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Categories of Pure Mind as the Foundation of Transdisciplinary Thinking

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The article presents an original concept of a universal philosophical language capable of transcending the boundaries between individual sciences and serving as a foundation for transdisciplinary thinking. This approach, developed by the author since the 1980s, is based on particular and general comparative concepts—concepts of practical mind and categories of pure mind. Therefore, the key element of the concept is the category of "particular and general", which fundamentally differs from the traditional category of "part and whole". This allows for the description of both structural and functional aspects of complex systems not only at the interdisciplinary but also at the transdisciplinary level. The primary categories of thought—Identity, Difference, Correlated, Opposite, and others—are regarded as universal notions that connect levels of reality and ensure the integration of individual sciences. Unlike contemporary transdisciplinary concepts based on Basarab Nicolescu's logic of the included middle and Edgar Morin's dialogics, the author's theory is built on the ultimate general Hegelian notion of "concrete identity" and its differentiation into a multitude of "concrete differences"—comparative concepts. As a result, a unique philosophical language has been developed, presented within the framework of the Philosophical Matrix as a system of categories of pure mind capable of describing the dynamics and wholeness of complex processes at the transdisciplinary level. The article is intended for researchers interested in the philosophical foundations of transdisciplinarity, the theory of complexity, and the development of universal categories of thought.

Keywords: specific sciences, general knowledge, concepts of practical mind, comparative concepts, categories of pure mind, holographic paradigm, logic of the included third, transdisciplinary language, philosophical matrix, cumulative theory

Introduction

Modern challenges in science and philosophy demand moving beyond disciplinary boundaries and creating a universal language capable of uniting diverse fields of knowledge. Transdisciplinarity, as an approach aimed at overcoming the fragmentation of scientific knowledge, has been extensively developed in the works of such thinkers as Basarab Nicolescu and Edgar Morin.

In this study, I examine the key principles of transdisciplinarity proposed by these prominent authors and offer my own interpretation, which is based on transitioning from the category of "part and whole" to the category of "particular and general". In this context, I refer to particular relations as concepts of practical mind, whereas the ultimate general relations are regarded as categories of pure mind.

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Basarab Nicolescu's Teaching: The Law of the Included Middle

Basarab Nicolescu, one of the founders of transdisciplinarity, proposed a concept in which the fragmentation of knowledge can be overcome through an understanding of the universal principles of transdisciplinarity: levels of reality, the logic of the included middle, and complexity. Unlike Aristotle's classical law of the excluded middle (either A or not-A), the logic of the included middle assumes the existence of an intermediate reality between opposites. At the same time, Nicolescu, similar to Hegel, interprets the notion of "opposites" in the broadest sense, including even specific differences that are not true opposites.

Without delving into the principle of complexity, I propose focusing on the key aspect of his approach—the law of the included middle, which recognizes that there is a third position between A and not-A[1], allowing for the unification of opposites. On this subject, Basarab Nicolescu writes: "The logic of the included middle is the cornerstone of the methodology of transdisciplinarity because it allows us to cross different levels of reality and perceive the dynamics of their interaction." (Nicolescu, 2002, p. 34). This is a key heuristic principle that underpins transdisciplinary thinking.

However, unlike Nicolescu, my perspective has led me to consider not physical, biological, social, psychological, spiritual, or other levels of reality, but rather concrete differences that determine natural and social processes. These are comparative concepts situated between the abstract identity and abstract difference of A and not-A within the framework of the Philosophical Matrix (Rotenfeld, 2024).

At the same time, Nicolescu's concept contains a significant flaw, which, in my opinion, completely blocks the path to transdisciplinarity. This flaw lies in his reliance on the category of "part and whole", despite its crucial role in describing structural interconnections within complex systems. According to David Bohm's interpretation, this position corresponds to the "lens paradigm", where attention is focused on individual parts and their relationship to the whole, as if reality were being viewed through a magnifying glass. Bohm writes:

> The notion that everything is fragmentary and separative is widespread not only in science but also in everyday life and in our general way of thinking and experiencing. This way of looking at the world may be called the lens paradigm, where each part is focused and studied separately. However, the holographic paradigm offers a fundamentally different view, in which each part contains an enfolded order of the whole. (Bohm, 1980, p. 173)

This quote clearly conveys the difference between two paradigms: the traditional focus on fragments and the holographic approach, which implies the mutual penetration of parts and the whole.

Despite its importance, the category of "part and whole" does not fully explain the functional relationships and dynamic aspects underlying transdisciplinary knowledge. The only productive alternative is a transition to the category of "particular and general". This category goes beyond the simple analysis of structural relations and encompasses both particular and general manifestations of knowledge, uniting them into a holographic whole.

This approach aligns with Bohm's "holographic paradigm", where each particular structure is not only connected to the whole but also contains a projection of the general, as in a hologram. This allows us to consider not only static interrelations but also dynamic interactions within the framework of comparative concepts across levels of reality, making the category of "particular and general" an adequate foundation for the transdisciplinary approach.

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[1] A and non-A are not opposite, but contradictory concepts.

Thus, the transition from the lens paradigm to the holographic paradigm makes it possible not only to integrate knowledge from various disciplines but also to create a universal language—the language of comparative concepts, capable of explaining both the structure and the logic of transdisciplinary thinking.

Edgar Morin's Teaching: Dialogics and Complexity

Edgar Morin, a philosopher known for his theory of complexity, offers a unique approach based on dialogics—the ability to connect opposites within a single system. The essence of dialogics lies in the idea that opposites do not necessarily exclude one another but, on the contrary, can coexist, complementing and reinforcing each other. According to Morin, this approach is particularly effective for analyzing complex systems, where comparative concepts play a key role in uniting contradictory elements into a cohesive whole.

Similar to Basarab Nicolescu, Edgar Morin emphasizes that reality emerges from the interaction between parts and the whole: each part not only depends on the whole but also influences it. On this point, for example, Morin writes:

> The whole is not only more than the sum of its parts, but also less. It is more because it displays emergent qualities and properties that do not exist in the isolated parts. It is less because the constraints of the whole may inhibit certain properties of the parts. (Morin, 1992, p. 100)

This focus on the relationship between the whole and its parts forms the foundation of Morin's entire teaching but deprives it of the ability to fully achieve transdisciplinarity.

At the same time, the principles of the law of the included middle and dialogics play an important role in the development of a transdisciplinary language, as they are objectively aimed at using comparative concepts that transcend the law of the excluded middle. While the law of the included middle helps to conceptualize intermediate states—which, in the Philosophical Matrix, lie between the categories of Identity and Difference—Edgar Morin's dialogics reveals the complementary nature of opposites.

This approach does not contradict the creation of new categories of pure mind—ultimate general comparative concepts that form the foundation of the transdisciplinary language.

"Particular and General" as the Basis of Transdisciplinarity

Despite the years-long efforts of the founding fathers of the transdisciplinary approach—Basarab Nicolescu and Edgar Morin, as well as their numerous followers—the justification of transdisciplinarity has not yet been fully realized. One of the main reasons for this is the dominance of an approach based on the category of "part and whole", which, while serving as an important conceptual foundation for describing complex systems, is entirely unsuitable for substantiating transdisciplinarity.

The category of "part and whole" limits the ability to describe the functional and dynamic aspects of interactions. It hinders the creation of a unified integrative approach to knowledge. This approach does not take into account the need to develop categories capable of uniting particular sciences through universal principles. This limitation prevents the development of a transdisciplinary language that could serve as a tool for integrating knowledge across various disciplines.

In contrast to "part and whole", the category of "particular and general" allows for an accurate description of the relationships between a multitude of particular sciences and philosophy, which is understood as cumulative, verifiable, and the most general knowledge about the world and humanity (Rotenfeld, 2024).

Particular: This represents the specific, individual manifestation of knowledge characteristic of individual sciences.

General: These are universal principles that integrate particular knowledge into a unified transdisciplinary system.

Thus, the metaphor for individual particular sciences could be an open hand with spread fingers, while the metaphor for general, transdisciplinary knowledge is a tightly clenched fist.

The Philosophical Matrix as a System of Transdisciplinary Categories

My approach assumes that transdisciplinarity should be based on comparative concepts, which are fundamental both to the concepts of practical mind underlying particular sciences and to the categories of pure mind that form the Philosophical Matrix. Its foundation is determined by the ultimate abstractions of identity and distinction—the concepts of Identity and Difference. These are the fundamental categories underlying comparison.

Identity: A universal category that establishes the sameness of objects or phenomena, emphasizing their common nature.

Difference: A category that indicates the uniqueness and divergence of objects, revealing their individual characteristics.

Within the transdisciplinary approach, Identity and Difference complement each other, providing a foundation for analyzing both particular and general patterns. At the same time, particular and general comparative concepts of a given type are designated by the same words. Therefore, I propose writing the concepts of practical mind with lowercase letters, while the categories of pure mind are written with capital letters.

For example, consider the particular manifestation of identity, such as “stone-stone” or “tree-tree”. In this case, we use the word “identity” with a lowercase letter, emphasizing that this concept fixes a specific instance of sameness within the framework of a particular science. A similar principle applies to cases of opposition, such as “stone-not stone” or “tree-not tree”. Here, the concept of “difference” is also written with a lowercase letter because it refers to particular comparisons.

However, when we move to universal transdisciplinary categories that go beyond particular contexts and encompass general principles of thought, these concepts are written with capital letters. For example, the concept of “Identity” as a category of pure mind reflects the universal notion of sameness, applicable to all levels of knowledge. The same applies to the concept of “Difference” as a category of pure mind, as it represents the ultimate general concept of divergence underlying the Philosophical Matrix. Since all comparative concepts in the Philosophical Matrix pertain to categories of pure mind, they are all denoted with capital letters, emphasizing their transdisciplinary and universal nature.

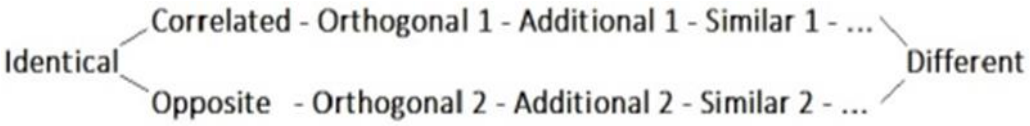

Figure 1. The Aristotle-Rotenfeld philosophical matrix as a system of transdisciplinary categories.

The concept of the Philosophical Matrix is based on identifying specific differences in each of the natural sciences. I call these particular comparative concepts or concepts of practical mind. Their integration by type

provides a classification of the ultimate general concepts, organized by levels of complexity in the Matrix as a system of transdisciplinary categories.

I do not think it is necessary to provide a detailed description of each comparative concept in this article, as their explanation has been given in earlier publications in this journal (Rotenfeld, 2014; 2023). However, a few words about each relationship are still worth mentioning.

For example, the concept of "Correlated" reflects the connection along a gradation scale between sides that possess greater or lesser degrees of the highlighted property, such as heavy and light. This means that correlated sides are always understood relative to one another: heavy relative to light, and light relative to heavy. Taking the lesser side as a unit of measurement, we perceive the greater side in numerical terms.

As for the concept of "Opposite", Aristotle believed that it expresses the excess and deficiency of a property relative to the position of equilibrium, i.e., the "golden mean". This means that any correlated side, understood relative to the mean, manifests itself as opposites. Therefore, in the Matrix, these concepts are placed one above the other, forming the beginnings of two fundamentally different sequences: the metaphysical and the dialectical. The former sequence allows for the calculation of reality, while the latter enables its comprehension as a corresponding process.

Next, let us consider two additional relationships: "Heraclitus' Orthogonal" and "Pythagoras' Orthogonal", which reflect circular processes. "Pythagoras' Orthogonal" allows for the description of this process in specific cases through trigonometric functions (Sin and Cos), while "Heraclitus' Orthogonal" enables its understanding as the relationship of two pairs of opposites, such as the exchange of values. This demonstrates the transdisciplinarity of the language of comparative concepts.

Other categories that form the Philosophical Matrix include Complementary, Similar, and other concepts, requiring more complex descriptions of the interconnections between different levels of reality. These serve as tools for analyzing complex systems within the framework of the transdisciplinary approach.

Conclusion

Today, transdisciplinarity is perceived as one of the key challenges for science and philosophy, requiring a rethinking of traditional categories of thought. However, the approaches proposed in modern philosophy, such as Basarab Nicolescu's logic of the included middle or Edgar Morin's dialogics, while attracting my close attention, have not become foundational for me.

My approach to creating a universal language began in the 1980s, long before I became acquainted with the concepts of Nicolescu and Morin. After defending my candidate dissertation "The Problem of Identity and Difference in Scientific Knowledge" (1986) and my doctoral dissertation "The Formation of Non-Classical Dialectics" (1991), I developed my own system of particular and general comparative concepts, which was later fully presented in the concept of the Philosophical Matrix.

At the core of my approach lies the category of "particular and general", which allowed me to exclude the traditional category of "part and whole" from my arsenal and propose an integrative tool for analyzing complex systems. The Philosophical Matrix unites various levels of knowledge through universal categories of Identity, Difference, and other comparative concepts situated between them, thereby creating a foundation for transdisciplinary thinking.

Thus, the Philosophical Matrix and transdisciplinary thinking are not borrowings of well-known ideas but the result of many years of research and reflection on comparative concepts as the basis of a universal

philosophical language. It offers a unique approach capable of uniting particular sciences through the general categories of pure mind and serving as a tool for understanding complex systems in their dynamics and wholeness.

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