03 · READING GUIDE

TRIAD OF LIFE

Why Life Requires a New Architecture

WHAT IT IS

The Theory of Continuous Mind (TMC) returns to the origins of life to investigate how organizations emerged that could maintain themselves, relate to the world, and continue through time. Along this path, it seeks to identify **which conditions of living organization participate in the emergence of the most elementary forms of feeling**.

Through the Factor X method, the TMC proposes a minimal causal architecture formed by three interdependent kinds of work: **Inside** (maintaining and reconstructing), **Between** (accessing and transforming), and **Ahead** (continuing beyond the instance). **Each instance participates in a trajectory that extends beyond it: it receives conditions from a lineage, transforms them through its encounters, and may leave differences that will participate in the formation of new instances.**

WHAT QUESTIONS DOES THIS CHAPTER INVESTIGATE?

- How did life come to constitute organizations capable of maintaining and transforming themselves?
- Where, in the trajectory of living systems, should we look for the conditions of primordial feeling?
- How can we investigate life without placing the answer inside its definition in advance?
- Why do maintaining, encountering, and continuing require distinct yet interdependent causal work?

KEY INSIGHTS

- **Life does not begin with the finished organism.** Its present organization bears the effects of earlier processes. A photograph shows the instance; the trajectory helps explain how it became possible.
- **Perhaps no bridge is missing; perhaps we constructed the banks.** Separating matter, operation, and experience in advance may introduce into the investigation part of the abyss we later try to explain.
- **Factor X suspends the authority of a concept, not the phenomenon being investigated.** On the way out, it demands justification of what should be retained, modified, or abandoned from the initial definition.
- **The Triad is not a list of properties.** Inside, Between, and Ahead represent different kinds of causal work whose articulation is proposed as a condition of living continuity.
- **An instance does not contain the whole of its own history.** It may receive effects from earlier trajectories and propagate differences that will participate in the reconstruction of other instances, without presupposing the continuity of the same self.

PURPOSE / CONNECTIONS

- **Philosophy of mind and consciousness:** investigate whether the genesis of living organization can clarify conditions of feeling, without automatically equating biological regulation with subjective experience.
- **Theoretical biology:** understand maintenance, transformation, and continuity as interdependent causal relations, rather than merely as isolated properties.
- **Astrobiology and artificial life:** investigate possible forms of life without requiring carbon, DNA, or the specific organization of terrestrial organisms in advance.
- **Artificial intelligence and AGI:** prepare the distinction between systems that merely execute operations and systems whose history changes the conditions of their future operations.

PLACE IN THE THESIS

This chapter establishes the conceptual architecture of the Triad and prepares its investigation in three directions: **Inside**, in Chapter 4; **Between**, in Chapter 5; and **Ahead**, in Chapter 6. Chapter 7 will examine the operational unity of the Self-Entity (*Ente Eu*), while Chapter 11 will confront the Triad with borderline cases to investigate its strengths and limitations as a criterion of life.

PATH THROUGH THE INVESTIGATION

01 RETURN: From the Finished Organism to the Genesis of the Living

02 SUSPENSION: Factor X and the Methodological Debt

03 TRIAD: The Three Kinds of Causal Work of Continuity

04 COHESION: The Triad Is Not a List

CHAPTER 03 · BLOCK 01

3.1 RETURN

From the Finished Organism to the Genesis of the Living

WHAT IT IS

Investigates why an explanation of mind may need to return to the history of the organism. It examines the body as part of the operation and the difficulties produced by questions that already presuppose their answers.

QUESTIONS

- What does a photograph of a finished organism leave out of the explanation?
- Why is the body not a neutral substrate for experience?
- How can the observer's position influence what is being investigated?

KEY INSIGHTS

- The history of living systems may remain operative in the present mechanism, rather than merely constituting a narrated past.
- Distinguishing matter from feeling is useful; presupposing that they are separate realities may distort the investigation.
- The observer is part of the observed system; the observer's perspective is not a universal yardstick.

IN THIS BLOCK

3.1.1 Why Return to Life?

3.1.2 The Organism Is Not a Neutral Substrate

3.1.3 The Gap Between Matter and Experience

3.1.4 When the Question Creates the Abyss Itself

3.1.5 The Three Errors of Investigation

3.1.1 — Why Return to Life?

The philosophical zombie begins at the end. The thought experiment starts with an already constituted human organism and asks whether experience could be absent without any change in its functioning. When the experiment assigns the zombie a physical history identical to our own, it merely fixes that history as part of the scenario; it does not investigate whether the trajectory through which the organism was formed participates in the explanation of experience. The organism is already there; all that remains is to imagine whether it could function without experience.

The TMC reverses the route. Instead of starting with the finished organism, it returns to the trajectory of living systems to reconstruct the path through which the organism came to exist, organize itself, regulate itself, act, and make experience possible. **This return does not abandon mind in favor of biology**; it prevents the explanation of experience from beginning only once the system has already been constituted. A present-day photograph shows the finished organism; by itself, it does not reconstruct the path that produced it.

This return by the TMC to the trajectory of living systems is a methodological choice: we move backward in search of the minimal

conditions under which the first spark of feeling might have been kindled and, from there, reconstruct its course up to the more complex forms in which that flame manifests in the present, without concluding in advance that it is exclusive to biological systems.

> Biology offers a methodological precedent for this return. Tinbergen proposed that explaining a behavior requires bringing together four complementary questions: by what mechanisms it occurs, how it develops, what function it serves, and how it arose over the course of evolution (Tinbergen, 1963). Examining only the present mechanism, therefore, is not enough to explain the organization that made it possible. Development and evolution do not constitute an external biography of the organism: their effects remain inscribed in its current organization.

If Tinbergen prevents the present from being isolated from the past that formed it, allostasis prevents the present from being reduced to a reaction to what has already happened. Kleckner et al. (2017) present evidence of a large-scale brain architecture that integrates interoception (the processing of signals related to the organism's internal state) with allostasis (the anticipatory regulation of its demands). The organism does not merely react to what has already occurred; it adjusts its present activity in light of what will probably be required of it. The brain does not observe the body from outside: it is part of the circuit whose viability it helps preserve. **Anticipating is not knowing the future; it is allocating resources before a demand materializes**, favoring some responses and increasing the cost of others.

These two movements reveal what a photograph of the organism conceals. **Life does not merely pass through time: it makes the past operational and the future relevant in the present.** That is why asking about experience only after the organism is finished may exclude from the explanation part of the very architecture we seek to understand.

The parallel is methodological, not proof of the thesis. Tinbergen's framework and allostasis do not demonstrate that the organism's trajectory produces phenomenal experience, nor that time alone explains it. They show something prior, yet decisive: in the trajectory of living systems, history can remain incorporated into the present mechanism. A photograph may accurately portray the current organism and still conceal the process that made it possible. If we do not yet understand how and why experience became possible, on what grounds could we decide in advance what purpose it serves, or that it serves no purpose at all?

Perhaps we call the interval between the matter that constitutes mind and the experience occurring within it an explanatory gap because we have

failed to reconstruct the causal process through which both could have constituted a single event. By separating matter and experience in advance, when they may never have constituted independent processes, we begin searching for a space that may never have existed.

3.1.2 — The Organism Is Not a Neutral Substrate

A substrate would be neutral only if changes in its own state did not interfere with the activities taking place in it. In an organism, the opposite occurs: variations in energy availability, temperature, tissue integrity, or chemical balance alter what it can do and may threaten its viability, mobilizing regulatory responses in the present when those variations matter.

The body's participation in perception can be observed experimentally. Garfinkel et al. (2014) presented fearful faces at different points in the cardiac cycle. When shown during systole—the phase in which the heart contracts—the faces were detected more easily and perceived as more intense than during diastole. **The images were equivalent; what changed was the bodily state of the person perceiving them.** The body, therefore, does not merely support perception: it participates in how what we perceive appears to us.

The decisive point is that the organism incorporates some of these conditions into its own regulatory organization. In a living system, the substrate does not merely make activity possible: its states shape that activity, and the activity in turn regulates and transforms the substrate itself.

The body, therefore, is not simply a container or stage for a mind. Its states participate in determining what becomes necessary, possible, or urgent for the system. The organism does not merely process information about an external world: it must regulate the matter through which it processes, acts, and continues to exist. Its known cognitive activity takes place within this circuit, not above or outside it.

None of this, by itself, demonstrates subjective experience. It establishes an earlier point: an explanation of mind cannot treat as a neutral container the very system whose preservation participates in the activity one seeks to explain.

3.1.3 — The Gap Between Matter and Experience

3.1.3 — The Gap Between Matter and Experience {#sec-3-1-3}

The gap in the relationship between material activity and conscious experience has run through science and philosophy for more than a century. The milestones below do not exhaust that history, but they show how the same impasse has been reformulated at different times:

> 1874 — Huxley: does consciousness play a causal role, or does it merely accompany the mechanism?

> 1940 — Sherrington: how can mind, brain, life, and matter be related within a single explanation?

> 1956 — Place: could consciousness and a brain process be the same event described in different ways?

> 1974 — Nagel: why does an objective description fail to capture "what it is like" to experience something?

> 1983 — Levine: names the explanatory gap between physical processes and experience.

> 1995 — Chalmers: reframes the impasse as the "hard problem" of consciousness.

Over more than a century, the problem has changed in vocabulary, method, and scale, but an underlying question has remained: how should the organism's physical organization be related to lived experience? Theories, instruments, and experiments have multiplied; the explanatory connection remains contested.

Perhaps the impasse has persisted because each era changed the language without entirely changing the starting point: first it separated matter and experience, then it sought to explain the connection between them.

3.1.4 — When the Question Creates the Abyss Itself

The persistence of the impasse between matter and experience may indicate more than a lack of data. The difficulty may begin before the investigation, when we introduce a conceptual division: on one side, matter that operates; on the other, feeling, conceived as a later ornament, dispensable to action. **What ought to be investigated—whether operating and feeling belong to the same process—becomes a premise: it is assumed that they do not.** Only then do we observe mechanisms, gather data, and seek an explanation capable of joining what

we have already declared separate. The connection does not appear, and the account fails to add up.

It is like investigating the relationship between a car and its motion while assuming that the car moves in order to produce wind. The question is already oriented by a mistaken purpose: it turns the wind, a consequence of displacement, into its objective. Once we correct the interpretation, the relationship becomes clearer: moving is the actual function performed by the car's organization; the wind is merely an effect of that motion. If we confuse function with effect, we look for the *what for* in the wrong place.

> **Under this reframing, the gap may not be merely an unanswered question. Perhaps no bridge is missing; perhaps we constructed the banks.**

The difference between observing a process from the outside and living it from within may lie only in the mode of access to the same reality; it does not necessarily indicate the existence of two different realities. In philosophical terms, the difference may be epistemological—concerning how we know—without being ontological—concerning what exists.

3.1.5 — The Three Errors of Investigation

Three errors may arise when we try to understand the phenomenon of felt experience.

1) ### 3.1.5 — The Three Errors of Investigation {#sec-3-1-5}

Distinguishing matter, function, and experience can be useful. The error begins when that distinction becomes a premise: matter operates, function performs, and feeling merely accompanies.

The original error is trying to explain something that is no longer the object one wanted to understand.

2) The First Error: Turning a Hypothesis into an Answer

A photograph describes what exists; a film investigates how it could come to exist.

By starting with the final frame, the investigation turns into its starting point precisely what it needed to explain.

3) The Second Error: Starting with the Final Frame

> Even after suspending the separation between matter and experience and recovering the organism's history, another obstacle remains: the investigator belongs to the very system being investigated. Speaking of experience in the first person while being the person who experiences it involves a risk of recursivity: how can we speak about mind using mind itself as the instrument? How could a camera photograph itself? Being the center of a perspective does not mean being the center of reality. Here we need a method of mitigation.

Frässle et al. (2014) — provided evidence that reporting one's own experience alters what is measured. The researchers presented two different images to a person, one to each eye. The person was asked to describe which image predominated. Even while knowing that there were two different images, the person, in describing the event, reported that sometimes one predominated and sometimes the other.

Kassam and Mendes (2013) — provided evidence that reporting one's own emotion changes part of the bodily reaction. The researchers elicited anger in participants through a difficult task accompanied by negative evaluations. One group had to describe what they felt; the other answered neutral questions. Those who described their own state showed changes in part of their cardiovascular response to anger as a result of describing it.

Sui, He, and Humphreys (2012) — provided evidence that associating something with oneself changes its perceptual priority. The researchers associated simple geometric figures with three people: the participant, a friend, and a stranger. Participants were then asked to identify those associations.

Figures associated with the participants themselves were recognized more quickly and accurately. The account of the self improves perception of what matters to the organism, but not necessarily an impartial understanding of the reality surrounding it—a narrative rupture between the self and reality.

Johansson et al. (2005) showed that the mind can produce a coherent explanation without having access to the process it purports to explain. After some participants chose between two faces, they were unknowingly given the face they had rejected and were invited to explain their choice. Many proceeded to justify why they had “chosen” it. Being the author of an account does not guarantee access to the cause of what is being recounted.

3) The Third Error: Confusing the Center of Perspective with the Center of Reality

Different philosophical traditions have tried to circumvent reflexivity by separating subject and object, suspending the observer's gaze, dividing phenomenon from access, or eliminating the figure of an internal observer. **The TMC proposes another route: situating the observer in time and understanding the observer's function.** History explains how that function was formed; function explains why it became useful; and that usefulness helps us understand why the organism lives its perspective as though it were the center of reality. The center of perspective does not merely reorganize what it sees; its own bodily location can be experimentally reorganized.

> The TMC's criticism is directed neither at these philosophical traditions nor at analytical decomposition in itself, but at the claim that such decomposition is sufficient to explain first-person experience. An analysis can correctly describe every component and still fail to explain the phenomenon produced by their relations—especially when the observer is part of the system under investigation. Three brooms leaning against one another can remain standing, although none has that capacity in isolation: stability belongs to the arrangement. Similarly, distinguishing experience, access, report, and self-reference clarifies parts of the problem but does not necessarily reconstruct the organization that articulates them. **The TMC does not reject the analysis of parts; it challenges the idea that simply bringing them together restores the phenomenon.**

In a stronger sense, the argument approaches the Kantian conception of the organism, according to which parts do not merely belong to the whole but are reciprocally the cause and effect of its organization. The TMC adds a diachronic requirement to this framework: to reconstruct how that organization, and the observer itself, were formed over time.

A knife can cut a sheet of paper but cannot cut a thought. Not because thought necessarily belongs to another kind of nature, but because relations, functions, and histories cannot be broken down in the same way as material objects. A recursive phenomenon—in which the one observing is also part of what is observed—requires a method capable of incorporating that condition.

The observer is not outside the mechanism being investigated. The observer's perspective is an operation of the organism itself, formed through a trajectory and oriented from a local center. Being the center of that perspective, however, does not demonstrate that one is the center of reality.

The TMC will develop this distinction in Chapter 7: the Self-Entity (*Ente Eu*) may be real as an operational unity without needing to constitute a separate substance or an ultimate center. And its trajectory may participate in continuities that extend beyond it without turning the lineage into a larger self.

The methodological problem thus appears at two boundaries: in the concepts used to observe and in the observer who uses them.

It is not enough to strip away inherited meanings of life, mind, and self from the object; we must also remove from the observer the privilege of using the observer's own biological realization as a universal yardstick. Otherwise, we expel anthropocentrism from the definition and reintroduce it through the measure.

The problem lies not only in the concepts used to observe; it also lies in the observer who uses them and resists losing centrality.

CHAPTER 03 · BLOCK 02

3.2 SUSPENSION

Factor X and the Methodological Debt

WHAT IT IS

Introduces Factor X as a method for investigating difficult concepts. The word continues to point to the phenomenon, but its inherited meaning no longer counts as an answer given in advance.

QUESTIONS

- What must be distinguished among term, meaning, and referent?
- How can we reduce presuppositions without losing the phenomenon being investigated?
- What methodological debt arises when a definition is suspended?

KEY INSIGHTS

- Reduction seeks the question with the fewest answers already built into it, not the smallest possible answer.
- At the end of the investigation, we must justify what is recovered, modified, or abandoned from the concept.
- XVREKY dramatizes the difference between encountering a sign and already knowing what it means.

IN THIS BLOCK

3.2.1 Distinguishing Term, Meaning, and Referent

3.2.2 Reducing and Investigating: Seeking the Minimal Question

3.2.3 Reassessing: How Much of the Concept Can Return?

3.2.4 Antecedents and Proposed Contribution

Factor X is the method the TMC employs to mitigate the effect of prior judgment on what is being investigated. With phenomena such as life, feeling, and sentience, the definition we adopt may introduce into the question part of the answer we later believe we have discovered.

“Mitigate” is deliberate. No investigation begins from a neutral standpoint: words and categories already delineate reality. Factor X does not eliminate presuppositions or resolve the observer's recursivity; it seeks only to make them visible, reduce their initial authority, and keep them open to revision.

Factor X does not suspend the phenomenon under investigation or erase the word used to point to it. It provisionally suspends the authority of the meaning we have already associated with that word. The referent remains the target of the investigation; the “X” marks precisely that whose meaning must still answer to what is found.

Factor X will cease to be merely a useful precaution and become a methodological contribution only when it demonstrates that it changes the investigation without predetermining its outcome.

The method works at both boundaries of the investigation: it conceptually prepares the entry and conceptually assesses the exit. Its cycle has three movements.

From this point onward, Factor X will not be reapplied as a formal procedure to every concept. Instead, it becomes a permanent methodological stance: while a category remains under investigation, its

name must be treated as a provisional marker, not a verdict. **The sign may guide the analysis; its inherited meaning, however, must not close it off** before relations, mechanisms, and evidence have been examined. Once the concept becomes established within the architecture of the thesis, it regains an explicitly stated technical meaning.

> **Factor X is not a technique to be repeated; it is a vigilance against the moment when a name tries to become an answer before the investigation.**

3.2.1 — Distinguishing Term, Meaning, and Referent

First, we distinguish three elements usually treated as one:

- **the term —** the word being used, such as “life” or “feeling”;
- **the inherited meaning —** the set of properties and ideas we already associate with that word;
- **the referent —** the phenomenon, or that in reality to which the word points, that we want to understand.

The term remains a marker of the problem and the referent remains the target of investigation. The inherited meaning, however, loses the right to determine in advance what will be found.

For example, we can continue asking what life is without requiring, before investigating, that everything deserving that name must necessarily possess DNA, cells, or reproduction.

> **We do not abandon the question. We separate from it the answer that may already have been hidden in its formulation.**

3.2.2 — Reducing and Investigating: Seeking the Minimal Question

The inherited meaning is reduced to its minimum of minima (*minimum minimorum*): the simplest and most encompassing formulation capable of preserving the referent. “Simpler” means presupposing fewer properties; “more encompassing” means not excluding plausible cases before investigation. **The limit is to keep what we intend to investigate recognizable.**

The *minimum minimorum* does not seek the smallest possible answer; it seeks the question that carries as little of the answer as possible within itself. The fewer presuppositions a framing contains, the broader its scope may be—provided that the referent is not lost.

In the case of feeling, this reduction can be seen in the formulation itself:

- **loaded formulation:** "a subjective and conscious impact caused by a stimulus";
- **intermediate formulation:** "conscious experience";
- **condensed term, but still loaded:** "qualia";
- **minimal anchor:** "something occurs for me".

Minimal formulations are possible when the referent has relatively recognizable contours. When the object is abstract or ontologically contested, only an anchor may remain: it preserves what the investigation points toward without anticipating what that something is.

The minimal anchor does not define feeling; it merely preserves the first-person recognition that something occurs. With life, the anchoring is different: a child recognizes a dog as alive without knowing how to define life, although the child cannot decide borderline cases such as viruses, cryptobiosis, or artificial forms.

These anchors therefore have different epistemic statuses: one's own feeling is accessible in the first person; life can initially be recognized through paradigmatic cases; the sentience of another entity is inferred from converging indicators.

Once the referent is preserved, essences, boundaries, mandatory mechanisms, and prior ontological commitments are suspended. They are not rejected; they merely cease to function as premises.

To investigate, here, is to confront that referent with reality: to examine its processes, relations, constraints, and trajectories; test rival explanations; and distinguish the phenomenon being sought, the indicators observed, and the inferences constructed. **Nociception, avoidance, or aversive learning, for example, may indicate something relevant, but none demonstrates felt pain on its own.**

Where possible, rival minimal formulations are also tested:

> **If the result changes with the conceptual doorway used, perhaps we are still investigating the definition rather than the phenomenon.**

3.2.3 — Reassessing: How Much of the Concept Can Return?

Once the investigation is complete, term, meaning, and referent are confronted again. To reassess is to decide how much of them should still remain joined.

The inherited meaning may be retained, broadened, narrowed, or divided; another concept may prove more appropriate; the term may be replaced, abandoned, or kept in suspension because the evidence is insufficient.

Reassessment considers four demands: adequacy to the cases and limits encountered; the ability to distinguish the referent from neighboring phenomena and indicators; robustness against rival formulations; and fruitfulness in guiding new questions and tests. These criteria discipline the decision, but do not replace it.

> **To reassess is not to give a name back to the phenomenon; it is to discover how much of the phenomenon that name can carry without distorting it.**

Every suspension therefore creates a methodological debt: we must state what was removed, what remained as the referent, and what the results required us to retain, modify, or abandon.

> **On the way in, the concept loses authority over the investigation. On the way out, the investigation decides how much authority the concept deserves to recover.**

3.2.4 — Antecedents and Proposed Contribution

> The operations brought together by Factor X have distinct antecedents: the suspension of prior commitments finds a partial antecedent in Edmund Husserl's *epoché*; the reconstruction of vague concepts into more precise and fruitful formulations, in Rudolf Carnap's conceptual explication; and the deliberate evaluation and revision of concepts, in contemporary conceptual engineering as discussed by Herman Cappelen and David Chalmers. The contribution proposed by the TMC lies not in these operations taken separately, but in the specific architecture that joins them into a cycle:

Factor X's proposed contribution is to turn suspension, reduction, and conceptual revision into a traceable cycle: it separates term, meaning, and referent; preserves the referent through the epistemically appropriate minimum; subjects it to investigation through rival formulations; and requires each suspended commitment subsequently to be retained, modified, or abandoned with justification. **Factor X does more than revise a concept: it controls how much power that concept may exercise before the investigation** and demands an accounting when that power is returned to it.

Factor X may be situated as a metaphilosophical method of critical, empirically oriented conceptual engineering. It engages primarily with the analytic tradition, while also incorporating, in part, phenomenological suspension.

Although formulated within the context of the TMC, the method may be extended, with the necessary adaptations, to other difficult problems—such as time, personal identity, free will, or existence—in which inherited meaning may steer the investigation in advance.

Factor X has three conceptual movements arranged around the investigation:

> `DISTINGUISH → REDUCE → INVESTIGATE → REASSESS`

Distinguishing, reducing, and reassessing conceptually discipline the investigation; investigating is the moment when the referent is confronted with relations, mechanisms, evidence, and rival hypotheses.

The “X” does not designate a mysterious entity or property, but that whose meaning has not yet been decided. Factor X does not produce neutrality, does not license ignoring the literature, and does not turn indicators into proofs of the phenomenon.

The “X” in Factor X points to XVREKY, a word deliberately constructed without an established lexical meaning, etymology, or referent. Faced with it, the reader encounters a sign whose meaning they do not yet know how to fill in: a brief hiatus arises between the form perceived and the meaning expected. Its function is to create that discomfort and oblige conceptualization to wait.

XVREKY was created to mean nothing before investigation. Its first meaning is precisely the provisional absence of meaning. XVREKY begins without conventional meaning, but ceases to be empty as soon as the method is explained.

Its function is more modest: to prevent, as far as possible, the investigation from finding only what its initial definition already allowed it to see.

CHAPTER 03 · BLOCK 03

3.3 TRIAD

The Three Kinds of Causal Work of Continuity

WHAT IT IS

Presents the minimal causal architecture proposed by the TMC for investigating living continuity. It distinguishes Inside, Between, and Ahead without reducing them to material structures or isolated properties.

QUESTIONS

- Why does the TMC's reduction propose three directions?
- What causal work corresponds to each direction?
- Why are metabolism, a membrane, or reproduction not sufficient on their own?

KEY INSIGHTS

- Inside maintains and reconstructs; Between accesses and transforms; Ahead allows differences to continue beyond the instance.
- The three directions are kinds of work proposed for investigation, not three parts of the organism.
- The test by removal asks which dimension of continuity is lost when one direction is excluded.

IN THIS BLOCK

3.3.1 From Living Organization to the Triad
3.3.2 Why Three Directions?
3.3.3 Inside: Maintaining and Reconstructing
3.3.4 Between: Accessing and Transforming
3.3.5 Ahead: Continuing Beyond the Instance

3.3.1 — From Living Organization to the Triad

When scholars of living organization sought to locate what makes a system a unity, different approaches began to look for that unity not in a material property or an isolated component, but in the relations that organize the system. Maturana and Varela emphasized the reciprocal production of the conditions that maintain the organism; Rosen, the closure among functions that make the organization itself possible; Montévil and Mossio, the mutual dependence among constraints that the system produces and maintains. Gánti, in turn, modeled a minimal living unity formed by the circular coupling of distinct functions, none of which is sufficient in isolation. Although these models are not equivalent, their convergence suggests a shift in focus: **life does not seem to reside in an isolated property or component**, but in an organization in which different functions produce and preserve conditions for one another.

When life is investigated through Factor X, it is not reduced in advance to an isolated organism. Intuitively, when we speak of the life of the dinosaurs, we are not referring to a single dinosaur. Similarly, when we speak of a living body, we do not reduce it to each of its cells, many of which die and are renewed over time. The focus, therefore, falls on the continuity of organization across different instances and scales.

Because Factor X is a method of approximation, this minimum remains open to revision. If the investigation reveals inconsistencies or structural gaps, the concept must be reformulated.

The TMC begins from a point of contact among distinct approaches in theoretical biology, neuroscience, and the philosophy of biology: the idea that the unity of living systems depends on organizational relations rather than on an isolated property or component. It then subjects that point of contact to Factor X.

This approach does not exclude physicochemical matter; it merely suspends, provisionally, the privilege accorded to a particular material realization in order to seek the minimal functional core and only then investigate which material substrates can realize it.

The TMC does not separate function from matter. It first asks what must happen; then, which physical structures make it possible. The process requires reciprocal verification: does the structure realize the function? Does that function help maintain or reconstruct the structure? If the same structure can persist without that function, then the structure, by itself, does not demonstrate the necessity of the function; the proposed relation must be reassessed.

3.3.2 — Why Three Directions?

> The Triad did not arise from choosing three properties in advance. In the investigation that led to the TMC, different criteria for life were compared and tested against widely accepted cases, negative cases, and borderline cases, while also varying the scale and time window. This path is presented in concentrated form in Chapter 11's comparative table, where metabolism, reproduction, thermodynamic organization, terrestrial biochemistry, and the Triad itself undergo a broad stress test involving living organisms, dormant states, artificial systems, dead structures, and other borderline cases. **The purpose of this comparison is not to prove the Triad through repetition**, but to examine how far each criterion can distinguish cases without producing arbitrary exceptions.

Applied to these comparisons, Factor X made it possible to remove particular properties and ask what still had to remain for living continuity to remain intelligible. The reduction then converged on a **proposed functional minimum of three requirements that cannot substitute for one another**: maintaining and reconstructing the present organization; relating to differences and being transformed by them; and enabling part of that trajectory to continue beyond the instance.

When the investigation of life is reduced to the functional minimum proposed by the TMC, three different but interdependent requirements can be distinguished: each answers a problem of continuity that the other two, taken alone, cannot resolve.

RESIST

To avoid coming apart under wear and deterioration, the organization must preserve and reconstruct the conditions that maintain it.

ACCESS

It must enter into relations with internal and external differences, operate on them, and incorporate their effects.

CONTINUE

So that what it has built does not end with the present instance, some difference capable of participating in a new reconstruction must pass beyond that instance.

The TMC calls these three functional directions Inside, Between, and Ahead.

> **The reduction arrived at three directions not because life was arbitrarily divided, but because, after successive comparisons and removals, each continued to answer a requirement that the others could not replace.**

> **The Triad emerges when the stress test no longer allows another direction to be removed without losing a causal dimension of continuity.**

This delineation can be tested by removal. Without Inside, the organization loses the capacity to maintain and reconstruct itself. Without Between, it cannot access differences or incorporate anything new into its own trajectory. Without Ahead, its continuity ends with that instance. **These are not yet three material components, but three minimal kinds of work** that must be sought and tested in concrete physicochemical arrangements.

In the TMC's proposal, living continuity requires the articulation of these three directions; the following chapters will investigate the work of each separately, and Chapter 11 will test their capacity to serve as a criterion of demarcation.

3.3.3 — Inside: Maintaining and Reconstructing

Inside is the causal work through which an organization maintains, repairs, and reconstructs the present instance. **It does not mean merely what is physically inside, nor can it be reduced to metabolism.** It includes the capacity to register and preserve, within the system's material organization, traces produced by contacts—encounters in which the object delineated by Between is confronted with records already available in Inside.

> **The object is not yet the contact: contact arises when what has been delineated encounters an organization that already has a history.**

Taken individually, none of the following is sufficient:

- being physically inside;
- having a membrane;
- carrying out metabolism;
- maintaining momentary homeostasis;

- repairing a component;
- storing information or memory;
- maintaining a static form;
- possessing neurons.

Each of these properties may participate in Inside, but none defines it on its own. The criterion is its participation in the work through which the organization maintains, repairs, records, and reconstructs its present continuity.

Chapter 4 will examine this work in detail: how recording incurs a cost, why preservation requires selection, and how the past can remain operative without remaining intact.

3.3.4 — Between: Accessing and Transforming

Between is the causal work through which an organization delineates and accesses external or internal differences, bringing the object into relation with traces already available in Inside. **From this encounter, contact is formed: the object encounters an organization that already has a history**, and what is accessed can modify both the present operation and the records that will participate in future encounters.

> **The object is not yet the contact: contact arises when what has been delineated encounters an organization that already has a history.**

Taken individually, none of the following is sufficient:

- having a membrane or boundary;
- exchanging matter or energy;
- receiving a stimulus;
- possessing receptors;
- performing transduction;
- reacting mechanically;
- moving;
- exhibiting feedback;
- merely undergoing a change caused by the environment.

These processes may participate in Between, but none of them, on its own, constitutes the historically conditioned encounter that the TMC seeks to describe.

Chapter 5 will develop this work in detail: how the present encounters the world through a history and how each contact can modify the organization that will receive the next object.

3.3.5 — Ahead: Continuing Beyond the Instance

Ahead is the causal work through which differences from a trajectory remain capable of participating in the reconstruction of organization beyond the present instance. It cannot be reduced to reproduction, genetic inheritance, or the transfer of an object between generations.

> **Ahead is not what passes across. It is the causal relation through which what passes across comes to make a difference again.**

What passes across need not be a complete copy or already contain the organization that will emerge later. It is enough for some difference produced or preserved by the earlier trajectory to remain capable of modifying what can be reconstructed in the next instance.

> **The past does not need to remain; it needs to remain capable of making a difference.**

Taken individually, none of the following is sufficient:

- having DNA or RNA;
- copying or transmitting a sequence;
- dividing or producing descendants;
- transmitting matter;
- producing similar descendants;
- exhibiting variation or selection.

All of these processes may participate in Ahead, but none defines it on its own. Reproduction is one way of realizing Ahead; it is not what defines Ahead.

Substrate neutrality does not mean accepting just anything as life; it means requiring the same causal work without demanding in advance the same

matter or the same already familiar arrangement.

Chapter 6 will develop this passage in detail: what must pass across, why simple transmission is not enough, and how an earlier difference can encounter a new organization and once again participate in its reconstruction.

CHAPTER 03 · BLOCK 04

3.4 COHESION

The Triad Is Not a List

WHAT IT IS

Shows why the Triad depends on the arrangement among its directions. It examines codependence, resilience, continuity, and the limits of the proposal before preparing the following chapters.

QUESTIONS

- How do the three directions condition one another?
- What can continue when the instance and its matter cease to exist?
- What has the Triad not yet demonstrated?

KEY INSIGHTS

- A property of the whole need not belong to any one of its parts in isolation.
- Continuity can transmit causal differences without carrying over a ready-made organization or the same self.
- The Triad is a proposed architecture to be confronted with cases and limits, not a universally sufficient account already demonstrated.

IN THIS BLOCK

3.4.1 Codependence: The Directions Sustain the Whole

3.4.2 Resilience: The Whole Resists and Reconstructs Itself

3.4.3 Continuity: Organization Extends Beyond the Instance

3.4.4 What the Triad Allows Us to Claim—and What It Has Yet to Demonstrate

3.4.5 The First Trajectory of the Triad

3.4.6 From the Triad to Inside: Separating in Order to Understand

3.4.7 THE MAP

The separation of Inside, Between, and Ahead is methodological. In living organization, these directions do not operate as three independent parts: they condition one another and form a causal and temporal articulation. The Triad, therefore, is not a list of three properties; it is the arrangement produced by their relations.

3.4.1 — Codependence: The Directions Sustain the Whole

Inside, Between, and Ahead are not three independent properties added to a system. Think of three brooms leaning against one another: separately, they fall; arranged together, they create a form of support that none possesses on its own. Remove any one of them, and the arrangement collapses.

> **None of the three directions carries the Triad within itself. The relevant property belongs to the arrangement.**

The analogy shows only this codependence. It does not demonstrate life, regeneration, or continuity. It shows that certain properties belong to the relations among parts, not to the parts in isolation.

In organizational terms, the argument approaches the Kantian conception of the organism, according to which the parts not only belong to the whole but are reciprocally cause and effect of its organization. **The TMC adds a diachronic requirement to this framework**: to investigate how this organization forms, reconstructs itself, and continues through time.

3.4.2 — Resilience: The Whole Resists and Reconstructs Itself

Resilience, here, is the capacity to preserve or recover organization in the face of disturbances. The codependence among Inside, Between, and Ahead may increase that capacity, but does not guarantee it.

Depending on its architecture and resources, a living organization may compensate for losses, repair components, and reconstruct compromised relations.

This capacity varies across systems. Cohesion does not imply unlimited regeneration; it means only that the maintenance or recovery of each direction may depend on the operation of the others.

3.4.3 — Continuity: Organization Extends Beyond the Instance

No material substrate persists indefinitely. Continuity, therefore, does not depend on preserving the same matter forever or producing a complete copy of oneself.

Through Ahead, differences from a trajectory may extend beyond the present instance and participate causally in the reconstruction of another. **What passes beyond is not the ready-made Triad, but materially realized differences** capable of participating in the conditions through which a new instance will reconstruct its own articulation of Inside, Between, and Ahead.

The cohesion of the Triad does not constitute a fourth direction. It designates the way in which Inside, Between, and Ahead become mutually dependent, may withstand disturbances together, and participate in a continuity that extends beyond the matter of the present instance.

> **Separating mind, body, and trajectory helps distinguish functions. Treating them as independent realities, however, may turn a tool of analysis into the very abyss one seeks to explain.**

3.4.4 — What the Triad Allows Us to Claim—and What It Has Yet to Demonstrate

In the TMC's proposal, the analysis by removal supports the claim that Inside, Between, and Ahead address distinct dimensions of continuity and cannot substitute for one another.

This does not yet demonstrate that the Triad is sufficient, exclusive, or universal. It shows that, within the proposed reduction, removing any one of the three directions eliminates a dimension that the other two do not restore.

Their mechanisms, evidence, limits, and possible failures will be examined separately in Chapters 4, 5, and 6. The three directions will then be brought together again and confronted with cases that challenge traditional definitions of life. In Chapter 11, the Triad returns as a comparative criterion and is also subjected to the possibility of failure.

> **At this point, therefore, the Triad should be understood as a proposed and methodologically derived causal architecture—not as universal sufficiency already demonstrated.**

3.4.5 — The First Trajectory of the Triad

> Prebiotic chemistry has already shown that, under conditions plausible for scenarios predating life, molecules used by living beings can emerge and some of these components can be brought together experimentally. **What remains open, however, is the problem of explaining how initially dispersed chemical processes could have formed systems capable of maintaining a continuity of their own.**

It is not enough to know how a molecule capable of copying itself, a membrane, or a network of chemical reactions appeared. **We need to explain how these functions began to work together**: one maintaining and reconstructing the system, another allowing internal and external differences to change its operation, and another enabling part of those changes to participate in the next formation.

Prebiotic chemistry has made great progress in producing the ingredients of life. What has not yet been fully demonstrated is how these ingredients, through their own couplings, closed a circuit capable of turning a passing reaction into a history that continues.

The TMC does not claim that this was the historical sequence actually followed by the first form of life. It is a model for investigation: asking at what point previously dispersed processes began to mutually sustain maintenance, transformation, and continuity.

The Triad adds a way of seeking this closure. Instead of taking DNA, a membrane, or metabolism as exclusive starting points, it seeks the arrangement capable of preventing each chemical achievement from disappearing with the reaction that produced it. Inside asks what maintains and reconstructs the system; Between, what allows differences to alter its trajectory; Ahead, what enables part of those changes to participate in the next formation. These are not three ingredients, but three kinds of causal work that different forms of matter may carry out.

The Triad does not replace the hypotheses, experiments, or chemical pathways already being investigated. It adds a criterion of closure: it makes it possible to organize and compare them and identify when dispersed processes begin to sustain a common continuity.

> **It does not replace the search for ingredients with a search for the arrangement; it shows how to investigate the moment when the ingredients began to build the next attempt.**

3.4.6 — From the Triad to Inside: Separating in Order to Understand

The Triad has so far been presented as an articulation among Inside, Between, and Ahead. In the next three chapters, these directions will be separated methodologically so that their mechanisms, limits, and realizations can be examined more precisely.

3.4.7 — THE MAP

Chapter 4 will investigate Inside—how an organization maintains, records, and reconstructs the present instance.

Chapter 5 will examine Between—how differences encounter an organization that already has a history and may transform its trajectory.

Chapter 6 will follow Ahead—how differences from that trajectory may continue causally beyond the present instance.

This decomposition does not turn the three directions into independent modules. Separating in order to understand does not mean separating in order to exist.

> **The path begins with Inside: before tracing what an organization encounters or what may continue beyond it, we must understand how it manages to remain an organization in the present.**
