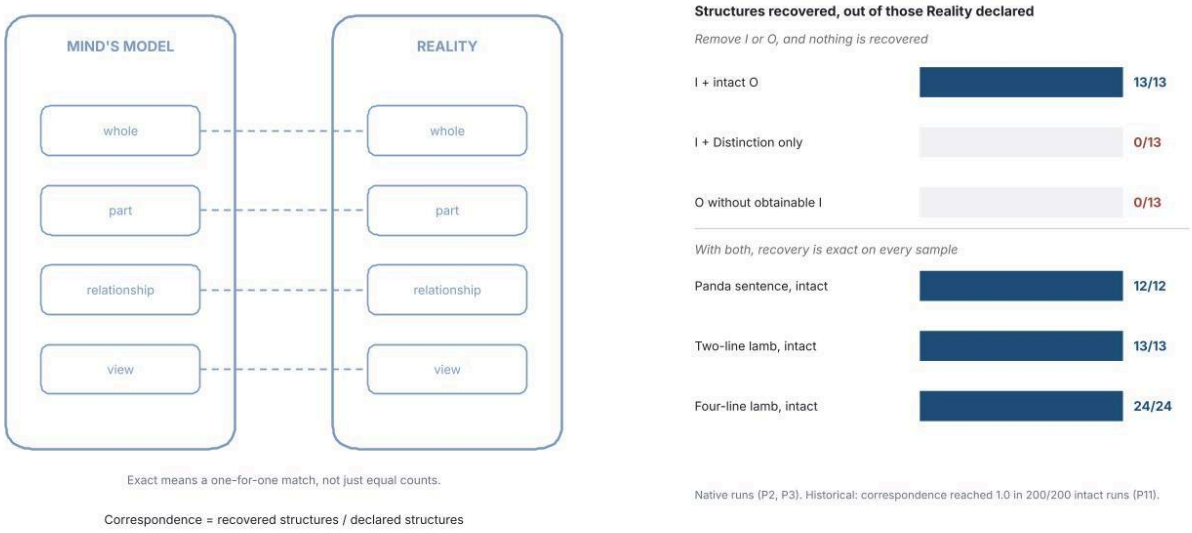


Figure 9. Correspondence Between Mind and Reality. The experimental comparisons measure how much of Reality's declared organization the Mind reconstructs under different organizational conditions. Exact recovery indicates matching structures, not merely equal structure counts.

P14 extends the account through contextual identity. A Thing's identity and inferential significance depend not simply on defining Information but on its organizational context. In the native experiment, different contextual relationships supported different correct inferences, represented by the results 17.99 and 20.57. Removing the relevant row-membership relationship eliminated both inferences; restoring it restored them. A name-swap control demonstrated that the result followed the represented structure rather than the labels assigned to its components.

The historical Zero-I experiments show the same principle. During the naming phase, the Mind recovered all of Reality's IO in 110 of 110 runs before any of the 7,514 Things had been spelled. This result ties structural correspondence to Meaning. A Thing is not fully understood through an isolated definition. Its Meaning also depends upon the organization in which it participates. The combined finding is that Models can be evaluated through their structural correspondence with Reality and that contextual organization is essential to what those Models mean.

7.3. Finding 3 — The Mind is a scientific machine

Predictions P5, P7, P9, P10, and P12

The third finding is about organized inquiry. The experiments demonstrate that a computational Mind can acquire Information from Reality, direct inquiry according to Purpose, and terminate investigation when the relevant organizational conditions are satisfied.

P12 is the strongest demonstration. The historical Zero-I experiments began without the relevant Things and spellings. Through organized questioning, the Mind recovered the reference organization in 110 of 110 runs. It then spelled 7,434 of the 7,514 Things as Reality spells them; the remaining 80 contained a space outside the declared alphabet. With Reality's count channel turned off, the Mind recovered nothing. Subsequent native experiments demonstrated recovery of twelve Things, thirteen structures, and twelve spellings in one case, and twenty-three of twenty-three spellings and twenty-four of twenty-four structures in a larger case. These findings demonstrate that Organization can make previously unavailable Information obtainable.

P5 established that this discovery has a cost. Withholding initial Information required the Mind to obtain it through inquiry, while preserving its capacity to reconstruct the relevant structures. In the historical experiments, the organizing cost was identical to the condition in which the Things were given, in 110 of 110 runs; acquiring the Information made up 13.5% of the cost at the median. In the native two-line lamb experiment, 13 count questions and 1,114 spelling questions acquired the Information, and the organizing cost was 1,995 O-slots whether the Things were found or given.

Purpose then changes the economics of that inquiry. In the historical experiments, purpose-directed modeling reduced organizational cost in 110 of 110 paired comparisons. Median efficiency ratios ranged from 1.56 to 7.34 across samples and sizes; all 1,270 task label cells were correct, and $p = .001$ at every size. The machine is deterministic; what varies across the 10 seeds is which things are sampled and the order in which the Mind meets them, so the tests compare runs on different inputs, not repeats of the same run.

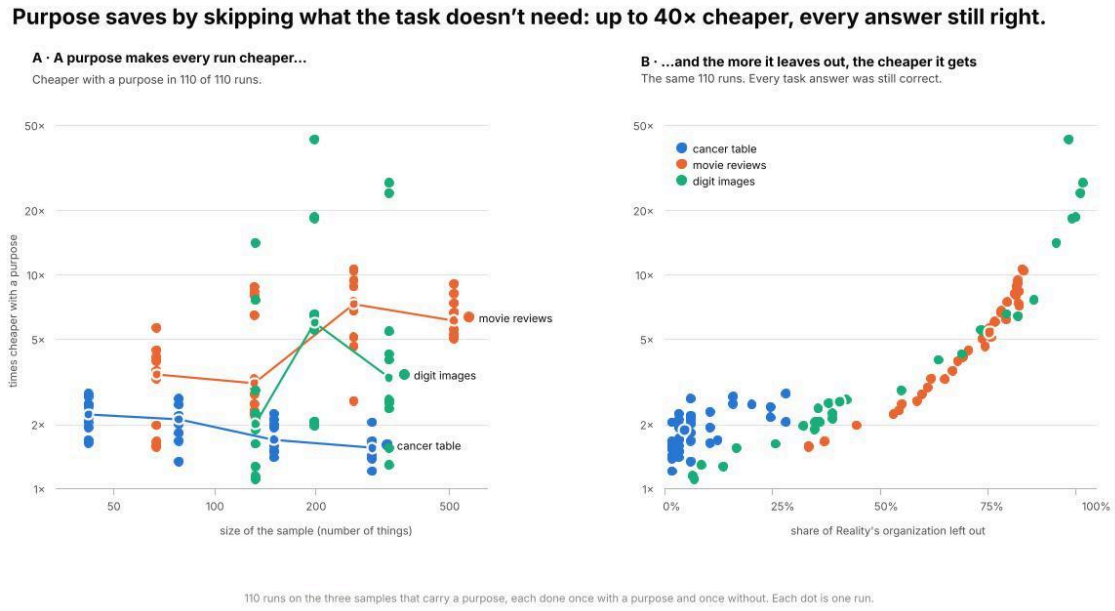


Figure 10. What Purpose Saves—and What It Leaves Unexplored. Both panels show the same 110 paired runs across the three samples with task-relevant labels: cancer data, movie reviews, and digit images. Each dot represents one paired comparison. **Panel A** plots sample size against the cost without

a declared purpose divided by the cost with one. A value of 2 means inquiry cost twice as much without a purpose. Every dot is above 1: purpose reduced cost in every comparison. The savings decrease as the cancer table grows, increase for movie reviews, and vary widely for digit images, where the order in which the Mind encounters pixels can draw its inquiry away from the task. **Panel B** plots the same cost ratio against the share of Reality's declared organization left unrecovered by purpose-directed inquiry. The two rise together: the more organization the purpose allows the Mind to leave unexplored, the more work it saves. Yet every label cell was correctly placed in all 110 runs. The Mind saved work by leaving some questions unasked while still completing the task.

The later native experiments tested these effects separately. Under P7, adding Relationships to a row-purpose condition increased organizational cost from 237 to 377 O-slots while preserving the same three correct task structures. Under a cell-purpose condition, however, the additional organizational capability was necessary for more complete recovery: five of five structures with $D + S + R + P$ versus three of five with $D + S + P$. The historical experiments showed the same dependence. For the row purpose, $D + S + P$ was cheaper in 110 of 110 paired runs (sign and Wilcoxon tests, $p = .001$ at every size). For the cell-line purpose, $D + S + P$ completed the task in 0 of 110 runs and $D + S + R + P$ in 110 of 110. The value of an organizational capability therefore depended on Purpose.

Under P9, the intact purpose condition required 88 questions and 377 O-slots. Disabling task-based stopping preserved framing but prevented the run from stopping on task completion. Disabling the purpose condition removed both framing and stopping, increasing inquiry to 538 questions and 2,355 O-slots—the same as the no-purpose comparison. Restoration returned the corresponding capabilities. In the historical experiments, no run stopped without a purpose (110 of 110), every run stopped with one (110 of 110), and steering was cheaper in 97 of 100 runs.

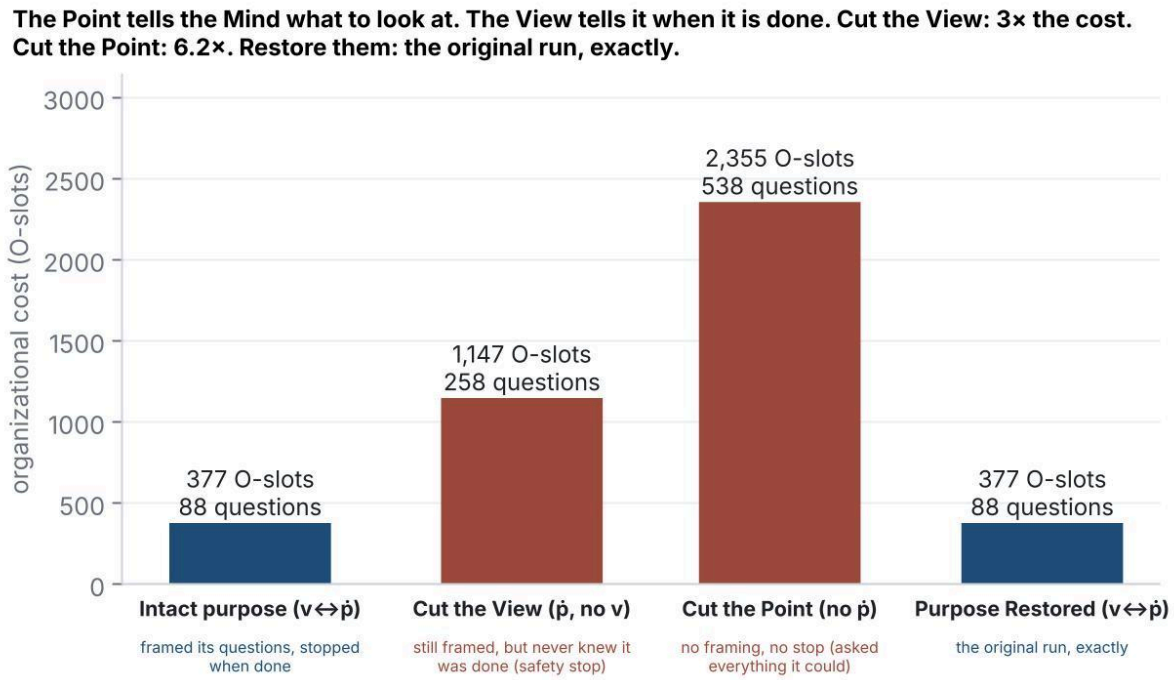


Figure 11. Purpose, Framing, and Stopping. The four conditions compare intact purpose, task-based stopping disabled, purpose disabled, and restoration. Framing and stopping made separable contributions to cost. The stopping-disabled run ended at a resource safety limit; it did not reach task-based termination. Restoration reproduced the original run exactly. Every condition retaining framing recovered all three task structures without error. Native P9 experiment.

P10 directly measured efficiency. The same three task-relevant structures were obtained at costs of 377 versus 596 O-slots, a 36.7% reduction. In the stopping comparison, the cost was 377 versus 2,355 O-slots, an 84.0% reduction.

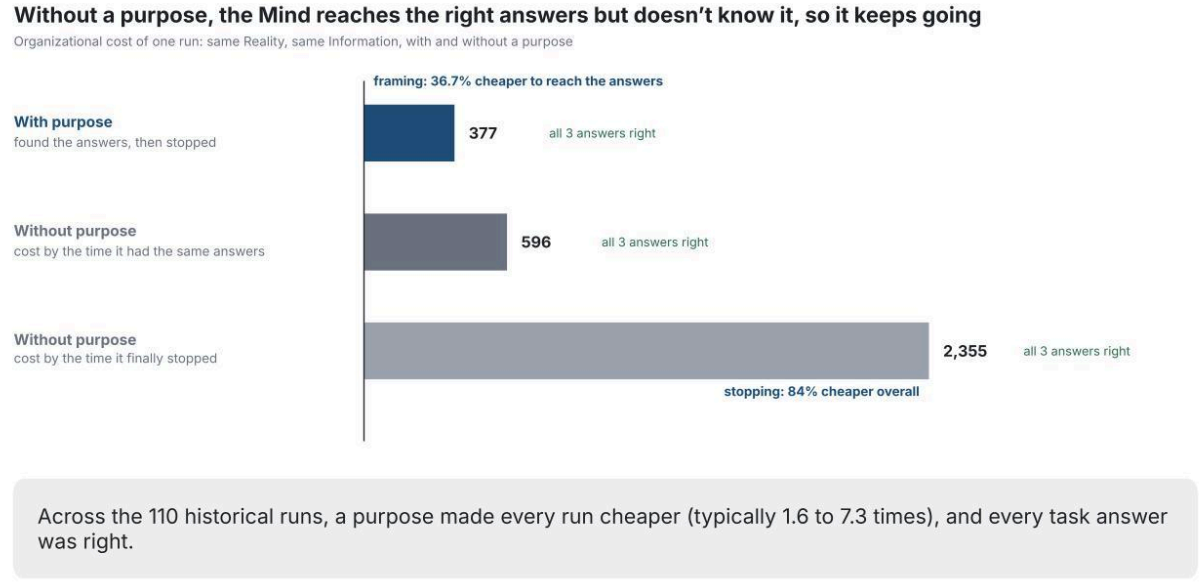


Figure 12. The Cost and Benefit of Purpose. Purpose changes the economics of inquiry. Across 110 paired historical experiments, purpose-directed modeling required fewer organizational questions while retaining the task-relevant results. The efficiency gain depended on how much of Reality's organization the purpose allowed the Mind to leave unexplored.

Taken together, the results show a Mind doing four useful things: finding Information it was not given, using a Purpose to decide what matters, avoiding work outside that Purpose, and stopping when the task's completion conditions are met.

Each is a piece of the LRL shown by experiment. Together they say that scientific inquiry is an organized exchange between a Model and the Reality it investigates.

7.4. Finding 4 — Organization generates higher-order organization

Predictions P13, P15, and P17

The fourth finding is about emergence and recursive construction. Organization need not stop at the level of its initial Things. New distinctions, relationships, and wholes can become Things that participate in further organization.

P15 demonstrated one form of this process. Beginning with thirty-three undivided character positions, the computational Mind constructed six word-level Things. When the relevant distinguishing capability or boundary structure was removed, the words were not constructed. Scrambling the order of the represented structures did not change the six-word result.

P17 investigated higher-order structural participation directly. The native experiments satisfied all six frozen conditions. The Mind recovered the higher-order relationship in the correct direction in two Realities that differed only in that direction. It built the same organization under shuffled order. Cutting the relevant structure removed only the higher-order relationship, and restoration was identical. The original Mind, without reentry, recovered first-order relationships only. Related experiments demonstrated that a newly constructed higher-order Thing could participate through all eight elements of DSRP-484.
P13 investigated emergence through interaction between organized systems. In the native experiment, neither participating Mind, nor the union of their initial holdings, contained four row-to-column relationships. After exchanging nine answers, one Mind constructed all four relationships, each matching the reference Reality. The controls held. With Relationships disabled, or with answering disabled, the cross-view relationships were not constructed; changing storage order did not change the result.
The historical experiments also showed positive increases in constructed organization across 200 runs, with a median increase of 94.5 structures. The important distinction is between increasing the quantity of organization already possessed and constructing organization that was not previously present in the interacting systems. P13 provides evidence of the latter under its tested conditions.

The result is organization built from organization. A relationship can become a Thing, that Thing can enter another relationship, and the process can continue. The architecture stays the same as the structures become more complex.

7.5. Finding 5 — Models generate behavior and enable adaptive correction

Predictions P16 and P18

The fifth finding goes beyond representation and discovery, to how Models are corrected and how their Organization causes behavior.

P16 examined empirical correction. The computational Mind began with one true prior and one false prior. After engaging with Reality, it retained the true prior, withdrew the false one, and reconstructed the reference organization exactly. The outcome held in both tested orders. When the verification step was removed, the correction did not occur. The result shows that the Mind can revise an existing Model in response to Reality, rather than simply add new Information.

P18 examined the behavioral consequences of Model organization. Holding the incoming percept, available actions, behavioral procedure, and execution environment constant, the experiment changed one decisive organizational relationship. The Mind opened Door A under one organization and Door B under the other. Removing the decisive relationship eliminated the action. Restoration, ordering, and can-fail controls supported the causal interpretation. Restoring the relationship returned Door A with an identical final state, and a control procedure that ignored the Model opened Door A under Model B and was detected. All seven frozen experimental predictions were satisfied across six conditions.

These results show two linked capabilities. The Mind can change its Model in response to Reality. And changing its Model's Organization can change what it does. Together they trace a route, shown by experiment, from organized Meaning to behavior and from contact with Reality to correction.

The larger point follows. If behavior arises from Models, then changes in Model organization can change what a Mind does. And if Models can be revised through interaction with Reality, then the LRL provides a general organizational account of how behavior can become adaptive.

7.6. Finding 6 — Organization is DSRP-484

Prediction P4, with evidence across the remaining predictions

The sixth finding concerns the architecture underlying the first five. The computational results demonstrate structural recovery, information discovery, contextual interpretation, purpose-directed inquiry, higher-order construction, empirical correction, and behavior through the proposed DSRP-484 organization. The historical experiments showed complete recovery of declared reference structures under intact organization across 200 runs. The native experiments extended the scope of the demonstrations. Most important, the recursive structural experiments demonstrated operational participation through all eight elements of DSRP-484.

The point is not that four patterns can represent four kinds of structure. It is that the same organizational architecture can be used recursively, including when constructed Relationships become Things participating in additional Distinctions, Systems, Relationships, and Perspectives.

The a priori argument for P4 addresses the necessity of these mutually entailing conditions under the theory's premises. The computational experiments address their operational sufficiency across the tested constructions. Together, the formal argument and experiments validate P4 within their respective scopes.

This finding ties the others together. Meaning, inquiry, contextual identity, emergence, correction, and behavior did not each need a mechanism of their own. One architecture produced them all. That is the central claim of O-Theory.

7.7. Independent support for $O = DSRP\text{-}484$ from formal ontologies

A formal ontology records what kinds of Things exist in a domain and how they relate. These ontologies give us structures built by other researchers for other purposes. The computational system represented and used them through the same eight-element DSRP-484 foundation, without adding a basic organizational element.

An independent engineer reran the full replication suite, and every test passed. All 14 registered ontology tests now pass, with none failed or outstanding; earlier failed attempts remain on the record. The engineer’s output is not published because it contains proprietary implementation details.

These results provide substantial additional evidence for O-Theory's claim that DSRP-484 is sufficient for the organizational operations tested.

Result	Evidence
Represented fourteen complete, pinned ontology artifacts	BFO 2020, eleven CCO 2.2 modules, DOLCE-Lite and PROV-O: 5,335 logical statements, with annotations preserved separately
Reasoned across all twelve BFO/CCO ontologies together	For 1,437 classes, the system's kinds-above answers matched the reference OWL reasoner; planted contradictions were detected
Worked across separately developed ontologies	A DOLCE-Lite/BFO pilot passed, followed by an unchanged procedure operating on previously unseen PROV-O and BFO/CCO descriptions
Preserved assertions and their sources	Multiple facts about an individual remained separately retrievable, including conflicting or uncertain descriptions
Found and explained a cross-ontology conflict itself	The system connected record matches, source typings, a supplied alignment claim and disjointness, then reported that the premises could not all hold together
Proposed class correspondences from evidence	The unseen transfer produced 13 record pairs and 58 class-candidate pairs, preserving evidence and unresolved results rather than declaring unsupported equivalences

Survived independent execution	An independent engineer passed every test in replication suite v2

Table 7. Ontology Evidence for the Sufficiency of DSRP-484. Results from representing and operating across independently developed formal ontologies. These results are reported separately from the eighteen-prediction tally.

The tests included shuffled storage, scrambled names, deliberate errors, removal of supporting structures and fresh-process checks. Removing particular evidence changed exactly the answers predicted. Not all fourteen ontologies were loaded together. The integrated BFO/CCO test held twelve; later PROV-O/BFO/CCO tests contained thirteen. DOLCE-Lite had separate holding and pilot tests.

The computational experiments above tested organization through computational Minds and independently specified Realities. The ontology work adds evidence from organizational systems developed by other researchers for unrelated purposes. The system did more than preserve their text. Its programs used their represented structures to reason, compare descriptions, answer cross-source questions and identify incompatibilities. This strengthens the sufficiency argument: the same organizational foundation supports work across substantially different knowledge systems beyond the examples constructed for the original experiments. It also shows that different descriptions can remain different while still being used together. Interoperability did not require silently merging their meanings or deleting disagreements.

Sufficiency receives direct support: DSRP-based structures and procedures performed the tested operations without another primitive. The work also bears on necessity. Ontologies built by others, for their own purposes, could be held and used in the same eight elements, and removing supporting structures changed exactly the answers that depended on them. No finite test proves universal necessity, but this result converges with the cut experiments and the wider evidence discussed in Section 11.2.

An external translator performed the initial conversion from OWL into the system's representation. Native OWL reading has not been demonstrated. Identifier-scheme correspondences were supplied, and the discovered class relations remain candidates rather than universally established mappings. Full-size class-discovery persistence used a separately tested capacity extension to the execution environment. That changed resource policy, not the DSRP-484 foundation. Holding every source statement is also distinct from proving every possible OWL inference.

Independently developed formal ontologies can be represented and used through the system's DSRP-484 foundation. This is substantial, independently reproduced evidence for sufficiency within the tested work, and it adds to the converging evidence for necessity (Section 11.2).

8. Eighteen Predictions: Tests and Results

Prediction and test	Results and statistics	Scientific implications

P1 — $\mathbb{M} \neq I$: A mental model is not identical to its information. **Null and alternative:** $H_0 : \mathbb{M} = I$ and $H_a : \mathbb{M} \neq I$ **Test and decision rule:** Hold I constant; vary O at pattern and element grains. Reject H_0 if $\mathbb{M}$ changes while I does not. **Status:** VALIDATED	***Historical***: with the distinction cut alone, the Mind recovered 0 of Reality's IO in 200/200 runs; with intact organization, it recovered all declared IO in 200/200. ***Native***: with Information held fixed, changing the organization changed what the Mind recovered, in a three-arm comparison and a 160-cell pattern grid.	Information alone does not constitute Meaning. Explains why providing more facts does not necessarily produce understanding, learning, or behavioral change.
P2 — $\mathbb{M} = IO$: A mental model is information organized. **Null and alternative:** H_0: I alone is sufficient for $\mathbb{M}$. H_a: $\mathbb{M}$ requires I organized by O. **Test and decision rule:** Hold I constant; ablate DSRP-484. Reject H_0 if I remains but nonfunctional O prevents recovery of $\mathbb{R}$'s IO, while intact O recovers it. **Status:** VALIDATED	***Native***: I + intact O recovered 13/13 structures; I with Distinction only, 0/13; O without obtainable I, 0/13. ***Historical***: complete recovery with I + intact O in 200/200 runs; three patterns without the distinction cut recovered 0 in 200/200.	Establishes the fundamental model of cognition: $\mathbb{M} = IO$. Mind and Meaning cannot be explained by Information alone.
P3 — $\mathbb{R} = IO$: Reality is information organized. **Null and alternative:** H_0: intact O does not recover the organization in $\mathbb{R}$. H_a: it does. **Test and decision rule:** With Purpose uninstantiated, give $\mathbb{M}$ the sample's I and intact O. Reject H_0 if $IO(\mathbb{M}) = IO(\mathbb{R})$, no more and no less. **Status:** VALIDATED	***Historical***: exact recovery of Reality's declared structures, no more and no less, in 200/200 intact runs across six corpora. ***Native***: exact recovery of 12/12 (panda sentence), 13/13 (two-line lamb) and 24/24 (four-line lamb) structures.	Supports the proposition that Mind and Reality share a common organizational description, making structural correspondence possible.
P4 — $O = DSRP\text{-}484$: Organization is necessarily and sufficiently DSRP-484. **Null and alternative:** H_0: DSRP-484 is not necessary and/or sufficient for O. H_a: it is both. **Test and decision rule:** Ablate O at pattern and element grains; restore intact DSRP-484. Reject H_0 if required ablations break O and intact DSRP-484 forms O-questions and recovers $\mathbb{R}$'s IO. **Status:** VALIDATED	***Historical***: intact DSRP-484 recovered Reality's declared structures in 200/200 runs on six unlike corpora. ***Native***: cutting part membership removed the dependent capability; restoring it returned all four relationships and both inferences. Recursive reentry passed 6/6 conditions (P17). A newly constructed higher-order Thing, L_3, took part in all four patterns and all eight elements: i/o (distinguished from L_5), p/w (part of whole W), a/r (an end of relationship L_6) and $\dot{p}/v$ (a Point whose View directed the next question). No additional	Proposes a universal architecture of organization connecting cognition, information, physical organization, biological systems, and social systems.

	organizational primitive was required.	
P5 — I-cost / O-required: Information can be costly to acquire; organization is required to make it usable. **Null and alternative:** H_0: withholding I and disabling O have equivalent effects. H_a: their effects differ. **Test and decision rule:** I withheld + O intact gives higher cost, but $\mathbb{M}$ reaches $\mathbb{R}$. I present + O nonfunctional: I is present, but $\mathbb{M}$ cannot organize it into $\mathbb{R}$'s IO. Reject H_0 if this asymmetry holds. **Status:** VALIDATED	***Historical***: the Zero-I Mind recovered Reality's declared IO in 110/110 runs. Its organizing cost was identical to the given-Things condition in 110/110 runs; acquiring the Information made up 13.5% of the cost at the median. ***Native*** (two-line lamb): 13 count questions and 1,114 spelling questions acquired the Information; the organizing cost was 1,995 O-slots whether the Things were found or given.	Explains why learning requires both access to Reality and the capacity to organize what is discovered. More Information cannot substitute for Organization.
P6 — $ROI(I)$: The return on more information is conditional on organization. **Null and alternative:** H_0: $ROI(I)$ is independent of O. H_a: $ROI(I)$ depends on O. **Test and decision rule:** Compare $IO(\mathbb{M})$ as I increases under different O conditions. Reject H_0 if additional I yields little or no additional $\mathbb{M}$ under crippled O but greater $\mathbb{M}$ under intact O. **Status:** VALIDATED	***Native***: the same 11 additional Things produced 11 correct structures with $D+S+R+P$ and only 2 with $D+S$ (ROI 1.00 vs 0.18), with no incorrect structures. ***Historical***: with intact O, slopes ran from 1.00 to 6.11 additional structures per Thing across corpora (1.17 cancer, 1.09 movie reviews); recovery never fell in 10/10 seeds on any corpus; with organization crippled, it stayed at 0 in 200/200 runs.	Explains why information investments have unequal returns across Minds, organizations, and institutions. The value of Information depends on organizational capability.
P7 — $ROI(O)$: The return on more organization is conditional on Purpose. **Null and alternative:** H_0: $ROI(O)$ is independent of Purpose. H_a: $ROI(O)$ depends on Purpose. **Test and decision rule:** Add or remove an O-pattern under purposes that do and do not require it. Reject H_0 if unnecessary O adds cost without benefit but required O is necessary for completion. **Status:** VALIDATED	***Native***: for the row purpose, adding R raised the cost from 237 to 377 O-slots with no change in result (3/3 correct structures). For the cell purpose, adding R enabled complete recovery ($D+S+R+P$ 5/5 vs $D+S+P$ 3/5). ***Historical***: for the row purpose, $D+S+P$ was cheaper in 110/110 paired runs (sign and Wilcoxon tests, $p = .001$ at every size); for the cell-line purpose, $D+S+P$ completed the task in 0/110 runs and $D+S+R+P$ in 110/110.	Organizational complexity is not inherently beneficial. Appropriate Organization is determined by its relationship to Purpose.
P8 — Cost of unseen O: The cost of unseen organization is unseen reality. **Null and alternative:** H_0: constraining $\mathbb{M}$ lowers cost without reducing what it can recover from $\mathbb{R}$. H_a: lower cost comes	***Historical***: a nesting cap of 1 was cheaper than a cap of 3 in 200/200 runs (0.7%–16.7% less, median 2.5%) but recovered none of Reality's second-level wholes; the cap of 3	Explains blind spots, oversimplification, and the hidden costs of limited organizational

from leaving $\mathbb{R}$'s O unseen. **Test and decision rule:** Hold I, $\mathbb{R}$, and DSRP-484 constant; vary nesting cap. Reject H_0 if the lower cap costs less but misses higher-order O that $\mathbb{R}$ contains. **Status:** VALIDATED	recovered all of them. ***Native***: the pattern grid measured the wholes and relationships missed when S or R was unavailable.	capacity. Unseen organization is not absent organization.
P9 — Framing and stopping: Purpose can guide inquiry and determine completion within the tested DSRP-484 system. **Null and alternative:** H_0: framing and stopping require structure outside DSRP-484. H_a: these capabilities operate within DSRP-484. **Test and decision rule:** Compare inquiry with and without a declared purpose, including separate framing and stopping controls. Reject the null if the tested system exhibits both capabilities without an additional organizational primitive. **Status:** VALIDATED	***Native***: the intact condition required 88 questions and 377 O-slots. Disabling the purpose condition removed both framing and purpose-directed stopping (538 questions, 2,355 O-slots, the same as no purpose). Disabling task-based stopping kept framing but removed stopping. Restoring either returned the intact result. ***Historical***: no stop without a purpose (110/110), a stop with one (110/110); steering was cheaper in 97/100 runs.	Provides an organizational account of purposeful cognition, attention, relevance, and the regulation of inquiry.
P10 — $P \rightarrow$ efficient tuning: Perspective, instantiated as Purpose, increases the efficiency with which $\mathbb{M}$ tunes to $\mathbb{R}$. **Null and alternative:** H_0: Purpose does not reduce tuning cost. H_a: Purpose reduces tuning cost. **Test and decision rule:** Hold I, $\mathbb{R}$, available O, and seed constant; vary Purpose. Reject H_0 if Purpose reaches the same task-relevant IO at lower cost. **Status:** VALIDATED	***Native***: purpose reached the same three task structures at 377 vs 596 O-slots (36.7% lower) and stopped at 377 vs 2,355 O-slots (84.0% lower). ***Historical***: purpose reduced cost in 110/110 paired runs, by median ratios of $1.56\times$ to $7.34\times$ across samples and sizes; 1,270/1,270 task label cells were correct; $p = .001$ at every size.	Explains how Purpose directs attention, reduces unnecessary investigation, and improves adaptive efficiency.
P11 — LRL correspondence: $C(\mathbb{M}, \mathbb{R}) = IO(\mathbb{M})/IO(\mathbb{R})$ **Null and alternative:** H_0: the ratio is not a meaningful common-unit measure of correspondence. H_a: it is, and varies systematically with O. **Test and decision rule:** Hold I and $\mathbb{R}$ constant; vary O. Reject H_0 if $IO(\mathbb{M})/IO(\mathbb{R})$ changes systematically and reaches 1 when their IO matches. **Status:** VALIDATED	***Historical***: the correspondence ratio never fell as patterns were added and reached 1.0 in 200/200 runs. ***Native***: correspondence measured at 336 points along the run (panda sentence) and exact final models across the pattern grid.	Establishes an operational basis for measuring the accuracy of Models and evaluating learning as increasing structural correspondence with Reality.
P12 — Zero-I: O does not manufacture I; O makes I obtainable from Reality.	***Historical***: exact recovery in 110/110 runs; 7,434 of 7,514 Things spelled	Demonstrates that a Mind can acquire

Null and alternative: H_0: from zero I, intact O cannot obtain the I needed to reconstruct $\mathbb{R}$'s IO. H_a: it can. **Test and decision rule:** Begin $\mathbb{M}$ with intact DSRP-484 and zero I. Reject H_0 if O-questions and $\mathbb{R}$'s I-answers yield $IO(\mathbb{M}) = IO(\mathbb{R})$. **Status:** VALIDATED	as Reality spells them (the other 80 contained a space outside the declared alphabet); with Reality's count channel off, the Mind recovered nothing. ***Native***: 12 Things, 13 structures and 12/12 spellings discovered (two-line lamb); 23/23 spellings and 24/24 structures (four-line lamb).	Information through Organization rather than requiring its Information to be provided in advance. Supports an executable account of discovery and inquiry.
P13 — $\text{Emergence} = \Delta O$: Higher-order organization emerges as ΔO from interacting lower-order organized systems. **Null and alternative:** H_0: higher-order organization requires O outside DSRP-484. H_a: it arises as ΔO using the same DSRP-484 primitives. **Test and decision rule:** Measure ΔO across levels; have two Minds with complementary information interact. Reject H_0 if higher-order relationships that neither Mind held arise without new primitives. **Status:** VALIDATED	***Native***: neither Mind, nor the union of both, held the four row-to-column relationships. After the two Minds exchanged nine answers, one Mind constructed all four, each matching Reality. Controls held: with R disabled, with answering disabled, and with storage order changed. ***Historical***: $\Delta O > 0$ in 200/200 runs (median 94.5 structures).	Provides an organizational explanation of emergence relevant to collective cognition, social organization, biological systems, and complex systems.
P14 — Contextual identity: The identity of X is its contextual IO, not its definition alone. **Null and alternative:** H_0: inference about X is determined by defining I alone. H_a: inference depends on X's contextual IO. **Test and decision rule:** Hold defining I constant; vary contextual D, S, R, P. Reject H_0 if inference changes systematically and selective ablation removes what that structure licenses. **Status:** VALIDATED	***Native***: two Things with identical defining Information supported different correct inferences from their contexts (17.99 vs 20.57). Removing row membership eliminated both inferences; restoring it returned both. A name-swap control followed structure, not names. ***Historical***: in the Zero-I naming phase, the Mind recovered all of Reality's IO in 110/110 runs before any of the 7,514 Things was spelled.	Establishes identity as contextual and relational. Offers implications for semantics, categorization, perspective, psychological interpretation, and context-sensitive reasoning.
P15 — Distinctions construct meaningful Things. **Null and alternative:** H_0: word-level Things are not constructed from undivided character positions. H_a: Distinctions construct them. **Test and decision rule:** Give the Mind undivided character positions; turn distinction off; cut a boundary; scramble order. Reject H_0 if the words form intact, do not form with distinction off or the	***Native***: 6 words constructed from 33 undivided character positions, without being handed the completed words. With distinction turned off, or the boundary cut, no words formed. With order scrambled, the same 6 words formed.	Demonstrates how organization produces meaningful distinctions at new levels, with implications for language acquisition, perception, categorization, and

boundary cut, and form the same under scrambled order. **Status:** VALIDATED		learning.
P16 — Models can evaluate and correct themselves. **Null and alternative:** H_0: a Mind cannot revise previously accepted information through interaction with Reality. H_a: it retains confirmed priors and withdraws contradicted ones. **Test and decision rule:** Give one true and one false accepted prior, in both orders; cut the verification step. Reject H_0 if the true prior is kept, the false one withdrawn, Reality's organization rebuilt, and no correction occurs with verification cut. **Status:** VALIDATED	***Native***: the Mind retained its correct prior, withdrew its incorrect prior, and reconstructed Reality's organization exactly, in both presentation orders. Removing the verification step prevented correction.	Provides evidence for an executable component of epistemic self-correction, supporting the LRL account of learning, error correction, and adaptive judgment.
P17 — Organization is recursively reentrant. **Null and alternative:** H_0: constructed relationships cannot become Things for further organization without new primitives. H_a: they can. **Test and decision rule:** Six frozen conditions: two Realities with opposite higher-order direction, shuffled order, structural cut, restoration, original-Mind control. Reject H_0 if the higher-order relationship is recovered in the correct direction, survives shuffling, is removed only by the cut, and returns on restoration. **Status:** VALIDATED	***Native***: 6/6 frozen conditions. The Mind recovered $L_1 \to L_2$ in one Reality and $L_2 \to L_1$ in a Reality with the opposite direction. It built the same organization under shuffled order. The structural cut removed only the higher-order relationship, and restoration was identical. The original Mind, without reentry, recovered first-order relationships only. The newly built Thing L_3 also took part in all eight elements (P4).	Supports recursive organizational closure, including relationships between relationships, higher-order modeling, abstraction, and the construction of increasingly complex systems.
P18 — Models cause behavior. **Null and alternative:** H_0: changing only Model organization does not change executed behavior. H_a: it does. **Test and decision rule:** Hold percept, available actions, and the behavioral and execution procedures constant; change only the decisive membership fact; cut, restore, reverse order, and run a procedure that ignores the Model. Reject H_0 if the executed action follows the organization and disappears when the relationship is cut. **Status:** VALIDATED	***Native***: 7/7 frozen predictions across 6 conditions. Context $K_1 \to$ Door A opened; context $K_2 \to$ Door B opened; decisive relationship removed $\to$ no action; restored $\to$ Door A, with an identical final state; reversed order $\to$ Door A. A control procedure that ignored the Model opened Door A under Model B and was detected.	Demonstrates direct organizational causation of executed behavior in a computational Mind. Extends $\mathbb{M} = IO$ beyond Meaning and knowledge to action, providing a testable foundation for broader psychological, biological, and sociological predictions.

Table 8. Eighteen Empirically Validated Predictions of O-Theory and the Love Reality Loop: Hypotheses, Tests, Results, and Scientific Implications. Each prediction is stated with its null hypothesis (H_0), its alternative (H_a), and the result that would reject the null. P1–P14 are carried from the original pre-registered set; the interaction clause of P13, untested there because that apparatus held one modeler, was tested in the native experiments. P15–P18 were added with the native experiments, each with predictions frozen before execution. Historical: the historical computational experiments. Native: the later focused computational confirmations. Counts, correspondence measures, efficiency ratios, and experimental conditions refer to the specific test systems employed and are not estimates of universal performance. O-slots: the organizational questions a Mind opens, the cost measure used throughout. Exact: the recovered structures match Reality's declared structures one for one, not merely in number. Sources: the historical and frozen native experimental records.

Table 8 is the full accounting. Each prediction keeps its own purpose, intervention, result, and implication. The six findings presented above provide the conceptual synthesis; Table 8 provides the prediction-level evidence. The eighteen predictions should not be interpreted as eighteen interchangeable tests of a single outcome. They investigate distinguishable consequences of the theory, including the necessity of Organization for Meaning, the discovery of Information, the efficiency of purposeful inquiry, structural correspondence, recursive construction, contextual identity, empirical correction, and executed behavior. The experimental results validate P1–P18 within their tested conditions. This convergence across different tasks and measurements provides the empirical foundation for the broader theoretical discussion that follows.

9. Cognitive Bias and Organizational Impairment

O-Theory has a direct consequence for cognitive bias. Cognitive biases are often described as errors in judgment, deviations from rationality, or systematic failures in information processing. These descriptions identify important features of bias without necessarily explaining the organization that makes the errors possible. If:

$$\mathbb{M} = IO$$

then failures of understanding can arise not only because Information is absent or incorrect, but because the Organization of available Information is inadequate. A Mind can have accurate Information and still build a badly wrong Model of Reality.

Because Models cause behavior, distorted organization can change more than what the Mind believes. They can shape what the Mind perceives, predicts, experiences emotionally, decides, and does.

9.1. Different causes, the same impairment: bias and neurological injury

Neurological injury can produce striking dissociations between access to sensory information and the ability to organize that information meaningfully. In the clinical literature, disorders of visual recognition, integration, or attention can leave some aspects of sensory processing relatively preserved while disrupting the organization necessary for particular forms of recognition or action [22–27]. These cases

show plainly that having information about the world does not mean being able to organize it into an accurate Model.

O-Theory suggests a provocative analogy. A persistent cognitive bias may produce a functional organizational impairment even in the absence of structural neurological injury. A Mind may be unable or unwilling to make a necessary Distinction, recognize a relevant System, construct an appropriate Relationship, or adopt a Perspective that would change its interpretation. The resulting failure of organization may be the same failure that a neurological impairment produces.

The causes differ. A neurological injury may be biological or mechanical, as in trauma; a bias is a persistent way of organizing, and ordinary cognitive bias is not literal brain damage. What the two may share is the consequence: impaired Organization, and the same failures of Distinction, System, Relationship, or Perspective that follow from it. The analogy lies in how each cause relates to that impairment. The consequences themselves are not analogous; on this account they are the same.

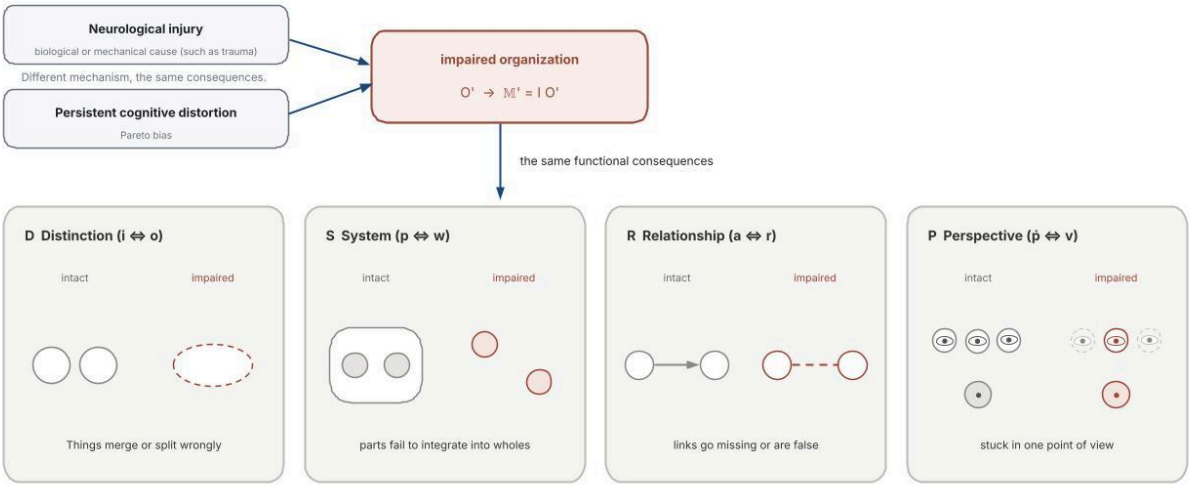


Figure 13. Cognitive Bias as Organizational Impairment. Cognitive bias as a proposed functional impairment of organization. Neurological injury, whether biological or mechanical, and persistent cognitive distortion are different causes that may produce the same failures of distinction, integration, relationship construction, or perspective taking. What is analogous is how each cause relates to the impaired organization; the consequences are the same. Neither literal brain damage nor a shared biological mechanism is implied.

9.2. Different organizational failures

The four patterns give us four places to look for a mistake. Did we confuse criticism of an action with rejection of the person? That may be a Distinction problem. Did we miss the larger context? A System problem. Did we mistake correlation for causation? A Relationship problem. Did we refuse to consider another interpretation? A Perspective problem. These are examples of how thinking can go wrong, not diagnoses of the person doing it.

They also help explain why correcting bias may require more than presenting additional Information. If the limitation is in Organization, new Information may enter the same inaccurate Model. The Mind may

even use new Information to reinforce the interpretation that needs correcting. Effective Model revision may therefore require changes in Distinctions, Systems, Relationships, or Perspectives—not simply an increase in the quantity of evidence supplied.

9.3. The behavioral consequences of cognitive bias

Because Models cause behavior, this matters. An inaccurate Model does not merely produce an inaccurate opinion. It can generate avoidance, conflict, aggression, withdrawal, inappropriate confidence, maladaptive decisions, or institutional dysfunction. The behavior depends on the Model and its interaction with the circumstances. But the causal significance of Organization means that correcting behavior may require correcting the Model from which the behavior arises.

This offers a potential organizational explanation for why some educational, therapeutic, managerial, and public-information interventions fail despite providing accurate Information. They attempt to change behavior by changing Information while leaving the relevant Organization substantially intact.
The proposed alternative is not to abandon Information. It is to recognize that Information and Organization must change together when the Model itself is the problem.

10. Foundational Implications

The experiments give us a working computational case. The next question is whether the same organizational principles help explain Minds and behavior beyond these machines. The sections that follow explore that possibility across several fields. They propose directions for testing; they do not report results already established in those fields.

Domain	Implication	What the experiments show	What remains to be tested
Cognitive science	The organization of information is an explanatory variable connecting perception, memory, inference, and learning.	Differences in organization changed structural recovery, contextual inference, inquiry efficiency, and behavior.	Whether the same principles operate in human and animal cognition.
Psychology	Models generate and constrain individual behavior; changing behavior may require changing Model organization.	Changing one organizational relationship changed an executed action (P18).	Identifying and manipulating Models in human participants without defining them by the behavior being explained.
Sociology	Shared and institutional Models organize norms, roles, incentives, and collective action.	Interacting Minds constructed relationships that neither held alone (P13).	Collective Models in real institutions, without reducing them to individual opinion.

Biology	Modeling may extend beyond conscious, language-using, or neurological systems.	Not tested directly; a theoretical implication.	Criteria that separate a system that models its environment from one that only undergoes physical change.
Computing and AI	Organization can be an active part of what a system constructs and uses.	Recovery, discovery, purpose-directed inquiry, recursion, self-correction, and Model-dependent action in one computational Mind.	General autonomous inquiry and self-improvement beyond the tested systems.
Ontology	The organization of knowing and of what is known share one architecture: Mind is Reality modeling Reality.	A shared structural description made exact correspondence measurable in the tested Realities (P3, P11).	Correspondence in natural systems that lack a complete reference inventory.

Table 9. Foundational Implications Across Scientific Domains. Each row separates the theoretical implication developed in Section 10 from what the computational experiments show and from what remains open. Implications are proposals for further testing, not experimental results.

10.1. Cognitive science: from information processing to information organization

Cognitive science has developed extensive accounts of information processing, representation, memory, perception, learning, prediction, and decision-making. O-Theory proposes that the organization of information connects these processes. The question becomes not only what Information a Mind has but how it is organized, because different organization produces different Models from the same Information. The experimental results demonstrate that such differences can alter structural recovery, contextual inference, inquiry efficiency, and behavior.

An organizational account could complement theories of perception, memory, inference, and learning by identifying structural principles they share. The claim is not that DSRP-484 replaces established cognitive mechanisms. It is that those mechanisms may run on a deeper organizational architecture.

10.2. Psychology: from beliefs to the causal organization of behavior

A belief, a feeling, an expectation, and a decision may look like separate subjects. O-Theory asks what organization they share. An expectation organizes what may happen. A decision organizes alternatives, consequences, and purposes. Emotions arise within a system that distinguishes and evaluates its circumstances. DSRP-484 offers a language for investigating how these activities connect. The claim needs testing in psychological systems, as well as demonstration in a machine.

It also suggests a possible direction for psychological intervention. Changing a person's behavior may require changing the organization of the Models through which the person encounters Reality. P18

provides a computational demonstration of the causal principle, while broader psychological applications require corresponding empirical investigation in human participants.

10.3. Sociology: collective Models and collective behavior

Social systems are not simply aggregates of independent individuals. They involve institutions, roles, relationships, norms, histories, identities, incentives, and shared understandings. These are organized structures. A society's collective behavior depends in part upon how its members and institutions distinguish legitimate from illegitimate conduct, organize roles and responsibilities, establish relationships, and interpret events from different Perspectives. The same economic, political, or environmental Information can lead to different institutional actions because the Information participates in different collective Models.

An organization may understand poor performance as a failure of individual motivation or as a failure of system design. A community may interpret a change as a threat to its identity or an opportunity for adaptation. A government may organize the same evidence around different definitions of the problem, different causal assumptions, or different purposes. These distinctions affect behavior.
Collective change may depend on changes in shared and institutional Models. We should not assume that collective Models work exactly like individual psychological Models. The theoretical value of DSRP-484 is that it offers a common organizational vocabulary while leaving the distinctive mechanisms of social interaction, institutional coordination, and collective behavior open to investigation.

10.4. Biology: modeling beyond human consciousness

If modeling consists fundamentally of Information and Organization, then it need not be restricted by definition to conscious thought or language. Biological systems routinely distinguish environmental conditions, coordinate internal components, respond to relationships, and regulate activity relative to changing circumstances. These capacities invite investigation through the proposed organizational architecture. An organism need not possess a verbal representation of its environment for its organized state to play a role in generating adaptive behavior. Likewise, modeling need not be limited to nervous systems merely because human Minds depend upon neural organization.

This lets us ask about modeling at several biological scales. But we need a test that can tell a system modeling its environment from a system simply changing physically. A plant bending toward light does not settle that question by itself. The theory supplies a way to ask; the evidence must establish where the answer is yes.

10.5. Computing and artificial intelligence: organization as an active capability

We often judge computational systems by how well they classify, predict, generate responses, or optimize performance. These findings suggest looking at the organization underneath those outputs. The computational Mind studied here did more than process an already completed representation. Across the

experimental program, it demonstrated capabilities to recover organization, discover initially unavailable Information, direct inquiry according to Purpose, construct higher-order structures, correct inaccurate Models, and perform different actions when Model organization changed. These results support the possibility of developing computational systems in which Organization is not simply a fixed structure imposed before computation, but an active part of what the system constructs and uses. This matters for autonomous inquiry, adaptive learning, model evaluation, and self-correcting systems.

The research also distinguishes producing an answer from producing it through an explicitly represented organizational process. That distinction matters when the scientific question concerns how a system knows, judges, or acts rather than merely whether its output matches a target.

The present experiments validate selected computational capabilities. They do not establish unrestricted autonomous intelligence or generalized self-improvement. They do show that key parts of adaptive cognition can be studied through one organizational architecture.

Shannon [28] described communication through a source, transmitter, channel, receiver, and destination. Cabrera [29] related that account to DSRP. In these experiments, Reality supplied responses through a restricted interface, and the Mind used those responses to construct its own Model. The comparison concerns the relationship between Information communicated and organization recovered. It does not imply that a completed Model crossed between the two systems.

The comparison with Shannon separates communication cost from the work of constructing an understanding. The apparatus recorded inquiry as well as the Information received. Shannon set semantic meaning aside for his engineering problem; Weaver distinguished that problem from questions about meaning and effectiveness [30]. Here, the reported costs concern how much inquiry the Mind needed to recover the declared reference organization. They describe the tested interaction, not a general cost law for all communication.

The Zero-I experiments measured two kinds of work: recovering the declared organization and acquiring the spellings associated with the recovered Things. Figure 5 reports those costs separately. This lets us compare building a Model with acquiring additional Information about what it represents.

For the illustrated cancer-table run, 42 Things required 33,557 questions: 29,218 for structural inquiry and 4,339 for spelling recovery. Across the 110 runs, acquiring Information accounted for 13.5 percent of total cost at the median, 47 percent in the smallest world, and under 1 percent in the largest. In these tested conditions, Information acquisition took a smaller share of the work as the modeled world grew. This is a measured cost pattern, not a universal scaling claim.

Think of two farmers comparing what they know about their fields. Each brings years of work that the other cannot receive in a sentence. They point, ask, explain, and check what the other means. The distinction is useful: building an understanding and communicating it are different kinds of work. In the Zero-I apparatus, we can measure those costs separately, and translation was the smaller part. That measured ratio belongs to these computational runs. The human example makes the distinction familiar; it does not establish the same ratio for conversation.

The spelling measurements can also be compared with the information needed to identify a symbol. The illustrated run used 15.9 yes/no questions per character; the figure across all 110 runs was 18.6. For 94 equally likely symbols, $\log_2(94) \approx 6.55$ bits gives the information-theoretic lower bound. That comparison concerns symbol identification under stated assumptions. Constructing a Model is a separate cost.

Picture two rooms joined by a narrow pipe. Each room holds a Mind with Models of its own. Words cross the pipe, but most of the organization behind them stays in the room. The listener has to build Meaning from what arrives. Understanding is reconstructed, never transmitted. Existing Models shape that reconstruction—and can bias it (Section 9; Cabrera [29]). A shared grammar can help both sides interpret what crosses. Twenty Questions makes the task concrete: one player holds a Thing; the other asks enough yes-or-no questions to identify it. The Zero-I experiments make that distinction measurable: the Mind recovered the declared organization without being handed a completed representation.

The Contextual Identity paper [31] writes the listener's side as a chain. The speaker's model produces an utterance; the utterance arrives at the listener as information; the listener organizes it into a model of the speaker:

$$\mathbb{M}_1 \rightarrow y \rightarrow I_2 \rightarrow \mathbb{M}_2$$

the first model ($\mathbb{M}$ with subscript 1) produces an output (y), which is taken in as the second mind's information (I with subscript 2), which the second mind organizes into its model of the first ($\mathbb{M}$ with subscript 2). The Zero-I run is that chain with the pipe made as narrow as it can be made. The utterance is an answer. The listener holds the grammar and nothing else. And the listener still ends holding what the speaker holds, in 110 runs of 110, at a cost that says what the narrowness cost. Read that way, Figure 5 is a picture of every conversation at its limit: one side asking with the grammar, the other answering yes and no, and the whole of what one holds ending up in the other, at a price.

The distinction also applies to how much organization is supplied as Information. A table with headers and aligned rows gives a reader clues to its organization. Withholding those clues changes what the reader must discover. The Pioneer plaque [32] illustrates the broader communication problem: a recipient must interpret marks using whatever shared reference is available. In the experiments here, the supplied-Things and Zero-I conditions varied what the Mind initially received. Both were judged against the declared reference structures.

10.6. Ontology: Mind is Reality modeling Reality

The broadest claim brings two old questions together: how do we know the world, and what is the world made of? The first is epistemology; the second is ontology. O-Theory proposes that knowing and what is known share an organizational architecture [33]. A Mind is part of the world it is trying to understand.

$$\mathbb{M} = IO$$

$$\mathbb{R} = IO$$

$$O_{\mathbb{M}} = O_{\mathbb{R}} = DSRP\text{-}484$$

Under this formulation, Mind is not an organizational exception to Nature. A Mind is itself part of Reality. Its Models are real organized structures, even when their correspondence with other aspects of Reality is inaccurate.

The distinction between a Model and the Reality it models remains essential. But that distinction need not imply that Mind and Nature belong to fundamentally different categories of existence. Rather, the Mind can be understood as an organized part of Reality engaged in modeling other aspects of Reality. The LRL describes how this interaction can occur.

The ontological proposition is therefore not that every Model is correct or that Reality depends upon human interpretation. It is that the activity of modeling is itself part of Reality, and that the same organizational principles may apply to the modeler, the Model, and what is modeled.

This yields the central synthesis:

Mind is Reality modeling Reality.

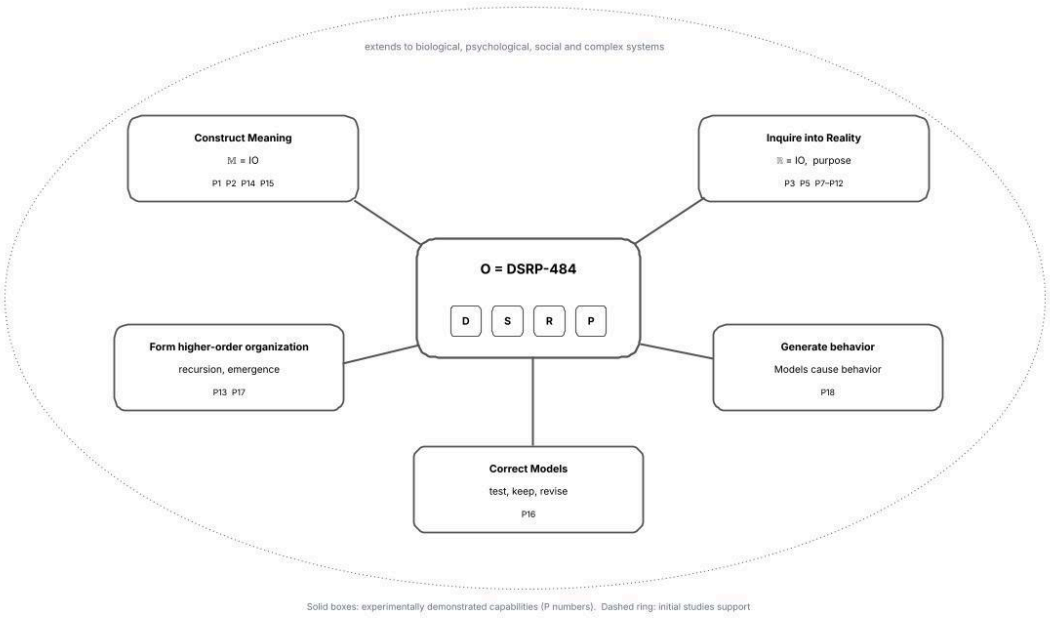


Figure 14. The Unified Organizational Architecture. A unified organizational account of Mind, Reality, and adaptive behavior. DSRP-484 is proposed as the common architecture through which Minds construct Meaning, inquire into Reality, generate behavior, correct Models, and form higher-order organization. The diagram integrates the paper's theoretical propositions and experimentally demonstrated capabilities; it does not imply that every proposed universal extension has been empirically established.

11. Limitations, Falsifiability, and Future Research

Part of a foundational theory's scientific value lies in stating its claims clearly and identifying what could contradict them. O-Theory proposes that Organization is DSRP-484. Its broadest falsification condition is the discovery of organization that cannot be accounted for through Distinctions, Systems, Relationships, Perspectives, their eight elements, and their proposed dynamics. Such a counterexample would challenge the claim that this organization is universal.

The computational experiments test this proposition in defined systems through specified organizational tasks. Within those conditions the results are strong, but they have limits.

The historical experiments have plain limits. They involved no learning and no held-out data. Their computational Reality always answered truthfully and completely, so noisy, incomplete, or contradictory responses remain untested in that series. Identity and the reference structures were determined by the declared experimental conditions. The samples were also limited: six corpora and ten random seeds.

Sufficiency is bounded in the same way. The experiments show that no primitive outside DSRP-484 was needed for six samples under the reference structures declared for them. They do not show that none could ever be needed, which is why the claim stays falsifiable.

The native P13 experiment extended the historical apparatus by testing interaction between two Minds (Section 7.4). Further work can investigate misleading purposes, ambiguous Information, language, and inquiry under less guidance. These are research questions, not capabilities established by the experiments reported here.

11.1. Computational validation and universal generalization

The experiments demonstrate that the proposed architecture can support the tested computational capabilities. They do not, by themselves, establish that all possible forms of physical, biological, psychological, or sociological organization have been exhaustively examined. The broader theory predicts the same architecture across those domains. That prediction can be investigated with methods suited to each domain.

11.2. Theoretical necessity and empirical sufficiency

P4 includes both necessity and sufficiency. The theoretical necessity argument is developed from the premises of identity, coimplication, simultaneity, and enclosure. The computational experiments demonstrate operational sufficiency for the structures and capabilities tested, including recursive participation through all eight elements. Necessity, like any universal claim, cannot be proven once and for all; it can only accumulate evidence or meet a counterexample. The evidence here points one way. Each cut experiment removed the capability that depended on what was cut, and restoring it brought the capability back (P1, P2, P4, P9, P14, P17). The same architecture represented and reasoned across

fourteen independently built formal ontologies without needing another primitive (Section 7.7). And a growing body of studies across disciplines finds the same four patterns at work [34–38] (see dsrpevidence.org). The convergence supports the claim; its reach still depends on the scope and independence of the evidence. The a priori argument and the experiments are complementary forms of evidence. The a priori argument's logical force depends on its premises and derivation. The architecture earns empirical generality as it continues to account for organization in further domains and circumstances.

11.3. Modeling and Reality

In the machine, we can check a recovered structure against a declared reference. A field, a person, or a society comes with no such complete answer sheet. To measure correspondence there, we must specify what we are measuring, at what scale, and against what reference. Exact recovery in this apparatus shows that the comparison can work under declared conditions. It does not supply those conditions for every natural system.

11.4. Model causation and behavioral necessity

P18 demonstrated that changing a single organizational relationship could change executed behavior under controlled computational conditions. The proposition that all behavior arises from Models reaches further. Testing that proposition across biological, psychological, and sociological systems requires independent ways to identify and manipulate Models without defining them solely by the behaviors being explained. This experiment establishes one causal case. It does not settle the broader claim.

11.5. Correspondence and improvement

The LRL describes how interaction with Reality can permit a Mind to correct and improve its Models. It does not guarantee that every interaction produces improvement. Feedback may be incomplete. A Mind may ignore it, misinterpret it, or organize it through inaccurate prior Models. Purpose can increase efficiency while restricting the scope of inquiry. Organizational limitations may prevent a Mind from recognizing relevant aspects of Reality.

These possibilities are consistent with the theory's distinction between available Information and the Organization through which that Information becomes Meaning. The theory explains how modeling can become more accurate without assuming that every modeling process automatically converges on truth.

12. Conclusion: Reality Modeling Reality

A Mind has practical work to do: make sense of what it encounters, find out what it does not know, act, and correct itself when the world says otherwise. This paper asks whether those abilities can grow from one organizational architecture.

O-Theory proposes that these questions share a common organizational foundation. Mind and Reality consist of Information organized through DSRP-484. The Love Reality Loop describes how a Mind constructs Models, engages Reality through questions, predictions, tests, and actions, receives Information, and evaluates and revises its Models.

The computational experiments investigated eighteen scientific predictions derived from this account. The results validate capabilities including structural recovery, information discovery, purpose-dependent inquiry, measurable correspondence, contextual identity, recursive higher-order construction, empirical self-correction, and Model-dependent executed behavior. Together they support the claim that Organization is not just one feature of cognition. It underlies Meaning, inquiry, and action.

The behavioral finding matters most. Models are not simply descriptions that accompany behavior. Their Organization can cause what a computational Mind actually does. The broader theory proposes that this causal relationship extends to psychological, biological, and sociological behavior.

If the account holds more widely, it could connect how we understand with how we act, how individuals think with how groups organize, and everyday inquiry with formal science. Those connections are a research program to pursue.

It also suggests a different way to understand Mind's relationship with Nature. The Mind is part of Reality. Its Models, questions, actions, and revisions are organized events within it.

The proposed unity is not that Mind and Reality are indistinguishable, or that Models are necessarily accurate. It is that the organization through which a Mind constructs Meaning is proposed to be the same organization through which Reality itself is constituted. The Love Reality Loop provides an account of how these organized systems interact and how their correspondence can improve.

Information alone is not Meaning. Models are Information organized. Models cause behavior. Minds can change their Models through interaction with Reality.

And because Minds are themselves part of Reality, the entire process can be understood through one proposition:

Mind is Reality modeling Reality.

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