

THRESHOLDS, SCALES, AND THE MODAL DISCIPLINE OF THE THEORY OF OBJECTIVITY:

a critical–propositional analysis of Miloslav Grundmann’s article in
confrontation with the axioms, phenomenic elements, Inducer Effects,
cosmogonic theorem, and cosmological Eras of TO

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ABSTRACT

This article presents a critical–propositional analysis of Miloslav Grundmann’s *Thresholds, Scales, and the Limits of Thought Frameworks: A Multi-Scale Approach to Social Dynamics*, published as a 2026 working paper and associated with the DOI <https://doi.org/10.5281/zenodo.19632756>. The analysis examines Grundmann’s article in dialogue with the Theory of Objectivity, especially its Seven Absolute Truths, phenomenic elements, Inducer Effects, cosmogonic theorem, and cosmological Eras. Grundmann’s central thesis is that no single thought framework can fully explain all social phenomena without becoming too general to remain practically useful. His framework emphasizes scale-dependent causality, threshold-based stability, emergent cognitive constraints, structural connectivity, and meaning as a relational output. This study argues that Grundmann’s article has strong dialogical value for the Theory of Objectivity because it offers an epistemological and social-theoretical model of scale, boundary, relationality, emergence, and structural mismatch. These concepts resonate especially with the fourth, fifth, sixth, and seventh axioms of the Theory of Objectivity. However, relevant tensions remain: Grundmann does not formulate a modal ontology of cosmic origin, does not derive his propositions as necessary truths, and does not identify information with atomic radiation or transcendent substance in the specific sense proposed by the Theory of Objectivity. The article concludes that Grundmann’s work is highly compatible with the methodological and phenomenological dimensions of the Theory of Objectivity, while remaining limited as a cosmological or modal foundation. Its final dialogue score with the Theory of Objectivity is 8.0 out of 10.

Keywords: Theory of Objectivity; Vidamor Cabannas; Denivaldo Silva; Miloslav Grundmann; scale-dependent causality; emergence; thresholds; relational meaning; modal ontology; phenomenic elements; Inducer Effects; cosmological Eras.

Resumo

Este artigo apresenta uma análise crítico-propositiva do texto de Miloslav Grundmann, *Thresholds, Scales, and the Limits of Thought Frameworks: A Multi-Scale Approach to Social Dynamics*, publicado como working paper em 2026 e associado ao DOI <https://doi.org/10.5281/zenodo.19632756>. O estudo examina o artigo em confronto com a Teoria da Objetividade, especialmente seus axiomas de necessidade modal, seus elementos fenomênicos, seus Efeitos Indutores, seu teorema cosmogênico e suas Eras cosmológicas. Grundmann sustenta que nenhum quadro único de pensamento consegue explicar todos os fenômenos sociais sem tornar-se excessivamente geral e, por isso, pouco útil. Sua proposta enfatiza causalidade dependente de escala, estabilidade por limiares, quadros cognitivos como restrições emergentes, conectividade estrutural e sentido como produto relacional. A análise demonstra que o artigo possui forte valor dialógico com a TO porque oferece um modelo epistemológico e social de escala, fronteira, emergência, relacionalidade e erro de nível explicativo. Essas categorias se aproximam especialmente da quarta, quinta, sexta e sétima Verdades Absolutas da TO. Ao mesmo tempo, permanecem tensões relevantes: Grundmann não propõe uma ontologia modal da origem, não deduz suas teses como verdades necessárias e não identifica informação, conhecimento ou sentido com radiações atômicas ou com a substância transcendente do universo, conforme a interpretação recente da TO. Conclui-se que o artigo analisado tem grande pertinência metodológica, epistemológica e fenomenológica para a TO, mas alcance limitado como fundamento cosmológico. A nota final de diálogo com a Teoria da Objetividade é 8,0 em uma escala de 0 a 10.

Palavras-chave: Teoria da Objetividade; Vidamor Cabannas; Denivaldo Silva; Miloslav Grundmann; causalidade dependente de escala; emergência; limiares; sentido relacional; ontologia modal; elementos fenomênicos; Efeitos Indutores; Eras cosmológicas.

1. Introduction

This article aims to present a critical–propositional analysis of Miloslav Grundmann’s *Thresholds, Scales, and the Limits of Thought Frameworks: A Multi-Scale Approach to Social Dynamics* in confrontation with the Theory of Objectivity, hereafter TO. Grundmann’s article is associated with the DOI <https://doi.org/10.5281/zenodo.19632756> and proposes a multi-scale framework for understanding social systems, thought frameworks, scale-dependent causality, threshold-based stability, and the relational production of meaning.

The Theory of Objectivity, according to its foundational bibliography, proposes a logical–modal ontology of the origin of the universe, presented as an alternative to both creationist interpretation and an exclusively physical-expansionist interpretation of the Big Bang. In its initial works, Cabannas and Silva formulate the Seven Absolute Truths as necessary conditions of objective existence: Nothing as a primitive and eternal mathematical essence; the uniqueness of elements through their aura or field of distinction; Infinity as a necessary non-element; boundary as the condition of distinction between elements; relational observation as the condition of full existence; the recursive composition of every element by previous elements; and transcendent substance as a condition for the existence of the universe (Cabannas and Silva 2016; 2018; 2020).

In its recent bibliography, TO more systematically develops its modal discipline, phenomenic elements, bridges of testability, relation to contemporary physics, and its interpretation of the transcendent element as knowledge or information produced in atomic relations and equivalent to atomic radiation (Cabannas and Silva 2025; 2026a; 2026b; 2026c; 2026d; 2026e). This interpretation allows TO to extend beyond origin cosmology into the physics of information, epistemology, the emergence of consciousness, relational objectivity, and complex systems.

Grundmann’s article is not a work of physical cosmology, nor does it propose a theory of the origin of the universe. Its primary domain is social, epistemological, and systemic analysis. Nevertheless, its relevance to TO arises precisely because it works with structural categories that cross different levels of reality: scale, threshold, connectivity, emergence, boundary, stability, cognitive constraint, relational meaning, and explanatory level error. The analysis developed here starts from the hypothesis that these categories may offer TO an additional language for understanding how social, cognitive, and epistemological systems manifest, at a derived scale, principles already present in TO’s ontological axioms.

The central thesis of this article is the following: Grundmann does not offer cosmological confirmation of TO, but he provides an epistemological and multi-scale model

that is strongly compatible with its modal discipline, especially regarding the ideas of boundary, relational observation, recursive composition, emergence of meaning, and informational transcendence. The main tension lies in the fact that Grundmann limits his approach to scale-appropriate coherence, whereas TO affirms the modal necessity of its axioms as universal conditions of possibility of the universe.

2. Miloslav Grundmann’s Article: Object, Thesis, and Dialogical Relevance

Grundmann’s article begins from a recurring problem in the social sciences: explanatory models tend to become increasingly complex without necessarily improving their explanatory or predictive power. The author rejects the simple explanation that this difficulty results only from insufficient data or imperfect modeling techniques. For him, there is a deeper structural constraint: no thought framework can explain all social phenomena without becoming so general that it loses practical usefulness.

This thesis produces a relevant critique of the ambition of single explanatory systems. Grundmann does not deny the need for theory, but argues that theory must be situated at the scale at which the phenomenon becomes coherent. The failure of a model, in this sense, is not merely a technical deficiency; it may signal that the phenomenon has been sought at the wrong scale. The problem, therefore, is not only “which variable is missing,” but “at what level the relevant causality is organized.”

This point is especially important for TO. The Theory of Objectivity insists on distinguishing the modal, ontological, physical, phenomenological, and empirical-operational planes. The absence of such distinction may produce serious confusions. A modal truth should not be treated as a simple experimental variable; likewise, a localized empirical observation should not immediately be taken as an absolute ontological foundation. Grundmann’s multi-scale reading may therefore reinforce the need for a discipline of levels within TO.

Another central aspect of the analyzed article is the claim that causality is scale-dependent. Causal factors that explain a given phenomenon at one level may be inadequate at another. The behavior of a social system is not necessarily reducible to individual preferences, because structural connectivity may make certain forms of cooperation or conflict more likely. This reading approaches theories of complexity and emergence, but its specific point is to emphasize that perceived complexity may be an effect of scale error.

From the perspective of TO, this allows an approximation with the idea that each element becomes objectively intelligible only when situated within its network of

boundaries, observations, compositions, and informational transcendences. Causality is not merely linear sequence; it is structured relation. For this reason, Grundmann’s article may be interpreted as an epistemological contribution to the reading of composed systems.

3. The Theory of Objectivity as a Modal Discipline of Origin and Relational Objectivity

TO presents itself as a theory of the origin of the universe that is not limited to the physical description of later phases of cosmic expansion. The foundational bibliography of TO situates its ambition at the level of logical–ontological deduction: before asking how matter was organized in the observable universe, it asks which conditions are necessary for any universe to be logically defined as existing (Cabannas and Silva 2016; 2018).

This distinction is decisive. Cosmological models such as the Big Bang describe with great effectiveness the physical evolution of the observable universe from extremely dense and hot states. Weinberg (1993), Hawking (1988), and contemporary observational cosmology describe early physical instants, cosmic microwave background radiation, primordial nucleosynthesis, and cosmic expansion. TO, however, proposes that such descriptions remain posterior to the ontological problem of absolute origin: why are there distinction, boundary, element, observation, composition, and information?

In recent bibliography, Cabannas and Silva develop this difference through the idea of modal discipline. The Seven Absolute Truths are not mere empirical hypotheses, but necessary propositions for the universe to be objectively thinkable. Boundary, for example, is not merely a physical phenomenon; it is a logical condition of distinction. Observation is not merely a subjective act; it is a relational condition of full existence. Composition is not merely material aggregation; it is a recursive principle of the constitution of the element (Cabannas and Silva 2026a; 2026b).

The recent interpretation of the Seventh Truth gives special relevance to the analysis of Grundmann’s article. If the transcendent element is knowledge or information produced in atomic relations, equivalent to atomic radiation, then TO links ontology, physics, and epistemology. Information ceases to be mere mental or symbolic content; it becomes a relational product of objective processes. In this context, Grundmann’s article, by treating meaning as a relational product between a thought framework and a systemic state, becomes a relevant interlocutor, even though it operates at a social and cognitive scale.

4. Scale, Boundary, and Causality: Approximations between Grundmann and TO

The idea of scale is the axis of Grundmann’s article. The author argues that social systems exhibit distinct patterns at different levels of description. A phenomenon may appear irregular at one scale and coherent at another. Causality, therefore, does not present itself in the same way at all levels. Explaining a phenomenon requires identifying the level at which its dynamics are generated.

In TO, the category closest to scale is boundary. The Fourth Truth states that two distinct elements require at least one line of boundary. Boundary is the condition of distinction between elements. Without boundary, there is no separation, no relation, no composition, and no objectivity. Boundary, therefore, is not merely a spatial limit; it is an ontological condition of differentiation.

The approximation between Grundmann and TO may be formulated as follows: in Grundmann, scale delimits the field in which causality becomes intelligible; in TO, boundary delimits the field in which the element becomes objectively distinct. Scale, in the analyzed article, functions as an epistemological boundary. It separates levels of analysis and prevents causalities proper to one level from being improperly projected onto another.

This approximation is particularly important for the problem of complexity. Grundmann argues that perceived complexity increases when there is distance between the scale of analysis and the scale at which the phenomenon is generated. In terms of TO, this means that the observer has not yet found the correct objective boundary of the phenomenon. Analysis becomes artificially complex because it mixes elements that belong to different levels of composition.

The propositional contribution to TO is clear: the theory can incorporate a “discipline of scale” as a methodological instrument for its bridges of testability. TO may affirm that its axioms are modal, but their application to physical, social, or cognitive phenomena requires identifying the appropriate scale of observation, operationalization, and inference.

5. Thought Frameworks, Relational Observation, and the Production of Meaning

Grundmann conceives thought frameworks as emergent cognitive constraints. They are not produced entirely by an isolated individual, but result from accumulated inter-

actions, historical patterns, social connectivity, and structures of organization. These frameworks are stable enough to allow coherent interpretation, yet flexible enough to allow adaptation.

This thesis strongly dialogues with the Fifth and Sixth Truths of TO. According to the Fifth Truth, an element exists fully only if observed by at least two others. According to the Sixth, every element is composed of elements prior to it. The thought framework, in the analyzed article, is exactly a relational and composed structure: it does not arise from an isolated subject, but from a network of prior relations. Its validity is scale-dependent, and its efficacy depends on the compatibility between cognitive structure and systemic state.

TO may interpret thought frameworks as phenomenic units derived from relational observation. Cognition would not be, in this sense, pure subjective interiority, but a form of emergent objectivity. Thought is conditioned by prior relations and produces meaning when it encounters a determined systemic state.

The most relevant point is the definition of meaning as a relational product. Grundmann does not treat meaning as an independent primary cause. Meaning emerges from the interaction between thought framework and system. In TO, this approaches the interpretation of transcendent substance as knowledge or information produced in atomic relations. The difference is that Grundmann remains at the cognitive-social scale, while TO proposes a physical-ontological basis for information.

Even so, the compatibility is robust. In both cases, meaning is not an isolated entity. It is a product of relation. In Grundmann, relation occurs between cognitive structure and systemic state; in TO, relation occurs among elements, observers, boundaries, compositions, and informational radiations.

6. Threshold, Stability, and Inducer Effects in the Reading of TO

Grundmann's article assigns a central role to thresholds. Certain configurations do not emerge gradually, but only when structural conditions exceed critical values. The stability of a system depends on the relation among connectivity, compatibility, and scale. Cooperation and conflict do not result only from individual preferences, but from structural forms of connection.

This thesis is highly compatible with the reading of Inducer Effects in TO. The Expansive Inducer Effect may be understood as a principle of opening, differentiation, propagation, and relational growth. The Reductive Inducer Effect may be understood as a principle of containment, stabilization, condensation, and formal persistence. Objective systems require both: expansion without reduction tends toward dispersion; reduction

without expansion tends toward rigidity or the collapse of difference.

In Grundmann's analysis, cooperation emerges when reciprocal relations can grow in a scalable manner. This growth may be read, by TO, as a social manifestation of the Expansive Inducer Effect. Connectivity expands the relational field, multiplies observations, and allows new forms of structure. But cooperation only stabilizes when increasing complexity does not produce collapse. This second aspect corresponds to the Reductive Inducer Effect: expansion must be stabilized by compatibility.

Conflict, in turn, may emerge from low connectivity or incompatibility between scales. From the perspective of TO, this may be interpreted as disproportion between expansive induction and reductive induction. When the relation among elements does not reach a sufficient threshold of connectivity, isolated and short-range decision-making predominates, with a greater tendency toward conflict. When connectivity is high but lacks compatibility among levels, conflict may reappear at another scale.

The category of threshold is therefore an important contribution to TO. It allows transitions between states to be thought not as mere linear accumulations, but as structural transformations. This is compatible with the logic of TO's cosmological Eras, in which new forms of organization emerge when certain previous conditions make a subsequent phase possible.

7. Compatibilities with the Axioms of the Theory of Objectivity

7.1. First Truth: Nothing as a Primitive and Eternal Mathematical Essence

The First Truth of TO affirms Nothing as a primitive and eternal mathematical essence. Grundmann does not address Nothing, absolute origin, or anteriority to space-time. His article begins with already constituted systems: societies, cognitive frameworks, networks, and scales of analysis.

The compatibility here is indirect. Grundmann shows that no thought framework, within constituted systems, can encompass all phenomena without operational loss. This may be read by TO as a sign that empirical and social models do not, by themselves, reach the modal foundation of existence. The First Truth remains external to the analyzed article, but it is not contradicted by it.

7.2. Second Truth: Uniqueness of the Element through Aura or Distinctive Field

The Second Truth states that every element has an aura or field that makes it unique. Grundmann does not use this terminology, but his notion of scale as a specific regime of causality may be approximated to the idea of a distinctive field. Each scale reveals properties that do not appear in the same way at another. Each thought framework has situated validity. Each system has its own conditions of stability.

The compatibility is high at the analogical level. TO ontologizes uniqueness; Grundmann operationalizes it as differentiation of scales and structures.

7.3. Third Truth: Infinity as a Necessary Non-Element

The Third Truth of TO affirms Infinity as the non-element necessary for the logical definition of the universe. Grundmann does not formulate a theory of infinity, but he criticizes the pretension of totalizing frameworks. When a model attempts to cover everything, it tends to become so general that it loses explanatory power.

There is strong methodological dialogue: totality cannot be treated as the simple indefinite expansion of a local model. TO draws attention to Infinity as a non-element; Grundmann shows that unlimited generality dissolves explanatory usefulness.

7.4. Fourth Truth: Boundary as a Condition of Distinction

This is the point of greatest compatibility. Grundmann argues that analysis fails when it selects the wrong scale. TO argues that distinction requires boundary. Scale, in the analyzed article, functions as an epistemological boundary between causal levels. Boundary, in TO, is the ontological condition of distinction between elements.

The propositional contribution is direct: scale error can be reinterpreted as boundary error. The observer has not correctly identified where the phenomenon is distinguished and at what level its causality is organized.

7.5. Fifth Truth: Relational Observation

The Fifth Truth states that an element exists fully only if observed by at least two others. Grundmann states that meaning is relational, produced between a thought framework and a systemic state. This thesis reinforces TO's critique of the isolation of the element. Meaning does not exist as an isolated substance; it emerges in relation.

The compatibility is high, although Grundmann does not formulate an ontological

triadic observation. His contribution lies at the social and cognitive scale of observation.

7.6. Sixth Truth: Recursive Composition

Grundmann states that thought frameworks result from accumulated interactions and historical patterns. This is strongly compatible with the Sixth Truth: every element is composed of elements prior to it. Cognition, cooperation, conflict, and social interpretation are composed of previous structures.

TO may read this thesis as an epistemological application of the principle of recursive composition.

7.7. Seventh Truth: Transcendent Substance as Knowledge/Information

The Seventh Truth, in its recent interpretation, affirms that the existential universe requires a substance transcendent to its quantum, understood as knowledge or information produced in atomic relations and equivalent to atomic radiation. Grundmann conceives meaning as a relational product, but he does not identify it with atomic radiation or with a transcendent substance.

Compatibility is high at the relational and informational level; the tension remains at the physical-ontological level. Grundmann provides a social theory of meaning; TO proposes an informational ontology of the universe.

8. Points of Tension between the Analyzed Article and the Modal Necessity of TO

The first tension concerns the status of propositions. Grundmann proposes an interpretive model of social systems. TO affirms axioms of modal necessity. This means that, for TO, certain propositions are not merely useful or adequate to a scale; they are necessary conditions of any objective existence.

The second tension concerns the refusal of a universal explanation. Grundmann concludes that the goal of analysis is not universal truth, but scale-appropriate coherence. TO may accept this statement at the level of empirical models, but not at the level of its axioms. For TO, scale conditions application, not the modal validity of the Seven Absolute Truths.

The third tension concerns the domain of application. Grundmann works with social systems. TO aims to explain the logical origin of the universe, the formation of elements, the emergence of matter, the function of observation, transcendent information,

and cosmological Eras. Thus, the analyzed article is compatible with TO at the methodological and phenomenological level, but it does not replace its cosmogonic architecture.

The fourth tension concerns the notion of information. Grundmann speaks of relational meaning. TO speaks of knowledge/information produced in atomic relations, equivalent to atomic radiation. The passage from social semantics to the physics of information is not present in Grundmann's article. This passage is specifically TO.

The fifth tension concerns testability. Grundmann proposes a conceptual structure, but in the text provided he does not present a specific empirical study or formal experimental test. Recent TO, in turn, has sought operational bridges, modal formalizations, and criteria of empirical contact (Cabannas and Silva 2026a; 2026b). Grundmann's article may help in the methodological discipline of these bridges, but it does not provide direct empirical confirmation of TO.

9. Articulation with the Phenomenic Elements of TO

The phenomenic elements of TO may be understood as structural manifestations derived from the Seven Absolute Truths at the level of observable reality. Among them are boundary, relation, observation, composition, memory, field, radiation, information, convergence, divergence, equilibrium, induction, and intelligence.

In Grundmann's article, boundary appears as scale. Scale delimits the level at which the phenomenon becomes intelligible. Relation appears in the production of meaning, in social connectivity, and in cooperation. Observation appears in the link between thought framework and systemic state. Composition appears in the historical formation of cognitive frameworks. Memory appears implicitly in the accumulation of prior interactions. Information appears as relational meaning. Convergence appears when connectivity allows stable cooperation. Divergence appears when there is conflict, low connectivity, or incompatibility between scales.

This correspondence does not mean full identity between the article and TO. It means that Grundmann works, at a social and epistemological scale, with structures that TO considers deeper and ontologically necessary. The value of the article lies in showing how such structures may appear in derived systems: societies, cognitions, interpretive frameworks, and collective conflicts.

The idea of scale error is particularly relevant to TO's phenomenology. Many phenomena may appear contradictory when observed at an inadequate level. TO may use this insight to clarify that its phenomenic elements do not manifest uniformly at all scales. The logical boundary of the universe is not observable in the same way as a physical boundary; modal triadic observation is not identical to ordinary sensory observation;

transcendent informational substance is not reducible to a phrase, concept, or social symbol.

10. Articulation with the Cosmogonic Theorem and the Cosmological Eras of TO

The cosmogonic theorem of TO describes the passage from logical Nothing to the conditions of existence of the universe. This passage involves distinction, boundary, plurality, observation, composition, transcendent substance, and the emergence of structure. Grundmann's article does not deal with this process. Nevertheless, its multi-scale logic may help interpret how a cosmogonic theory should be applied at derived levels.

In the Antagonistic Era of TO, there is an original tension between logical possibilities that precede the stabilization of the universe. In Grundmann, the tension between generality and applicability is an epistemological form of antagonism. A very general framework loses precision; a very specific framework loses scope. This tension, although social and cognitive, has a structure analogous to the TO problem of initial differentiation.

In the Era of Logical Rails, TO describes the organization of structural pathways that make ordered emergence possible. In Grundmann, the correct scale functions as a logical rail of analysis. It guides thought toward the level at which causality is generated.

In the Era of Logical Currents of Tertiary Plasma, TO works with flows, interactions, and structures of organization. Grundmann describes connectivity, cooperation, and conflict as effects of relational structures. The analogy is useful: social and cognitive networks would be late manifestations of more general relational principles.

In the Centrifugal Era, TO emphasizes differentiation, expansion, and organization of elements. In Grundmann, there is expansion of frameworks, scales, and explanatory regimes. The plurality of scales is an epistemological form of centrifugation: social reality differentiates itself into levels that cannot be reduced to one another.

In the Era of Units of Intelligence, TO reaches the domain of consciousness, memory, information, and knowledge. Here the dialogue with Grundmann is more direct. The analyzed article deals precisely with thought frameworks, meaning, cognition, adaptation, and knowledge. The TO reading allows these phenomena to be understood as expressions of relational intelligence built upon prior layers of composition and information.

11. Foundational Bibliography, Recent Bibliography, and Supporting Bibliography: An Integrated Reading

The foundational bibliography of TO establishes the ontological basis of the present dialogue. In 2016, Cabannas and Silva presented TO as a third theory of the origin of the universe, alternative to the Big Bang Theory and Creationism. In 2018, they offered the English version of the theory, expanding its international reach. In 2020, with *A Esfera Perfeita*, they deepened the reflection on the primordial structure and the logical nature of origin (Cabannas and Silva 2016; 2018; 2020).

The recent bibliography expands the scope of TO. In 2025, Cabannas and Silva present logical, ontological, and scientific foundations for a new physics and cosmology in dialogue with artificial intelligences. In 2026, they develop the passage from modal axioms to empirical contact, with Gödelian discipline, the Law of Logical Minimum, and operational bridges. They also articulate TO with testability, boundaries, convergence, the phenomenic table, contemporary physics, gravity as convergence zones, properties of the vacuum, and the modal critique of the Big Bang Theory (Cabannas and Silva 2025; 2026a; 2026b; 2026c; 2026d; 2026e).

The supporting bibliography situates TO in dialogue with consolidated traditions. Einstein (1920) offers a profound transformation of the concepts of space, time, and reference frame. Heisenberg (1958) shows that modern physics alters the relation among observer, phenomenon, and language. Bohm (1980) proposes a reading of wholeness and implicate order that dialogues with relational perspectives. Prigogine and Stengers (1984) show that order, instability, and emergence are central to understanding complex systems. Kuhn (1962) demonstrates that scientific thought frameworks are not neutral, but structure the perception of the problem. Penrose (2004), Hawking (1988), and Weinberg (1993) offer fundamental panoramas of modern physics and cosmology.

The analysis of Grundmann fits especially into this point of intersection among Kuhn, Prigogine, Bohm, and TO. From Kuhn, it approaches the attention to thought frameworks. From Prigogine, it approaches the importance of thresholds, instabilities, and emergence. From Bohm, it approaches the refusal of a fragmented reading of reality. From TO, it approaches boundary, relationality, composition, and information. Its contribution is to show that explanatory failure may be structurally informative: when a model fails, perhaps it is not merely data that are missing; perhaps scale is missing.

12. Propositional Contributions of the Article to the Development of TO

The first contribution is the notion of a discipline of scale. TO may incorporate this notion to distinguish more precisely the modal, ontological, physical, phenomenological, social, and epistemological levels. This distinction prevents critics from demanding of a modal proposition the same kind of proof required of a laboratory measurement, and also prevents defenders of TO from converting empirical analogies into ontological confirmations without mediation.

The second contribution is the notion of scale error as boundary error. The Fourth Truth of TO may be methodologically enriched by this reading. If two elements require boundary, then two explanatory levels also require boundary. Confusion between levels produces false contradictions.

The third contribution is the notion of threshold as an operator of emergence. TO may use the category of threshold to describe transitions between Eras, the formation of structures, the emergence of stability, the birth of units of intelligence, and the passage from dispersed interactions to objective systems.

The fourth contribution is the reading of meaning as a relational product. This idea strengthens the recent interpretation of the Seventh Truth. If information is produced in atomic relations and is equivalent to atomic radiation, then social meaning may be read as a derived manifestation of deeper informational processes. Grundmann does not affirm this, but his thesis is compatible with this TO extension.

The fifth contribution is the notion of connectivity as a condition of cooperation and conflict. TO may translate this thesis in terms of Inducer Effects: cooperation as stabilized relational expansion; conflict as failure of connectivity, boundary incompatibility, or imbalance between expansion and reduction.

The sixth contribution is the idea that analytical failure may be informative. This approaches the recent TO bibliography on operational bridges and testability. A test that fails should not automatically be discarded as irrelevant; it may indicate that the scale of operationalization was poorly chosen.

13. Final Evaluation of the Strength of Dialogue with TO

Miloslav Grundmann's article deserves a score of **8.0 on a scale from 0 to 10** regarding its dialogue with the Theory of Objectivity.

The score is high because the article dialogues intensely with central TO categories:

boundary, scale, relationality, composition, emergence, stability, connectivity, threshold, and meaning. It is especially compatible with the Fourth, Fifth, Sixth, and Seventh Absolute Truths. It also allows a productive reading of the Inducer Effects and the Era of Units of Intelligence.

The score is not higher because the article does not present a cosmology, does not propose a modal ontology, does not deduce necessary axioms of existence, does not formulate a physics of information, and does not identify the transcendent element with knowledge/information produced in atomic relations and equivalent to atomic radiation. Its contribution is methodological, epistemological, and social, not cosmogonic.

14. Final Considerations

Grundmann's article is a relevant interlocutor for the Theory of Objectivity because it offers a multi-scale theory of explanation. Its main lesson is that complex phenomena cannot be understood by the simple accumulation of variables within a single framework. Understanding requires identifying the scale at which causality is organized and the threshold at which stability emerges.

This lesson is valuable for TO. The Theory of Objectivity proposes axioms of modal necessity, but its application to physical, cosmological, cognitive, and social domains requires a discipline of scale. TO should not be reduced to an ordinary empirical model, but neither should it dispense with operational bridges when it deals with observable phenomena. Grundmann helps clarify this difference.

The strongest dialogue occurs around boundary. The Grundmannian scale is an epistemological boundary; the TO boundary is an ontological condition. Correct analysis depends on recognizing where a phenomenon is distinguished, where it is composed, and where it becomes observable. Scale error, therefore, is a form of objectivity error.

The second strong dialogue occurs around meaning. Grundmann understands meaning as a relational product; TO understands knowledge/information as a transcendent substance produced in atomic relations and equivalent to atomic radiation. Although they are at different levels, both theses reject the idea of isolated, absolute, and disconnected meaning.

The third strong dialogue occurs around emergence. Grundmann shows that co-operation, conflict, and thought frameworks emerge from connectivity, thresholds, and structures. TO affirms that the universe emerges from necessary modal conditions through boundaries, observations, compositions, and informational transcendence. In both cases, reality is not a simple sum of parts, but relational organization.

It follows that the analyzed article does not empirically confirm TO, but contributes

significantly to its methodological and epistemological language. It helps think how TO may dialogue with social systems, complexity science, theory of knowledge, and analysis of cognitive structures. Its value lies in showing that objectivity requires correct scale, adequate boundary, sufficient relation, and a threshold of stability.

A. Appendix in the TO Style

A.1. Synthetic Formulation in the Language of the Theory of Objectivity

Applied axiom of boundary: No social phenomenon becomes objectively intelligible without delimiting the scale at which its causality is distinguished.

Applied axiom of observation: No social meaning exists as an isolated substance; it emerges from the relation among thought framework, systemic state, and field of observation.

Applied axiom of composition: Every thought framework is composed of prior interactions, structural memories, historical patterns, and accumulated relations.

Applied axiom of informational transcendence: Every social system produces surplus meanings that transcend its particular events, constituting derived relational information.

Propositional law of threshold: A social structure does not emerge merely through the quantitative increase of interactions, but when connectivity reaches a sufficient threshold to produce stability, compatibility, and reciprocal observation.

Propositional law of scale error: When the observer analyzes a phenomenon outside the scale at which its causality is organized, perceived complexity increases and objectivity decreases.

Propositional law of objective cooperation: Cooperation is relational expansion stabilized by structural compatibility.

Propositional law of objective conflict: Conflict is failure of connectivity, incompatibility between scales, or imbalance between expansive induction and reductive induction.

TO translation of Grundmann's thesis: What Grundmann calls correct scale, TO may interpret as adequate phenomenic boundary. What Grundmann calls relational meaning, TO may interpret as a cognitive-social manifestation of transcendent information. What Grundmann calls threshold, TO may interpret as a point of transition between phenomenic states. What Grundmann calls thought framework, TO may interpret as a unit of intelligence composed of prior relations.

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