The Symbol as Material Operation – A Quantum Example

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Abstract

This essay proposes a radical reformulation of the concept of the symbol, displacing it from representational traditions toward a relational materialist ontology, designated as the Ontology of Emerging Complexity (OEC). Through the distinction between trace, mark, and symbol, the text constructs a rigorous terminology that allows inscription to be thought as functional reorganization of matter, without recourse to transcendence or essences. The culmination of this conceptual trajectory takes place in the quantum experiment, taken not as an object of physics, but as a philosophical paradigm of inscription.

The wave function, understood as a technical operator that reorganizes probabilities, is interpreted as a symbol in the full sense: not as representation of a hidden state, but as inscription of a material possibility. Quantum reality, with its constitutive indeterminacy and its dependence on observation, reveals itself as the field where symbolic inscription reaches its maximum ontological potency. The symbol ceases to be mediation and becomes operation — there is no essence to unveil, but matter to reorganize.

In this sense, the text does not aim to explain quantum physics, but to reinscribe it as a privileged example of an ontology of inscription, where the real is not given but technically produced. The quantum experiment is not an epistemological limit, but an ontological opening: it shows that the symbol is not a reflection, but an event. Thus, quantum physics is invoked not as a science of nature, but as testimony to the symbolic nature of inscription — where the real is always an effect of coupling, reorganization, and complexification.

The history of Western philosophy is, to a large extent, a history of symbolization and of the attempts to assign it an ultimate foundation. From the very beginning, the symbol was invested with the promise of access to another dimension of the real — whether that of essence, truth, or hidden meaning. The philosophical trajectory can thus be read as a succession of models that, despite their differences, share a common presupposition: that the symbol is not merely a situated operative gesture, but a path of revelation of being.

In the classical tradition, the symbol appears under the Platonic form of participation: the phenomena of the sensible world acquire intelligibility only by reference to an eternal and immutable archetype. Aristotle reinscribes this paradigm by conceiving the linguistic symbol as the expression of the ontological structures of being. In both cases, the symbol is thought as mediation of a prior order, without questioning the material conditions of its formation.

Medieval theology radicalizes this heritage by transforming the symbol into sacrament: it not only represents but contains transcendent reality. The hermeneutics of the sacred reinforces this interpretation, attributing to the symbol an epiphanic function, almost independent of the materiality of its support.

Modern rationalism secularizes this matrix. For Descartes, symbolic clarity reflects the order of thought; for Leibniz, mathematics embodies a transparent universal language; in Kant, the aesthetic symbol appears as mediation between the sensible and the supersensible. In all these cases, the symbol continues to be treated as mirror or translation of a prior order, remaining detached from the technical gesture of inscription.

Romanticism and the philosophies of life reorient symbolization as immediate expression of a creative interiority. Schelling, Goethe, and Hegel conceive the symbol as revelation of spirit or history, once again relegating the material aspect. In Novalis, the poetic dimension of the symbol is elevated to the condition of sensitive revelation of the absolute, granting it metaphysical status.

Linguistic structuralism (Saussure) breaks with naturalist correspondence, defining the sign as the arbitrary unit of signifier and signified, regulated by internal differences within the system. Despite this rupture, by reducing the symbol to a formal function, it eclipses the materiality of support and inscription, subordinating the symbolic to the abstract logic of structure.

Hermeneutic phenomenology (Heidegger, Gadamer) shifts the focus to language as the dwelling of being and the opening of world. Symbolization gains existential and historical density, but retains a revelatory power that obscures the material gesture. Inscription remains invisible, dissolved into the horizon of interpretation.

Psychoanalysis (Freud and Lacan) grants the symbol a decisive function — cipher of the unconscious or structuring order of desire. Yet even here, the symbol is conceived as translation or latent structure, not as material operation. Technical inscription gives way to a process of deciphering or psychic structuration.

Post-structuralism (Derrida, Barthes) dissolves the symbol into networks of infinite referral. Derrida insists on différance as incessant deferral of presence; Barthes multiplies the sign into cultural codes and intertexts. Symbolization no longer guarantees stability, yet it remains without technical thematization: it is treated as movement of meaning, not as material inscription.

Foucault introduces an important displacement by situating the symbol as an instrument within dispositifs of knowledge-power. It ceases to be foundation and becomes historical operator of classification, ordering, and exclusion. The reading approaches a material problematization, but remains functional and historical: the symbol is the effect of dispositifs, not an ontological operation.

Throughout this trajectory, the symbol was repeatedly treated as a constituted datum — something already in operation — and rarely as a process of material and technical emergence. Even currents that destabilized its traditional function did not interrogate its genesis: the gesture by which a difference is inscribed and becomes symbol.

Against this naturalization, the OEC proposes to re-situate the inaugural question: how does the symbol happen? Only through analysis of its material conditions — inscription, codification, repetition — can the limits and the power of the symbolic be understood. By breaking with the interiorist conception, which sees in the symbol the expression of a prior essence (soul, spirit, consciousness, or subject), the OEC affirms that there is no interiority without inscription, nor symbolization as mere echo of a pre-existing content.

The symbol is the effect of material codification and functional reorganization, not the revelation of a transcendent ground. It is not mediation between heterogeneous planes

(material/spiritual), but a material configuration that functionally represents a portion of complex matter that is absent or accessible only through processes of abstraction. The symbol, thus understood, is not the echo of an absolute interiority: it is a real operator of symbolic reorganization, a contingent effect of inscriptions that stabilize themselves in technical supports.

The symbol is neither the translation of an essence nor a bridge to transcendence. It is a material operative relation constituted in the process of inscription: the functional stabilization of a material difference in a concrete support. Through this operation, the portion of matter symbolized ceases to be a mere dispersed datum and becomes integrated as a functionally articulated element within a symbolic network. This redefinition breaks both with the Platonic heritage of participation and with its modern transpositions in phenomenological, transcendental, or intersubjective regimes.

By displacing primacy from the representational to the operative, the OEC reconstructs symbolization in material and relational terms. At a first level, the symbol can be understood as functional representation of a material absence — a configuration not physically co-present in the operative act. This is what happens, for example, when the word *door* evokes the image of an absent object: here, the minimal representation allows the subject to recognize what is at stake. But this level does not exhaust the scope of the symbolic. At a second, more complex level, the symbol not only evokes the absence: it reinscribes it into a network of legibility, reorganizing it according to new contexts of meaning and new articulations. Thus, the word *door* may figure as metaphor of passage, as technical concept in architecture, or as religious sign, acquiring layers of signification in symbolic processes of greater abstraction and complexity. It is in this passage from minimal representation to operative reinscription that the core of the current proposed here is revealed: every symbol requires material inscription, and every symbolic inscription gains status only by integrating into a system that relates and stabilizes it.

To understand the symbol within this horizon is to recognize it as an ontological emergence anchored in specific material conditions: support, functional differentiation, possibility of reinscription. It does not possess the status of an essence to be reflected, but of an operative technical image of an absent configuration, made accessible through the process of inscription. Contrary to the passive image of the mirror, the symbol intervenes in the operative field of matter, instituting differentiations that reconfigure both material flows and regimes of meaning.

From this perspective, the symbol defines itself as a technical operation of functional reorganization of matter, through which an inscription becomes legible by integrating into a system of differential relations. It manifests as an ontological event: a material structure that acquires symbolic consistency by becoming functionally active within a network. Its strength lies not only in the inaugural moment of inscription, but above all in the possibility of being reinscribed in distinct contexts, producing successive reorganizations without losing functional consistency.

It is also important to distinguish the symbol from the sign. In the OEC, the symbol is not reduced to a mere conventional marker: it is a material operation that reorganizes an inscription, instituting new regimes of legibility. The sign, by contrast, corresponds to a derived reading of this process, already situated in the cultural plane, where signifier and signified vary according to contexts and communities. In practice, symbols are often

converted into signs in the process of communication, when their material-operative dimension is abstracted and reduced to a shared code. Thus, whereas the sign is a variable convention, the symbol is an ontological condition: the material stabilization that makes any reference possible.

This operation may evoke images, concepts, or affects, but such contents are not the origin of symbolization — they are its effect. There is symbolic evocation only because there has previously been material inscription that rendered that structure identifiable and manipulable within an operative system. The interiority evoked is, in this sense, the product of the symbolic process — and not its point of departure.

It is precisely from this material inscription that the symbolic operation assumes an ontologically productive role. By inscribing a structure into an operative system, it not only intervenes in the organization of matter: it produces a precise ontological effect — the legibility of certain elements as bearers of meaning. This effect is designated, in the OEC, as *mark*.

The mark is the very portion of matter symbolized, a direct effect of the operation of symbolic inscription. Before inscription, there is only indifferent material organization; after it, that same portion becomes distinguishable and representable, not by itself, but through the symbol that encodes it. The mark does not precede the symbol, nor does it possess functional agency: it is a passive record of symbolization, a seal of the inscribed difference whose operativity depends entirely on the symbol that represents it.

Within this horizon, the mark does not represent or communicate: it functions exclusively as a material seal. Its role is limited to designating the structure through which matter becomes distinguishable. What we call mark is, therefore, matter that has been symbolized, which remains the same in its constitution, but which, through the symbol, comes to figure as a point of reference within a functional symbolic regime.

Unlike the symbol, which is relational and recursive, capable of integrating into networks and being reinscribed in multiple contexts, the mark is localized and singular. It does not establish relations nor reorganize itself at higher levels of complexity: it is a portion of matter made distinguishable by the effect of symbolic inscription. It does not refer to other elements, nor does it operate functionally upon the semiotic regime — it merely figures as a minimal point of stabilized legibility. Wherever there is a mark, there has already been inscription: mark and symbol emerge co-implicated in the gesture of differentiation that inaugurates the intelligibility of matter. With the mark, a first distinction is instituted, but not yet a relation between multiple operative differences.

An analogy helps to clarify this definition. Imagine a block of stone placed in a garden. As stone, it is only indifferent matter. But if it is symbolized as a "garden bench," it remains exactly the same block of stone, without any physical alteration. Nevertheless, it now has a symbolic status: it is recognized and used as a bench. In this case, the block of stone is the mark — the symbolized matter, fixed as support —, and the bench is the symbol — the function or value attributed to it. The stone remains stone, but it has also become mark: matter distinguished and stabilized as bearer of meaning.

Thus, the mark is the threshold between raw matter and symbolized matter. It is not symbol, but the inaugural effect of symbolization, which institutes a minimal distinction within the material field, rendering it legible. It inaugurates the possibility of meaning, but does not organize it; it manifests a singularity, but does not constitute a network.

For the mark to emerge, matter must first become identifiable. Here intervenes the concept of *trace*. In the OEC, the trace is the phenomenon by which a material difference, not yet symbolized, becomes accessible to an operation of inscription. It is neither mark nor symbol, but the minimal condition of their emergence: the point at which a difference begins to be legible prior to any symbolic organization.

The trace occurs when an irregularity or pattern in matter — until then undifferentiated for the system of inscription — becomes recognizable through a technical-material articulation. This recognition is not subjective, but an effect of devices that highlight the difference. For example, when studying a new protein, it only becomes symbolizable if its structure emerges as trace for a technical system of reading, such as spectrometry or crystallography. Without this phenomenon, the structure remains opaque, outside any regime of inscription.

Thus, the trace is situated at the ontological threshold of symbolization: a minimal material event that opens the possibility of inscription, but does not yet become mark. What becomes mark is the matter itself once symbolized; the trace merely indicates its singularity as potential for legibility. It is important to stress that not every difference generates a trace. Most material variations remain mute, outside any regime of legibility. For a difference to become trace, it is necessary that a structure — sensory, technical, or cognitive — identify it as relevant. The trace is therefore a relational event, not an intrinsic property of matter.

This phenomenon can be observed in its extreme form in the attempt to know the interior of a black hole. It is not a question of absence of reality, but of absence of technically accessible traces: to this day, no technology has made it possible to extract a recognizable pattern that reveals its internal structure. Without trace there is no inscription; without inscription there is no symbol; without symbol there is no knowledge. The black hole, in this sense, is not the nonexistent, but the not-yet-symbolizable — that which remains outside the field of technical legibility.

The same problem manifests itself at the philosophical level. The distinction between trace, mark, and symbol constitutes a critical point of the OEC, since it separates three regimes of material inscription without recourse to transcendence or to the metaphysics of signification. To ignore this separation — as happens in various linguistic, hermeneutic, or phenomenological theories — leads to the collapse of the difference between what is inscribed and what operates symbolically.

To recapitulate synthetically: the trace is the phenomenon by which a difference becomes recognizable as potential for symbolization; the mark is the symbolized matter, stabilized by inscription; the symbol is the material and representational reorganization of that mark in its own support, allowing abstraction and integration into systems of symbolic operation. This is not a temporal succession, but distinct functions articulated in the process of symbolization.

To confuse these layers is to dissolve the very possibility of a non-transcendental philosophy of the symbol. To affirm that any legible form is already symbolic, simply because it is interpretable by humans or results from intentional action, amounts to erasing the difference between material legibility and operative symbolization — thereby returning thought to the representational paradigm and reinstating, through a lateral path, a transcendence of consciousness.

Concrete examples help clarify this distinction. An electrical oscillation recorded by a cerebral electrode, a groove in a rock, or a genetic sequence read by an algorithm are not yet symbols: they only become relevant when a technical system is able to recognize them as traces, that is, as highlighted differences capable of being inscribed. None of these converts into a mark until there is material inscription that stabilizes it; and only by being represented within a symbolic regime can it acquire the status of symbol. Symbolization, therefore, cannot be reduced to raw legibility: it requires a technical process of inscription that converts variations into operators of action and memory.

The mistake of treating the symbol as bearer of an essential meaning traverses three major traditions: representational idealism, which conceives it as reflection of an idea; phenomenological hermeneutics, which understands it as mediation of presence or of being; and structural linguistics, which reduces it to a formal element. In all these approaches, the symbol appears as expression of a content that transcends it. The OEC refuses this transcendence, without denying the material anteriority of what is symbolized. The symbol does not reflect an idea: it operates upon material inscriptions. Its efficacy does not lie in revealing a pre-existing meaning, but in instituting operative functions that reorganize the legibility of matter.

The analogy of the garden bench can now be made more precise. As a block of stone, there is only raw matter, without function. When someone recognizes in its form the possibility of sitting upon it, that difference becomes legible: it is trace. If, from then on, the stone is stabilized as support of a designation, it becomes mark — not because it acts, but because it remains as inscribed matter, passive seal of what has been symbolized. Only when that stone is referred to or evoked as a "garden bench," even in its absence, does it convert into symbol: a material organization with relational function, capable of operating within networks of signification that exceed its physical presence.

This process, though exemplified in exterior physical space, obeys a broader ontological logic: every symbol emerges from the inscription of a difference in a material support. Inscription is always an objective transformation of the support: there is no symbolization without material reorganization that sustains its legibility and operative efficacy.

In the brain, for example, the inscription of a concept, an image, or an idea corresponds to synaptic and electrochemical alterations in neuronal networks. It is this physical modification that makes recognition, memory, and the articulation of new symbols possible. To think is never an act in the void: it is always the articulation of already materially inscribed symbols, combined into new arrangements by functional coupling. Language, as symbolic system, can only operate because it is physically inscribed in the neural tissue.

The same holds true for artificial devices: inscription on a hard drive or in computer memory translates into concrete magnetic, electrical, or semiconductor states. There is no immaterial storage: all information, symbolic or not, requires physical support.

This principle dissolves once and for all the phantom of the transcendental. Consciousness, rational thought, aesthetic imagination, artistic creation, or ethical experience — all the processes that for centuries were attributed to an immaterial plane — find in neuroscience and in the OEC their material basis: they are effects of complex symbolic inscriptions upon physical supports.

Symbolic inscription is, therefore, the concrete operation by which matter reorganizes itself into regimes of legibility. It does not merely fix a difference, but institutes conditions of memory and reactivation, opening new pathways of action and recognition. For this reason, it must not be understood as a secondary effect of perception, but as the inaugural gesture of constitution of the symbolic field.

By inscribing a difference, the technical system — whether biological, cultural, or artificial — creates an operative memory: what before was only variation now counts as an element within a circuit of recognition and action. This circuit does not merely conserve the difference: it redefines the criteria of pertinence that determine which variations will be perceived, codified, or ignored.

What is at stake here is a materialist understanding of inscription: it is not the visible mark of an intention or of a representation, but the activation of a new functional arrangement within matter. In all cases — microscopic or macrostructural, individual or collective — it defines a new field of symbolic consistency.

It is precisely for this reason that inscription must be thought of as ontological technology: it does not describe the world, but constitutes the symbolic world, organizing matter into regimes of functional legibility. And since every inscription implies selection, it is also decision: it cuts, stabilizes, and excludes. What is inscribed becomes world; what is not inscribed remains outside. It is in this gesture of selection that inscription touches the political, the epistemological, and the ontological at once.

But to understand the scope of this operation, one must recognize that not every variation of matter immediately becomes symbolic. Only when a difference is captured and stabilized within a technical device does it convert into functional difference, symbolically integrated — that is, into a condition of action, memory, or reorganization. What is at stake is not an ontological leap, but a threshold of complexity: the same matter, once reinscribed within a regime of legibility, gains symbolic pertinence. There is no change of plane, but a change of function: variation becomes operable because it has been integrated into a network that validates and reinscribes it.

The passage from physical difference to functional difference must not be understood as a leap, but as a variation of complexity. The denser the material organization of a system — as in the brain or in advanced technical devices — the greater its capacity to stabilize differences and reinscribe them as symbolic operators. Inscription does not pull matter out of the physical regime into some symbolic beyond; it merely reconfigures relations that are already material, transforming variations into stabilized marks, upon which symbols will be able to operate.

Thus, inscription does not inaugurate a new status of matter — unlike metaphysical traditions that conceived the symbol as mediation between two planes of being. It does not institute an ontological split — against modern dualisms that separated body and consciousness. Nor does it hierarchize physical difference and functional difference — in critique of hermeneutics and structuralism, which only recognized value in what was legible within the symbolic. And, above all, it does not transform one and the same matter into something "higher" — the error of representational theories that confused the mark with the symbol and attributed transcendence to the act of symbolizing.

In this sense, inscription does not inaugurate a new world, but establishes a higher regime of complexity, in which legibility ceases to be mere sensory capture and becomes a

condition of coordinated action. What changes is not the nature of the real, but the way certain differences come to be reused and reinscribed within functional networks.

Inscription does not institute any ontological split: it makes explicit the immanent plasticity of complex matter, whose power of reorganization allows variations to become symbolic operators. Symbolization is not a leap nor a rupture, but a contingent expression of the material continuity of complexity.

It is tempting, even within a materialist ontology, to postulate a distinction between physical difference and functional difference, as if only the latter constituted a true ontological event. This distinction, though at first sight useful for describing the way certain technical systems reorganize themselves symbolically, introduces nevertheless a conceptual trap: the idea that there would be some matter "more important" than another, some difference that "counts" and another that does not. But this distinction, once analyzed rigorously, proves unsustainable.

What is often called functional difference is presented as the moment when a material variation begins to operate within a symbolic system. But this formulation shifts the ontological axis to the standpoint of functionality, suggesting that only what serves a circuit of recognition, memory, or action has ontological value. This reinstates, subtly but perniciously, an anthropocentric criterion, in which the symbolic — insofar as it is legible, reinscribable, and useful — becomes the measure of reality.

Now, such a gesture is unacceptable within the OEC. There are not two types of matter, nor two planes of existence. What there are, are different forms of reorganization of matter — all fully material, all fully real, all immanently productive in their degree of complexity. Variation that has not yet been reinscribed is not "less real": it is simply not integrated within a specific operative regime. This does not diminish it ontologically — it only situates it outside a given technical field.

The very expression "ontological leap" must therefore be abandoned. It insinuates a cleavage of status, as if symbolic emergence constituted a passage between orders of being. What exists, in truth, is the local intensification of matter's automodulation, which reorganizes itself internally into new circuits, stabilizations, and conditions of reinscription. Legibility is not a plane above the physical: it is a technical form of its reorganization. And the symbolic does not constitute an elevation, but a local function of complexity.

By rejecting the hierarchization between "physical difference" and "functional difference," this work reaffirms a non-negotiable principle: every difference is fully material, and all matter, even when not symbolized, is ontologically dense. Symbolic inscription does not transform one and the same matter into something "higher," but creates another material organization that represents the first. The mark is the matter symbolized, stabilized by inscription; the symbol is an independent reorganization, in another support, capable of operating upon that mark. When I symbolize an apple, I do not alter the matter of the apple itself, elevating it to symbol: I produce a material configuration in my brain that represents it. The error of the metaphysics of consciousness, of classical phenomenology, and of the theory of representation was to confuse these planes, as if legibility implied an elevation of the very matter represented. Here, that illusion is undone: symbolization neither hierarchizes nor transfigures the real, it only creates new material regimes of representation.

Thought, consciousness, language, and technique are not expressions of a special kind of matter, but local effects of contingent material self-organizations. And where there

is no symbol, there is still world: matter in flux, reorganizing itself without need of recognition, without demand for meaning, without appeal to operativity. Difference does not need to "function" in order to be. And the world, in turn, does not need to be legible in order to exist.

If every difference is already matter, and every inscription is an immanent reorganization, it becomes necessary to confront a recurring misconception: the idea that certain symbolic operations would have retroactive power over the real, as if symbolization not only inscribed itself upon matter, but could reconfigure past events themselves. Symbolic emergence does not create a new world: it merely reorganizes the same world in iterative, technical, and relational fashion, always within the symbolic plane.

It is in this sense that one must understand the vocabulary of retroactivity that pervades certain twentieth-century currents. Gadamer's hermeneutics, in speaking of the fusion of horizons, suggests that the reading of a tradition alters its very meaning. Ricoeur speaks of the "refiguration" of the narrated past in light of new contexts. Derrida, in insisting on différance, indicates that each sign displaces the previous ones, rendering their meaning always provisional. Even in analytic philosophy of language, in authors such as Quine or Davidson, interpretation appears as a network that constantly redescribes its own presuppositions. In all these formulations there is a valid intuition: the past can be reinterpreted in light of new conditions of legibility.

The problem begins when this intuition is converted into an ontological thesis: that reinterpretation is equivalent to modification of the inscribed event. The word "retroactive" suggests that the symbol could alter what has already happened, as if the emergence of a new regime of reading could rewrite the real itself. No symbol — no matter how powerful — has such capacity. What happened, happened. A material inscription, once recorded, is not annulled by a new symbolic codification. What can be transformed is only its interpretation, the network in which it is reinscribed, the functions it acquires.

The distinction is clear: to change perception is not to change the event. Editing a video recorded ten years ago does not alter what happened on that day; it only changes the way we see it now. In the same way, a historical narrative, a scientific theory, or a cultural codification can reorganize the legibility of past facts, but cannot erase the irreversibility of their material inscription. To confuse event and interpretation leads to the illusion that symbolization could have retroactive power over the real — an illusion that runs through both hermeneutic phenomenology and certain post-structuralist readings.

The origin of this illusion lies in the confusion between two distinct planes: that of the real world and that of the symbolized world. When a philosophical current identifies the real with what is symbolized — or with what is perceived within experience —, it opens the fallacious idea that to transform symbolization is to transform the real. But the real is not reducible to its symbolic legibility. What symbolization organizes is only a regime of representation and interpretation. Events remain independent of that gesture.

The OEC dispels this illusion. The symbol does not rewrite the past: it reorganizes its legibility in the present. At each new symbolic emergence, a set of already existing inscriptions can acquire other meanings, be reinscribed into different networks, gain new operative function. But this transformation is always operative and actual, never ontologically retroactive. Symbolization is not time travel: it is the immanent reorganization of the field of legibility.

It is precisely here that the strength of the concept of functional coupling is understood. The question is not how the symbol alters the past, but how it expands the present by articulating with other symbols. In the domain of the symbolic, coupling designates the capacity by which different symbols, when articulated together, produce meanings that none of them in isolation could contain. It is not a matter of sum, but of emergent function: each symbol, by integrating into an operative network, loses its isolated autonomy and acquires relational consistency. It is this capacity that founds logic, grammar, narrative, mathematical deduction — in short, the very possibility of language and systematic thought.

An isolated symbol is complete as a representational unit, but its potential expands only when it is inserted into chains of articulation. It is in coupling that symbolization becomes more complex, allowing abstract reasoning, hypothetical constructions, and collective narratives. This is what differentiates the OEC's approach from traditions such as Peircean semiotics, which emphasized the triad sign–object–interpretant but never described the material condition of articulation between symbols; or structural linguistics, which described formal difference but not the gesture of inscription that sustains it.

This principle applies at multiple scales: in mathematics, where combined symbols enable deduction; in written language, where words acquire force only in the sentence; in cognition, where networks of symbols sustain abstract thought. In all these cases, it is functional coupling that stabilizes and amplifies symbolic potency.

To think coupling is, therefore, to recognize that symbolization is not merely the isolated inscription of differences, but above all their articulation within operative networks. The symbol is not a mere singular operator, but a node of convergence — always situated, yet capable of opening itself to broader systems. It is in this openness that its reorganizing power resides: not to alter the real retroactively, but to multiply the ways of operating with it.

In the domain of quantum physics, the triadic structure of the OEC manifests itself in exemplary fashion. The wave function is not an unknown nor a reflection of the observer's ignorance, but a symbolic construction: a mathematical inscription that stabilizes, in probabilistic form, the possible behaviors of the system. Unlike classical physics, in which equations represent determined states of bodies and trajectories, here the symbol is from the outset a formalization of the indeterminate as a field of possibilities.

It is in this horizon that functional coupling shows its true power: it does not limit itself to constituting language, logic, or narrative, but also becomes operative principle of the sciences. Whenever different symbols are articulated together, systems are created that can organize, predict, and intervene in the real in ways that no isolated symbol could achieve. It is this combinatory capacity that sustains both mathematical discourse and the formulation of physical or biological theories. Symbolic coupling is, therefore, not an abstraction restricted to the philosophy of language: it is a material condition of all scientific practice.

Now, it is precisely in the domain of quantum physics that this point becomes most evident. There, mathematical symbols do not function as mere intuitive representations, but as operators which, coupled within systems of equations and experimental protocols, enable the organization of the probabilistic field of the quantum real. Each formalism is, in itself, a symbol; but it is in the articulation among symbols — wave functions, operators, matrices — that a regime of predictability and manipulation opens.

A measurement does not, therefore, reveal a hidden property, as classical tradition would suppose, but actualizes one of the possibilities inscribed within the symbolic regime of the wave function. The value recorded is an experimental inscription that only acquires the status of *trace* when it introduces a difference not previously foreseen within the regime — that is, when it opens the way for a new symbolic stabilization. In this sense, the logic of trace, mark, and symbol remains, but applied to a plane in which the real presents itself always in the form of variation and probability.

In the OEC, the wave function is not an exception to the symbolic process, but one of its most rigorous expressions in the technical-scientific plane. It is a mathematical symbol that references a quantum material structure, allowing it to be operated upon in probabilistic terms. Its strength does not lie in offering an intuitive image of the system, but in enabling predictions, calculations, and experimental manipulations. Symbolization here does not translate a hidden essence: it reorganizes the field of the possible according to technical-mathematical protocols.

The symbolic status of the wave function does not depend, therefore, on ontological certainties nor on subjective interpretations. It emerges from its functional integration within experimental devices, theoretical models, and scientific practices. Like other technical-scientific symbols — graphs, differential equations, algorithms — the wave function organizes material differences within an operative regime of legibility and intervention. Its efficacy lies in its capacity for reinscription: it can be manipulated, transformed, combined with other symbols in a scientific and technological network, producing real effects of knowledge and action.

It is precisely this point that distinguishes quantum physics from classical physics: whereas the latter presupposed that symbolization corresponded to determined properties of an objective world, the former shows that symbolization also operates upon that which exists only as possibility. The indeterminate is not a limit of reason, but matter of symbolization — provided it is inscribed within technical devices capable of rendering it operable. The wave function is thus a symbol of material possibilities, not the mask of our ignorance.

The progression described must not be understood as a leap or change of plane, but as an intensification of complexity: the trace arises when something emerges as an unforeseen difference; the mark stabilizes that difference as legible; and the symbol reinscribes it within networks of calculation and prediction. Each of these operations does not replace the previous one, but reorganizes it, creating new regimes of intelligibility. What is at stake is a process of immanent transduction: quantum matter becomes legible only because it has been reorganized through successive symbolic inscriptions, which alter at once the material conditions of observation and the horizons of possible action.

In this sense, symbolic ontogenesis in the quantum domain does not result from an intention of faithful representation, but from a gradient of material complexity that opens new forms of distinction, differentiation, and reinscription. Quantum physics thus confirms the thesis of the OEC: symbolization is not blocked by indeterminacy, but precisely in the indeterminate it finds its most potent field of operation.

In conclusion, the analysis conducted has shown that symbolization cannot be thought of as the revelation of a hidden essence, but as an immanent operation of inscription and material reorganization. The traversal of classical, medieval, and modern traditions

revealed the persistence of the idea of the symbol as mediator of a prior meaning, whereas the OEC rejects this inheritance, situating the symbol within the plane of the technical and relational conditions that render it operative.

The introduction of the notions of trace, mark, and symbol clarified the distinction between different moments of inscription: the trace as a difference not yet symbolized, the mark as matter made legible, and the symbol as relational operation capable of reinscribing meaning into new regimes of legibility. Functional coupling proved to be a fundamental condition of this dynamic, for it is through the articulation of symbols that unprecedented meanings are produced, from everyday language to scientific abstraction.

The examination of the case of quantum physics illustrated this thesis in exemplary fashion: the wave function, as mathematical symbol, does not reveal hidden properties, but organizes probabilities, enabling calculation and intervention. The symbol, far from being a mirror of the real, appears as a technical operator that reorganizes the possible.

With this, the central proposition is confirmed: symbolic intelligibility is always the effect of material reconfiguration. There is no essence to be discovered behind the symbol; there is only matter which, by inscribing itself, opens a field of legibility and action. Symbolization is a creative exception, contingent and fragile, dependent on technical conditions and on precise relational ecologies. The chapter does not close with a definitive conclusion, but reopens itself as an invitation: to think the symbolic not as reflection, but as power of continuous reorganization of the real.

References

- Aristotle. 1963. *Categories and De Interpretatione*. Translated by J. L. Ackrill. Oxford: Clarendon Press.
- Barthes, Roland. 1977. *Image–Music–Text*. Translated by Stephen Heath. London: Fontana Press.
- Davidson, Donald. 1984. *Inquiries into Truth and Interpretation*. Oxford: Oxford University Press.
- Derrida, Jacques. 1967. *De la grammatologie*. Paris: Les Éditions de Minuit.
- Descartes, René. 1637. *Discours de la méthode*. Leiden: Jan Maire.
- Foucault, Michel. 1969. *L'archéologie du savoir*. Paris: Gallimard.
- Freud, Sigmund. 1900. *Die Traumdeutung*. Leipzig & Wien: Franz Deuticke.
- Gadamer, Hans-Georg. 1960. *Wahrheit und Methode: Grundzüge einer philosophischen Hermeneutik*. Tübingen: Mohr (Siebeck).
- Goethe, Johann Wolfgang von. 1809. *Die Wahlverwandtschaften*. Tübingen: J. G. Cotta.
- Hegel, Georg Wilhelm Friedrich. 1977. *Phenomenology of Spirit*. Translated by A. V. Miller. Oxford: Oxford University Press.
- Heidegger, Martin. 1962. *Being and Time*. Translated by John Macquarrie and Edward Robinson. Oxford/Cambridge, MA: Blackwell.

- Kant, Immanuel. 2000. *Critique of the Power of Judgment.* Edited and translated by Paul Guyer and Eric Matthews. Cambridge: Cambridge University Press.
- Lacan, Jacques. 1966. *Écrits.* Paris: Éditions du Seuil.
- Leibniz, Gottfried Wilhelm. 1996. *New Essays on Human Understanding.* Edited and translated by Peter Remnant and Jonathan Bennett. Cambridge: Cambridge University Press.
- Novalis. 1798. "Blüthenstaub [Pollen]." *Athenaeum* (ed. F. Schlegel).
- Peirce, Charles Sanders. 1931–1958. *Collected Papers of Charles Sanders Peirce.* Vols. 1–6 ed. Charles Hartshorne and Paul Weiss; vols. 7–8 ed. Arthur W. Burks. Cambridge, MA: Harvard University Press.
- Quine, Willard Van Orman. 1960. *Word and Object.* Cambridge, MA: MIT Press.
- Ricoeur, Paul. 1983. *Temps et récit, vol. 1: L'intrigue et le récit historique.* Paris: Seuil.
- Saussure, Ferdinand de. 1916. *Cours de linguistique générale.* Lausanne & Paris: Payot.
- Schelling, Friedrich Wilhelm Joseph. 1978. *System of Transcendental Idealism (1800).* Translated by Peter Heath. Charlottesville: University Press of Virginia.