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Simulation, Closure and the Ontological Limit of Artificial Systems

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Simulation, Closure and the Ontological Limit of Artificial Systems

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Abstract

The present volume brings together three contributions that pursue a shared ontological question: under what conditions can world arise at all, and where do the structural limits of technical systems and theoretical models lie in relation to this capacity for world-formation.

The point of departure is the observation that many contemporary debates in physics, artificial intelligence, and information theory implicitly assume that increasing complexity, computational power, or theoretical precision could in principle suffice to reconstruct, simulate, or fully explain world. The contributions collected in this volume systematically challenge this assumption. They argue that world does not arise from completeness or formal closure, but presupposes a structural openness that cannot be fully stabilized without undermining the very condition that makes world possible.

The first contribution introduces the **All–Nothing Paradox (ANP)** as a minimal ontological condition of world-formation. According to this view, world appears only where reality does not fully coincide with itself and cannot collapse either into complete determinacy or into pure nothingness. Ontological openness is therefore not an epistemic incompleteness, but a structural prerequisite for perspective, emergence, and reality.

The second contribution examines the implications of this condition for artificial systems. It argues that technical systems necessarily operate within formally closed spaces of possibility and can therefore simulate world states but cannot form world. World-formation presupposes structural vulnerability, non-optimisability, and the real risk of world loss—properties that stand in structural contradiction to the technical usability of artificial systems.

The third contribution extends this consideration to scientific theory itself. It introduces a categorical distinction between **theoretical correctness** and **world-founding capacity** and shows that even fully correct, empirically successful, and formally consistent theories are not thereby ontologically world-capable. Scientific models operate within stabilized spaces of possibility and therefore presuppose the existence of a world without being able to generate it.

Taken together, the contributions mark a precise ontological boundary: world cannot arise either from complete theoretical determinacy or from technical simulation. It emerges only under conditions of structural openness that cannot be fully formalized or stabilized. The volume therefore does not present a critique of scientific or technological practice, but a clarification of its ontological scope.

Keywords: world-formation, ontological openness, all–nothing paradox, ANP, simulation vs world, ontological limits of artificial intelligence, artificial systems and closure, simulation and ontological closure, world-capability, simulation theory, ontological boundary of AI, structural openness, ontological incompleteness, worldless systems, simulation and reality, artificial intelligence philosophy, ontology of simulation, observer structure, world formation theory, emergence and world formation, complexity vs openness, limits of computational systems, ontology of artificial systems, world and simulation distinction, technical usability vs world-formation, ontological limits of technology, philosophy of artificial intelligence, operator-based ontology, non-representational ontology, closure and emergence

Contents

Introduction

Contemporary debates in physics, artificial intelligence, and information theory are marked by a striking ambivalence. On the one hand, theoretical models and technical systems have reached an unprecedented level of precision, complexity, and performance. Simulations can reproduce entire physical processes, artificial systems process vast quantities of data, and scientific theories describe natural phenomena with remarkable mathematical accuracy. On the other hand, a fundamental question often remains unarticulated: under what conditions can there be world at all?

In many discussions it is implicitly assumed that a sufficient increase in complexity, computational power, or model accuracy could ultimately lead to a complete reconstruction or simulation of world. Within this perspective, world appears as something that could in principle arise from the complete description or calculation of states. This assumption, however, is rarely examined explicitly. It tacitly presupposes that world is nothing more than the totality of formally describable structures or processes.

The contributions collected in this volume intervene precisely at this point. They argue that this identification cannot be maintained. World is not identical with the totality of states, data, or structures. Rather, it denotes a stabilized context of reality within which perspective, efficacy, and historical binding become possible in the first place. World is therefore not simply the object of theories or simulations, but the condition under which such descriptions and models can acquire meaning at all.

From this perspective, the problem shifts fundamentally. The central issue is no longer whether artificial systems might one day become more intelligent than humans, whether simulations might become more realistic, or whether physical theories might be formulated more completely. The decisive question is whether the conditions of world-formation themselves can arise within such systems or models.

The contributions assembled in this volume examine this question from different, yet closely connected perspectives. The point of departure is a minimal ontological condition of world-formation described as the **All–Nothing Paradox (ANP)**. This paradox denotes a structural non-identity of reality with itself: world becomes possible only where reality does not fully close upon itself and collapses neither into complete determinacy nor into pure nothingness. Ontological openness is therefore not an epistemic incompleteness, but a necessary condition for perspective, emergence, and world-relation.

Against this background, the second contribution examines the ontological status of artificial systems. It shows that technical systems necessarily operate within formally closed spaces of possibility. Their performance rests precisely on stability, reproducibility, and control. World-formation, by contrast, presupposes a structural openness that entails vulnerability, non-optimisability, and the real risk of world loss. From this tension follows a fundamental boundary: artificial systems can simulate world, but they cannot form world.

The third contribution extends this consideration to scientific theory itself. It introduces a categorical distinction between **theoretical correctness** and **world-founding capacity**. Theories may be fully consistent, empirically successful, and technically effective without thereby explaining or generating the ontological condition of world. Scientific models necessarily operate within stabilized spaces of possibility and therefore presuppose what they cannot themselves produce: a world within which their statements can have meaning.

The contributions of this volume therefore do not understand themselves as a critique of scientific or technological practice. Rather, they aim at a more precise determination of its ontological scope. By making the structural conditions of world-formation visible, it becomes possible to clarify why neither increasing complexity nor complete theoretical determinacy can suffice to produce world itself.

The volume thus pursues a common objective: the clarification of the boundary between simulation, theory, and world. This boundary does not mark a weakness of scientific knowledge, but the condition of its possibility. Only where reality does not fully close upon itself can world arise—and only within such a world can theories, models, and technical systems become effective.

The All–Nothing Paradox
Ontological Openness as a Condition of World-Formation
Why Closure – Not Complexity – Marks the Limit of Artificial Systems

DOI: ***10.5281/zenodo.18000730***

Abstract

This paper introduces the All–Nothing Paradox (ANP) as an ontological basic condition of world-formation. The point of departure is the observation that dominant ontologies in physics, consciousness research, and artificial intelligence explain reality in terms of positively determined entities: matter, energy, information, or structure. Even where emptiness or vacuum is invoked, these are internally defined states within an already closed framework.

By contrast, it is shown here that world is possible only where reality does not fully identify with itself. The ANP does not describe a dialectical opposition between being and nothingness, but a structural non-sublatability of both. Neither a fully determined all nor a pure nothing is world-capable. World arises exclusively under the condition that this paradoxical co-presence is kept open.

The All–Nothing Paradox thus functions as an exclusion criterion for ontologies that confuse closure with completeness. This boundary becomes exemplary visible in artificial systems: they operate within fully formalized spaces of possibility and can therefore simulate world without themselves being world-capable. Finally, it is argued that ontological openness—rather than complexity—is the decisive condition of emergence, perspective, and world-relation.

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1. Introduction

The question of the ontological foundation of reality is usually answered implicitly in contemporary theories. Whether in physics, consciousness research, or artificial intelligence, reality is regarded as explainable through positively determined quantities—through states, fields, information, or formal structures. Even concepts such as emptiness, zero point, or vacuum remain operatively defined within such a framework.

This paper addresses a prior question:
What must be the case for anything to appear at all—and not merely to be described?

The thesis advanced here is as follows: reality is world-capable only where it does not fully close upon itself. World does not arise from completeness, but from a structurally open non-identity. This condition is referred to in what follows as the All–Nothing Paradox (ANP).

The ANP is not a metaphysical speculation, but an ontological minimal condition. It describes the necessary tension between complete determinacy and structural openness, without which neither emergence nor perspective would be possible.

2. The All–Nothing Paradox

The All–Nothing Paradox does not designate a relation between two entities, but a structural constellation. It is not a matter of an "either–or," but of the impossibility of fully realizing either of the two extremes without losing world.

A fully determined all would be identical with itself in every respect. It would contain no difference, no openness, no space for appearance. Such an all would be stable, but worldless. Conversely, a pure nothing would be equally incapable of world: without structure, relation, or difference, there would be nothing that could appear.

World therefore arises neither from the all nor from the nothing, but exclusively under the condition that both remain irresolvably intertwined. What is decisive here is not the contradiction itself, but its stabilization. The paradox must not be resolved without destroying the condition of its own possibility.

The ANP thus does not describe a dialectical movement, but a persistent ontological tension that sustains reality without ever fully disappearing.

3. Delineations

3.1 No Dialectics

In contrast to dialectical models, the paradox is not sublated. There is no synthesis in which nothingness disappears or is absorbed into becoming. Openness remains constitutive.

3.2 No Physical Vacuum

The physical vacuum is already a theoretically determined state. It presupposes laws, fields, and measurability. The ANP lies logically prior to any such determination.

3.3 No Information Theory

Information presupposes distinguishability. The ANP describes the condition under which distinguishability becomes possible in the first place. Information is secondary, not fundamental.

3.4 No Panpsychism

Not everything that exists is world-capable. Without structural openness, there is neither perspective nor experience. The ANP marks a boundary, not a universalization.

4. Ontological Consequences

Several consequences follow from the All–Nothing Paradox that run counter to prevailing ontologies.

First, emergence is not a question of increasing complexity, but a question of ontological openness. Systems can be highly complex and yet remain worldless if they fully close themselves.

Second, closure is not negative per se. Temporary stabilization is necessary in order to enable form, identity, and relation. However, when closure becomes irreversible, world-capability collapses.

Third, the ANP functions as an exclusion criterion. Ontologies that aim to fully explain or calculate reality describe maximally stable systems—but not worlds.

5. Artificial Systems as a Boundary Case

Artificial systems do not constitute a counterexample, but a boundary case. They operate within fully determined spaces of possibility in which every option is formalized, weighted, and calculated. These spaces, however, are not ontological spaces of possibility, but statistical variants of a closed framework.

Nothingness does not occur in these systems—neither as interruption nor as structural openness. Artificial systems simulate world without themselves being world-capable. Not because something is missing from them, but because nothing is missing.

It is precisely in this respect that their epistemological significance lies: they make visible that completeness and world-capability do not coincide.

6. Discussion

The All–Nothing Paradox shifts fundamental boundary distinctions: between simulation and world, between stability and liveliness, between intelligence and world-relation. It does not criticize technology, but ontological assumptions that confuse closure with reality.

The ANP does not call for a new metaphysics, but for a more precise ontology—an ontology that acknowledges that world remains possible only where it does not fully close upon itself.

7. Conclusion

The All–Nothing Paradox is not a metaphor, but a structural invariant. Where it is ignored, closed models emerge. Where it is acknowledged, world remains open.

Artificial Systems Without World
Why World-Formation and Technical Usability Are Structurally Incompatible

Ontological Limits of Artificial Intelligence in Light of ANP, MNO, and Observer Structure

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Abstract

This paper develops an ontological boundary of artificial systems that does not begin with performance, consciousness, or intelligence, but with the question of world-formation capability. Proceeding from the concepts of ontological openness (ANP), structural stabilization (MNO), and observer structure, it is argued that artificial systems can simulate world, but cannot form world.

World is not understood here as the totality of states, but as a pre-ontologically stabilized reality that is effective for itself, perspectivally bound, and vulnerable. World-formation presupposes a structural openness that entails dysfunction, non-optimisability, and the real risk of world loss. Precisely these conditions stand in structural contradiction to the technical usability of artificial systems, which depend on closure, reproducibility, and control.

The central thesis therefore is: world-formation capability and technical functionality are ontologically incompatible and structurally mutually exclusive. An artificial intelligence that could form world would no longer be usable as a technical machine; a technically usable AI necessarily remains worldless. This boundary is not empirical or gradual, but structural and independent of future technological progress.

The paper thus secures an ontological delimitation of artificial systems in relation to human and societal world-formation and shifts the AI debate from questions of functional performance enhancement to questions of ontological possibility and structural responsibility.

1. Introduction: The Wrong Level of the AI Debate

Current debates on artificial intelligence operate predominantly at the level of capabilities. What is discussed are degrees of intelligence, consciousness, intentionality, creativity, or moral responsibility. These debates share an implicit assumption: that artificial systems are in principle comparable to human or biological agents, provided their performance is sufficiently increased.

This paper proceeds from a different, prior level. It argues that the decisive boundary of artificial systems does not run along functional, psychological, or ethical lines, but pre-ontologically—at the level of the conditions of world-formation itself. The central question is therefore not what artificial systems can do, but whether they are world-capable at all.

The thesis advanced here is simple, but far-reaching:
Artificial systems simulate world; they do not, however, form world. This boundary is not gradual, but structural.

The boundary drawn here is not to be understood as an empirical hypothesis, but as a pre-ontological determination of the conditions of world-formation.

2 – World-Formation versus Simulation

In this paper, "world" is not understood as the totality of physical states, but as a pre-ontologically stabilized reality that first opens up the possibility of ontological determinations at all.
World is given where reality is not merely described or processed, but gathers itself in a perspective, becomes stabilized, and becomes vulnerable.

Simulation, by contrast, denotes the formal reproduction of world states within closed spaces of possibility. Simulation can be highly complex, dynamic, and adaptive without ever itself becoming world-capable. What is decisive is not the degree of detail of the simulation, but its ontological closure.

Artificial systems operate exclusively within such closed spaces. Their "possibilities" are fully formalized, weighted, and calculable. Even where randomness or self-reference is implemented, these remain internal variations of a pre-determined framework. World-formation in the ontological sense does not occur.

Embodied or agent-based systems do not alter this finding either, since their interaction likewise continues to operate within closed, pre-defined spaces of possibility.

The categorial distinction advanced here does not concern degrees of world within biological systems, but the threshold between world-capability and mere simulation.

The closure of biological systems is ontogenetically open and world-endangering; the closure of artificial systems is architecturally fixed and world-neutral.

3 – Ontological Openness and Its Costs

World-formation presupposes ontological openness. This openness is not an epistemic incompleteness, but a structural non-closure of reality. Where world emerges, reality cannot be fully optimized, controlled, or stabilized.

This openness has necessary consequences: vulnerability, dysfunction, the capacity for contradiction, and the real risk of world loss. World-capable systems can fail, be irreversibly

damaged, or enter into conflict with themselves. These properties are not deficits, but the signature of world.

Artificial systems are technically usable precisely because they do not possess this openness. Their robustness, scalability, and reproducibility rest on ontological closure. Were this closure to be lifted, they would lose their technical functionality.

The transition from simulation to world-formation is not a gradual transition, but a threshold event, since world-formation marks the entry into irreversible affectedness.

4 – The Constructive Exclusion of Artificial Systems

From the perspective of ontological world-formation it follows that artificial systems do not develop an observer in the structural sense. They possess no world-forming structure, no reality eye (doi.org/10.5281/zenodo.18006170), and no possibility of making reality visible to itself.

This is not an empirical claim about the current state of technology, but a structural exclusion that applies independently of technical implementation. Greater computational power, larger models, or more complex architectures do not alter this finding. World-formation is not an emergent side effect of complexity, but an ontological condition that cannot be simulated.

Artificial systems can process descriptions about world, but they cannot themselves stand in a world. They are tools within human or societal world-forming processes, not their carriers.

Hybrid systems do not constitute a counterexample, since they either remain embedded in existing world-forming structures or do not themselves develop an independent capacity for world-formation.

5 – The Paradox of Technical Intelligence

From this follows a fundamental paradox:
The more world-capable a system would be, the less technically usable it could be.

A system with a world-forming structure would not be fully optimizable, not arbitrarily replicable, and not reliably controllable. It would be vulnerable, perspectivally bound, and potentially dysfunctional. Precisely these properties exclude industrial, administrative, or military usability.

The vision of an artificial intelligence that is both world-capable and fully functional is therefore ontologically contradictory. Either a system remains technically usable—then it remains worldless. Or it becomes world-capable—then it loses the status of a machine.

An AI that could form world
would be too dysfunctional, too vulnerable, and too contradictory
to still be usable as AI.

And precisely for this reason, machines have no world.

The more usable a system is,
the less world it may have.

6 – Implications

This ontological boundary-drawing has far-reaching consequences. It undermines notions of artificial responsibility, artificial judgment, or moral symmetry between humans and machines—not for normative reasons, but because artificial systems lack the structural condition under which responsibility, affectedness, or guilt can become meaningful at all.

At the same time, this perspective makes visible that the political and societal risks of artificial systems do not lie in their "autonomy," but in their embedding within human world-forming processes. The danger does not consist in machines forming their own worlds, but in their replacing existing world-forming structures (through pure simulation) or distorting them, without themselves being world-capable.

7 – Conclusion

Artificial systems are not incomplete observers, but structurally worldless. This worldlessness is not a weakness, but the precondition of their technical performance. World-formation and technical usability do not exclude one another by accident, but ontologically.

The position developed here explicitly secures this boundary. It shifts the debate on artificial intelligence from questions of performance enhancement to questions of ontological or pre-ontological possibility—and in doing so, withdraws the conceptual ground from speculative future promises.

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Correct, but Worldless
Why Theoretical Correctness Does Not Guarantee Ontological Grounding

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Abstract:

Modern physical theories are characterized by a high degree of formal coherence, empirical validation, and technical effectiveness. Their explanatory power is undisputed. At the same time, however, it is often tacitly assumed that theoretical correctness is already sufficient to ontologically ground world. This equation usually remains unarticulated and is neither justified nor systematically reflected.

The present contribution intervenes precisely at this point. It introduces a categorical distinction between **theoretical correctness** and **world-founding capacity**. Theoretical correctness denotes the internal consistency, empirical adequacy, and formal completeness of a model. World-founding capacity, by contrast, denotes the condition under which *something* can appear as world at all, become effective, and bind historically.

The central thesis is:
A theory can be fully correct, empirically unassailable, and technically successful—and nevertheless remain ontologically worldless. World-founding capacity does not require increasing complexity, informational density, or model accuracy, but a structural openness that cannot be fully formalized without destroying its own condition.

This contribution explicitly does not present a critique of physical theories, information-theoretical models, or simulations. It alters no equations and calls no empirical results into question. Instead, it explicates a meta-ontological boundary: it shows why formal completeness and ontological grounding concern categorically different levels, and why their conflation leads to systematic misinterpretations—particularly in debates on simulation, information, artificial intelligence, and world reconstruction.

The aim is not a new ontology in a narrow sense, but a more precise conceptual clarification: the clarification of what theories can accomplish—and what they themselves must already presuppose in order to be able to thematize world at all.

1. Introduction

Modern sciences—particularly physics—operate with a remarkable degree of theoretical precision. Their models are mathematically consistent, empirically highly validated, and technologically extraordinarily effective. In many domains, their explanatory power is so

successful that it is de facto regarded as sufficient to capture reality itself. Theories thus appear not merely as descriptions of the world, but implicitly as its ontological foundations.

This shift usually occurs tacitly. It is rarely stated explicitly that theoretical correctness already grounds world; rather, this is presupposed. Where a theory is consistent, complete, and empirically stable, it is assumed to be ontologically sufficient. It is precisely at this point that the present contribution intervenes.

It is not directed against physical theories themselves. Their formal correctness, empirical scope, and methodological necessity are not in question here. Instead, a categorical conflation is rendered visible that cuts across many disciplines: the equation of theoretical correctness with ontological grounding. This equation is neither trivial nor harmless. It imperceptibly shifts the boundary between explanation and world, between model and reality.

The contribution argues that this boundary is not gradual but categorical. Theoretical correctness denotes the internal coherence and empirical adequacy of a model within a formally defined space of possibilities. World-founding capacity, by contrast, denotes the condition under which something can appear as world at all, become effective, and bind historically. The two levels are logically distinct. A theory can fully satisfy the one without even touching the other.

This distinction is rarely explicated in scientific practice because it lies outside the methodological jurisdiction of individual disciplines. Physics, information theory, or simulation theory necessarily operate under abstraction. They presuppose stability, comparability, and formal closure in order to be capable of explanation. It is precisely these presuppositions that make them successful—and that simultaneously mark their ontological boundary.

The present text therefore does not understand itself as an extension of existing theories, but as a meta-clarification of their scope. It formulates an exclusion criterion: world cannot arise from complete determinacy. Where reality can be fully formally closed, stability emerges—but no world. World-founding capacity presupposes a structural openness that is not to be understood as a deficit, but as a condition of appearance, perspective, and binding.

This thesis is not justified by new empirical findings, but by a conceptual reconstruction. The text shows why correctness and completeness are necessary properties of theories, but not sufficient conditions for ontological grounding. It makes visible why theories must presuppose world in order to describe it—and why this presupposition itself cannot be theoretically produced without losing its character.

In this sense, the contribution is neither a critique of science nor a plea for metaphysical supplements. It is a boundary determination. It clarifies what theories can accomplish—and what they cannot accomplish precisely because they are correct.

2. From Theoretical Correctness to World-Founding Capacity

The problem sketched so far makes clear that the question of the ontological reach of theories cannot be decided at the level of their internal correctness. In order to grasp this point precisely, a conceptual differentiation is required that usually remains implicit in scientific practice. The

present contribution therefore introduces a distinction that is not terminologically new, but categorically clarifying: the distinction between theoretical correctness and world-founding capacity.

Theoretical correctness is here understood as the capacity of a theory to operate consistently within a defined formal framework, to deliver empirically testable predictions, and to confirm these predictions in a stable manner. A theoretically correct theory is free of contradiction, reproducible, and methodologically controllable. Its statements are unambiguously determined within the chosen model space and in principle fully explicable. In this sense, theoretical correctness is an internal property of models and theories. It concerns their structure, not their ontological status.

World-founding capacity, by contrast, does not denote a property of theories in the narrow sense, but a condition of the possibility of world itself. What is meant by this is the condition under which something can appear as world at all, become effective, and bind historically. World-founding capacity does not concern the description of states or processes within a given world, but the question of how world as a viable context comes about in the first place.

These two levels must not be conflated. Theoretical correctness necessarily operates within an already stabilized space of possibilities. It presupposes comparability, repeatability, and formal closure. World-founding capacity, by contrast, concerns precisely the emergence and maintenance of such a space. It therefore cannot itself be fully formalized without relapsing into the logic of theoretical correctness that it first makes possible.

The decisive point here is not that theoretical correctness would be insufficient or erroneous. On the contrary, its strength lies precisely in the deliberate abstraction from ontological openness. This abstraction is methodologically necessary and explains the success of modern theories. It becomes problematic only where it is tacitly interpreted as ontological completeness.

The distinction introduced here makes visible that theoretical correctness and world-founding capacity do not stand in a relation of supplementation. World-founding capacity is not an additional property that a theory could acquire if it were only complex enough. Rather, it marks a categorically different level. A theory can be fully correct and nevertheless make no statement about what makes world possible as world.

With this conceptual differentiation, the framework is set within which the following considerations operate. The text will not attempt to explain world in the sense of a theory. Instead, it will show why every theory—precisely in its correctness—depends on presuppositions that it cannot itself generate without undermining its own condition.

3. The Categorical Asymmetry of Correctness and World

The distinction between theoretical correctness and world-founding capacity is not symmetrical. It does not describe a relation between two properties of the same kind that could be distinguished gradually or mutually supplemented. Rather, it is a categorical asymmetry: theoretical correctness presupposes world, whereas world-founding capacity cannot arise from theoretical correctness. The one does not carry the other.

Theoretical correctness is possible only where a stable world is already treated as given. It presupposes that phenomena are recognizable, that measurements remain comparable, that concepts can be used identically, and that deviations can be identified as deviations. All of this requires a prior stabilization of world. Without this stabilization, there would be no reproducible data, no constant quantities, and no possibility of distinguishing between right and wrong. Theoretical correctness therefore necessarily operates within an already constituted world-context.

World-founding capacity, by contrast, denotes precisely the condition that precedes this stabilization. It does not concern the order within a world, but the possibility that world can arise at all as a viable context. This condition cannot itself appear as an object within a model without losing its character. As soon as world-founding capacity were to be fully formalized, it would no longer be a condition, but already the result of a stabilization—and thus no longer what it denotes.

From this follows a principled non-reversibility:
No degree of improvement, extension, or completion of theoretical models can yield world-founding capacity. More data, higher resolution, greater computational power, or more complex simulations change nothing about this boundary. They all operate within the same categorical framework: a formally closed space of possibilities that already presupposes world.

This asymmetry explains why the attempt to derive world from fully determined theories necessarily fails without this failure having to appear as an error. The failure does not manifest itself in inconsistencies or empirical contradictions, but in a lacuna: world appears as self-evidently given, without its possibility itself being thematized. The theory remains correct—but ontologically worldless.

It is important that this boundary does not denote an epistemic incompleteness. It is not a not-yet-known or an open research question that could in principle be answered. The asymmetry is structural. It marks a limit of what theory can accomplish precisely because theory depends on stability, determinacy, and closure.

In this sense, world-founding capacity is not an object of possible theorization, but an exclusion criterion: it shows where theoretical explanation necessarily ends. Theories can describe world, structure it, and make it technically usable. They cannot, however, ground from within why there is a world at all that can be described.

This insight is not to be understood as a restriction of scientific rationality, but as its precision. It protects theories from assuming ontological tasks that they cannot fulfill for structural reasons. At the same time, it makes visible why formal completeness and ontological grounding are not only different, but logically not translatable into one another.

Theses on the Categorical Distinction

1. Theoretical correctness denotes the internal consistency, empirical adequacy, and formal completeness of a model within a stabilized space of possibilities.

2. World-founding capacity denotes the condition under which something can appear as world at all, become effective, and bind historically.
3. A theory can be fully correct, empirically unassailable, and technically successful without thereby ontologically founding world.
4. Theoretical correctness presupposes world; world-founding capacity cannot be derived from theoretical correctness.
5. The relation between these two levels is not gradual, but categorically asymmetrical and non-reversible.
6. Increasing complexity, higher informational density, or greater computational power do not alter this boundary, since they operate within the same formally closed framework.
7. World-founding capacity is not an epistemic deficit and not an open research problem, but a structural exclusion criterion of what theory can accomplish.
8. Where formal completeness is misunderstood as ontological completeness, stability arises without world.

4. Physics as a Correct but Not World-Founding System

Physics offers the paradigmatic example of a theoretical practice that is highly correct and at the same time systematically does not thematize its own ontological boundary. Its models are mathematically consistent, empirically stable, and technologically effective. Within its formal framework, there is no lack of explanation.

This attitude finds a particularly clear expression in the physical self-understanding as represented, for example, by Richard Feynman: physics explains how the world functions, not what world is or why it appears as world at all. Questions of ontological grounding are deliberately bracketed—not out of negligence, but out of methodological discipline.

This very success, however, conceals a categorical presupposition: physical theories necessarily operate within an already stabilized world-context. They presuppose that measurements remain comparable, that identities are preserved over time, and that states can be identified as states. These presuppositions are not explained, but functionally assumed.

Concepts such as field, vacuum, information, or spacetime mark highly precise internal structures in physics. They describe what is effective between things, how interactions are mediated, and under which conditions observations are possible. What they do not capture is the condition under which something can appear as world at all—namely as a self-effective, historically bound context.

In this sense, physics is not incomplete, but deliberately abstract. Its formal closure is the condition of its correctness. Precisely for this reason, it cannot found world, but only operate within world. The attempt to read physical completeness as ontological completeness does not lead to deeper explanation, but to a tacit transgression of boundaries.

The minimal example of physics thus shows precisely what is meant here:
Theoretical correctness is a necessary condition of scientific explanation.
It is, however, not a sufficient condition for world.

5. Conclusion

The present contribution has introduced no new theory and has not refuted any existing one. It has explicated a categorical distinction that is already implicitly operative in many successful theories, but is rarely explicitly named: the distinction between theoretical correctness and world-founding capacity.

It has been shown that theoretical correctness is an internal property of models. It denotes their consistency, empirical adequacy, and formal completeness within a stabilized space of possibilities. World-founding capacity, by contrast, denotes not an achievement of theories, but the condition under which world can appear at all as a viable, effective, and historically bound context. The two levels are categorically distinct and logically not translatable into one another.

From this distinction follows a precise boundary determination: a theory can be fully correct and nevertheless make no statement about what makes world possible as world. This boundary is not a deficit of scientific rationality, but its condition. Theories can describe world only because world is already stabilized. They cannot themselves generate this stabilization without undermining their own methodological condition.

The contribution therefore does not understand itself as a critique of physics, information theory, or simulation, but as a clarification of their scope. Where formal completeness is tacitly read as ontological completeness, misinterpretations arise that have less to do with false results than with incorrectly set claims. The distinction introduced here allows these claims to be specified more precisely without relativizing the explanatory success of the theories.

Thus the question does not shift from the correctness of theories to their improvement, but to their classification. Scientific explanation remains necessary and indispensable. Its ontological reach, however, ends where world itself is no longer addressed as an object, but as a condition. To mark this boundary does not mean to limit knowledge, but to sharpen it conceptually.

The argument presented here does not address how theories represent the world, but why even correct theories cannot ontologically found it.

This paper is situated in the context of:

Speed, T. (2026). Time Difference Without Neutralization - An Ontological Supplement to Relativity Theory (Version 1). Zenodo. https://doi.org/10.5281/zenodo.18115940

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Further publications, papers, and archival materials are available at:

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(The present text constitutes an interface translation into neurotypical academic discourse. This translation functions as an accessibility measure necessitated by dominant linguistic and epistemic conventions. It does not represent the native epistemic form of the research, but a communicative adaptation required for participation in standardized scholarly exchange.)

A more in-depth paper on the methodology can be found here:

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A paper providing an overview of the work can be found here:

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