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Morphogenesis without Structure? Deleuze and René Thom

1. Introduction

The concept of morphogenesis occupies a strategic position in the encounter between philosophy and the sciences of form. Throughout the twentieth century, it has functioned as a privileged operator for thinking the emergence, transformation, and stability of forms across heterogeneous domains, from physics and biology to linguistics and the human sciences. Among the most ambitious attempts to formalize morphogenesis in rigorous terms stands René Thom's theory of catastrophes, which proposes a qualitative, topological framework capable of describing discontinuous transformations within structurally stable systems. Gilles Deleuze, who repeatedly refers to Thom's work — most notably in *The Fold* (1988) — does not merely appropriate this framework, nor does he simply transpose it into philosophy. Rather, Deleuze pushes Thom's morphogenetic thought to a critical threshold, beyond which the very notion of structure that underpins catastrophe theory becomes untenable.

This article argues that Deleuze's engagement with Thom should not be understood as a philosophical application of catastrophe theory, nor as an endorsement of its structural assumptions. On the contrary, Thom represents for Deleuze the most rigorous and systematic attempt to think morphogenesis within a structural paradigm. By taking this paradigm to its limit, Deleuze reveals the point at which morphogenesis can no longer be subordinated to structural stability, topological invariance, or classificatory closure. What emerges from this displacement is a conception of morphogenesis without structure: a process governed not by stable forms or archetypal transitions, but by intensive variation, fluctuation, and continuous differentiation. It is precisely at this point that the passage from

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science to philosophy takes place in Deleuze's work. The displacement of morphogenesis beyond structure does not signal a refinement or extension of mathematical models, but a change of theoretical register: from scientific description to philosophical conceptualization. For this reason, we do not claim that Deleuze operates as a mathematician, nor that his thought aims at producing mathematical knowledge[1]. On the contrary, mathematics functions here as a limit-case whose internal rigor allows philosophy to identify the point at which scientific explanation necessarily gives way to a different mode of thought.

Catastrophe theory, as developed by René Thom, is programmatically situated at the level of topology, insofar as it seeks to describe the qualitative organization of forms and the structural conditions of their discontinuous transformations rather than to provide a quantitative measurement of change (Papadopoulos 2024, p. 400). This orientation does not entail a rejection of mathematical analysis. On the contrary, catastrophe theory makes systematic use of differentiable potential functions and of the theory of critical points, but it subordinates these analytical tools to a classificatory project grounded in topological invariants and criteria of structural stability (Thom 1983, p. 77; Aubin 2004, p. 98). Within this framework, catastrophes are defined as sudden qualitative transitions that occur when a continuous variation of control parameters modifies the stability regime of a system. The domain of applicability of the theory is deliberately restricted to systems that can be described by a small number of control parameters and that satisfy conditions of topological equivalence. This restriction is not accidental but constitutive of Thom's project: only under such constraints is it possible to obtain a finite classification of elementary forms of discontinuity. The well-known list of seven elementary catastrophes does not function as an empirical taxonomy, but rather as a set of structural archetypes expressing the fundamental ways in which a form can lose or acquire stability (Thom 1983, p. 88).

Because catastrophe theory is oriented toward topology, it privileges invariant structural relations over metric determinations. Quantitative magnitudes such as distance, scale, or velocity are not denied, but are treated as secondary with respect to the qualitative organization of form and therefore as irrelevant for the purposes of topological classification. In this sense, catastrophe theory operates like a map that identifies critical regions, bifurcations, and thresholds without aiming to measure their quantitative extent. Morphogenesis, accordingly, is conceived as inseparable from structure: it unfolds within a space of possibilities defined by regimes of stability and instability, where form emerges through the

[1] For a detailed discussion of Deleuze's relation to mathematics and of the philosophical status of mathematical concepts in his work, see Colombo (2023) and Colombo (2025).

interplay between continuous variation and qualitative transformation, rather than being simply imposed in advance as a fixed schema.

It is precisely this structural character of Thom's morphogenesis that allows Deleuze to engage with catastrophe theory in a decisive way. In *The Fold*, Deleuze explicitly acknowledges his debt to Thom, noting that the very concept of the fold derives from catastrophe theory and corresponds to one of its elementary forms (Deleuze 1993, p. 16). The fold, in Thom's sense, describes the simplest possible catastrophe: a system governed by a single variable and a single control parameter, whose potential exhibits a minimum that disappears at a critical threshold, giving rise to instability. Yet Deleuze is fully aware that, within catastrophe theory, the fold is neither genetically primary nor universally generative. It is not the foundation from which other catastrophes can be derived, but merely one archetype among others, applicable only to specific kinds of systems.

Deleuze's philosophical operation begins precisely at this point. Rather than treating the fold as a structural model, he transforms it into a *conceptual operator*. In doing so, he detaches the fold from the regime of structural stability that governs Thom's theory. This detachment does not consist in rejecting the mathematical framework outright, but in subjecting it to a radical deformation. Deleuze introduces into the fold a series of notions that are formally illegitimate from a topological standpoint: fluctuation, infinite speed, vortex, turbulence. These notions do not extend catastrophe theory; they violate its conditions of possibility.

> Everything changes when nucleation is made to intervene in place of internal homothesis. It is no longer possible to determine an angular point between two others, no matter how close one is to the other; but there remains the latitude to always add a detour, by making each interval the site of a new folding. That is how we go from fold to fold and not from point to point, and how every contour is blurred in order to give definition to the formal powers of the raw material, which rise to the surface and are put forward as so many detours and supplementary folds. The transformation of inflection can no longer allow for either symmetry or a favored plane of projection. It becomes vortical and is produced later—deferred, rather than prolonged or proliferating. The line effectively folds into a spiral in order to defer inflection in a movement suspended between sky and earth, which either moves away from or indefinitely approaches the center of a curve and at each instant "rises skyward or risks falling upon us." But the vertical spiral neither retains nor defers inflection without also promoting it and making it irresistible in a transversal sense: a turbulence that is never produced on its own, whose spiral follows a fractal mode by which new turbulences are inserted between the initial ones (Deleuze 1993, p 17).

When Deleuze describes the transformation of the point of inflection through fluctuation rather than internal homothety, he abandons the idea that morphogenesis proceeds from point to point within a stable configuration space. Instead, morphogenesis unfolds "from fold to fold," through an incessant multiplication of deviations that dissolve contours and undermine any privileged plane of projection. The fold no longer marks a determinate transition between stable states; it becomes the site of a vortical movement, a spiral that indefinitely approaches and withdraws from a center of curvature without ever stabilizing. Morphogenesis, in this sense, is no longer governed by archetypal forms, but by an intensive dynamic that exceeds structural classification.

This transformation marks a decisive boundary between mathematics and philosophy. By introducing parameters such as infinite velocity and fluctuation, Deleuze does not attempt to refine topological models; he displaces the problem onto a different plane (Tarizzo 2004, p. XVI). The issue is no longer how forms change within a structured space, but how form itself emerges from a pre-structural field of intensive variation. Thom's catastrophe theory provides Deleuze with a rigorous image of morphogenesis at the moment when structure still holds. Philosophy begins where this image breaks down.

In this respect, Deleuze's engagement with Thom anticipates the distinction between concepts and functions that will later be articulated in *What Is Philosophy?* (Deleuze, Guattari 1994). Scientific functions, including mathematical models, operate by slowing down chaos, extracting invariants, and stabilizing relations. Philosophical concepts, by contrast, must be capable of sustaining the chaotic, fluctuating, and intensive dimensions of reality without reducing them to structure. Deleuze's fold is not a mathematical object, but a philosophical concept that emerges from the collapse of morphogenesis as a structural problem.

The question that guides this article—whether morphogenesis can be thought without structure—thus receives a precise answer. Deleuze does not oppose morphogenesis to structure in a simple or negative sense. Rather, he subtracts morphogenesis from structure by pushing structural morphogenesis to its breaking point. René Thom's catastrophe theory marks the last mathematically rigorous attempt to think the genesis of form within a stable topological framework. Deleuze inherits this attempt, radicalizes it, and transforms it into a philosophy of morphogenesis without structure.

2. René Thom and Structural Morphogenesis

René Thom's theory of catastrophes must be situated within a precise intellectual horizon, one that combines a rigorous mathematical formalism with an explicitly philosophical ambition. Far from conceiving catastrophe theory as a predictive or universal model, Thom understood it as an attempt to restore intelligibility to natural phenomena by identifying the qualitative structures governing the emergence and transformation of forms. As Athanase Papadopoulos has emphasized, Thom's project is inseparable from a self-conscious return to Aristotle and to a *philosophy of nature* grounded in form, stability, and qualitative differentiation rather than quantitative calculation (Papadopoulos 2024, p. 403).

At its core, catastrophe theory proposes a qualitative description of dynamical systems whose behavior is governed by a potential function. Stable and unstable states correspond to critical points of this potential, and a catastrophe occurs when a continuous variation of control parameters produces a sudden qualitative reorganization of the system. The originality of Thom's approach lies not in the introduction of discontinuity as such, but in its strict formalization under conditions of topological equivalence and structural stability. Only those singularities that remain invariant under small perturbations are considered morphogenetically relevant. As a result, catastrophe theory yields a finite classification of elementary catastrophes—seven in its canonical formulation—each corresponding to a structurally stable mode of qualitative transition.

This finitude is not an accidental feature of the theory, nor a provisional limitation to be overcome by future refinements. On the contrary, it expresses Thom's fundamental conviction that morphogenesis can only be thought rigorously within a bounded space of possibilities (Rossi 2011, p. 98). Beyond a certain threshold of complexity, singularities proliferate without order, classification collapses, and the very notion of form loses its explanatory power. Thom is explicit on this point: catastrophe theory does not aspire to explain all processes, but only those that can be captured within a stable topological framework (Bruter 1978, p. 302). In this sense, the theory is deliberately non-universal, and its epistemological sobriety is one of its defining virtues.

The topological nature of catastrophe theory is essential to this stance. Topology abstracts from metric properties such as distance, magnitude, or velocity, focusing instead on relational invariants preserved through continuous deformation. A topological space may be described in multiple dimensions, but these dimensions are not measured; they are articulated. Morphogenesis, within this framework, is not a matter of quantitative growth or accumulation, but of qualitative reorganization. Catastrophe theory thus resembles a map without scale (Thom 1983, p. 129): it identifies critical zones, bifurcation points, and regions of stability, without assigning numerical values to their extent or intensity. Its descriptive power lies in the articulation of form, not in calculation.

From this perspective, morphogenesis remains inseparable from structure. Each elementary catastrophe defines a specific structural configuration governing the possible transitions of a system. The persistence of structure at this level is not a theoretical weakness, nor a residue of an outdated paradigm, but a deliberate and constitutive feature of Thom's project. As David Aubin has shown, catastrophe theory does not represent a departure from structuralism, but rather its radicalization: structural explanation is extended to morphogenetic processes themselves, such that qualitative change becomes intelligible only insofar as it is constrained by invariant relations, conditions of structural stability, and a finite space of possibilities (Aubin 2004, p. 117). Thom's emphasis on topological invariance and classification is not meant to suppress dynamism, but to render it intelligible, by ensuring that morphogenetic transformations remain identifiable despite perturbations. Even when Thom insists on the dynamical character of form, this dynamism unfolds within a space that is already structured, partitioned, and classified. Structural stability guarantees that change occurs as variation internal to a stable formal schema, rather than as an unconstrained genesis of form. Morphogenesis, in Thom's sense, is therefore not opposed to structure, but *conditioned* by it.

This point has been emphasized by several commentators, who have shown that Thom's theory must be understood as a structural morphodynamics rather than as a philosophy of pure becoming (Petitot 2011, p. 273; Sarti, Citti, Piotrowski 2022, p. 22). What is at stake is not the dissolution of form into process, but the articulation of process through stable topological schemas. It is precisely along these lines that Jean Petitot develops his own project. Drawing explicitly on Thom's catastrophe theory, Petitot elaborates a structural dynamic capable of extending morphogenetic explanation beyond its original mathematical domain, applying it to perception, language, semiotics, and cognition (Petitot 1985, 2003, 2010). In Petitot's work, meaning itself becomes a morphogenetic phenomenon, emerging through bifurcations, attractors, and qualitative discontinuities within a structured space of possibilities. Yet this extension does not abandon structure; on the contrary, it radicalizes its role. Morphogenesis always presupposes a structural space articulated by differences, positional relations, and constraints of stability. Even when applied to domains traditionally considered resistant to formalization, catastrophe theory functions as a *transcendental framework of intelligibility* rather than as a mere descriptive metaphor. Taken together, Thom and Petitot thus delineate the upper limit of a structural conception of morphogenesis. Thom establishes its mathematical foundations and epistemological constraints; Petitot demonstrates its extraordinary power of extension across heterogeneous domains. Yet precisely through this extension, the limits of the paradigm become visible. Structural morphogenesis can account for the

transformation of forms within a given space of possibilities, but it cannot account for the genesis of that space itself. The morphogenetic field within which forms emerge remains given, not generated. Thom's morphogenesis is therefore a morphogenesis of form, not a genesis of structure.
It is at this limit that Deleuze intervenes. His engagement with Thom does not consist in rejecting catastrophe theory for remaining structuralist, nor in simply applying it within a philosophical framework. On the contrary, Deleuze takes Thom's structuralism with full seriousness, and seizes upon the point at which its explanatory power reaches its internal limit. The fold, detached from the conditions of structural stability that govern it in Thom's theory, becomes the site of a different kind of genesis—one no longer regulated by invariant structures, but by intensive variation, continuous differentiation, and the production of a morphogenetic field irreducible to structural classification.

3. Deleuze and Thom: The Fold as a Limit-Concept

The theoretical transformation that characterizes Gilles Deleuze's work from the mid-1970s onward cannot be adequately understood as a simple abandonment of structuralism in favor of a philosophy of becoming (Tarizzo 2003; Dosse 2012). Rather, it involves a more complex displacement of the transcendental itself. What is progressively called into question is not only the primacy of structure as an explanatory framework, but the very idea that the genesis of the real can be accounted for through a stable set of formal conditions. This displacement finds an initial articulation in *A Thousand Plateaus,* where the critique of structure is carried out through concepts such as multiplicity, assemblage, and deterritorialization. It is further developed in the cinema books, where Deleuze explicitly ties thought to non-totalizable temporal and perceptual processes. Yet it is only in *The Fold: Leibniz and the Baroque* (1988) that this transformation assumes a fully explicit and systematic philosophical form.

The Fold should therefore be read as a work of theoretical consolidation rather than as a transitional or purely exegetical text. Under the guise of a study devoted to Leibniz and the Baroque, Deleuze undertakes a profound reconfiguration of the transcendental, one that decisively separates his later philosophy from both structuralism and the earlier formulations of his own work (D'Aurizio 2024). What is at stake in this reconfiguration is the status of what Deleuze calls the "Outside" of thought. In *The Fold*, the Outside is no longer conceived as a limit opposed to interiority, nor as a domain that must be symbolically mediated through structure. Instead, it becomes the condition through which thought is forced to operate, precisely insofar as thought can no longer rely on any pre-given unifying framework.

The concept of the fold articulates this new configuration. The fold names the dynamic through which the Outside is interiorized without being neutralized, and through which interiority is opened without being dissolved. It thus describes a movement of reciprocal implication between inside and outside that excludes any hierarchical or foundational ordering. Neither term precedes the other; neither functions as an origin. This movement is not merely metaphorical. It designates a real ontological process and, at the same time, the specific activity of philosophy, understood as the construction of concepts capable of sustaining difference without subordinating it to unity.

In this sense, *The Fold* marks a decisive shift in Deleuze's understanding of the transcendental. The transcendental is no longer identified with a set of formal structures underlying experience, but with a field of problematization inseparable from the concrete processes through which reality differentiates itself. The traditional distinction between transcendental conditions and empirical actuality is thereby displaced. Transcendental analysis becomes immanent to the dynamics it seeks to think. This shift entails the definitive abandonment of any residual structuralism, as well as the rejection of the idea that language or sense might provide a univocal horizon capable of organizing the real, as was still the case in the 1960s.

However, the Outside does not operate in abstraction. Deleuze insists that it requires a point of encounter, a force capable of receiving and actualizing it. This is the context in which the notion of the "soul" appears. Far from reintroducing a metaphysical or psychological substance, the soul designates a site of intensity, a capacity to be affected and to actualize virtual multiplicities. It must be carefully distinguished from consciousness, which presupposes identity, negation, and representation—categories that Deleuze had consistently criticized since the 1960s. Nor can the soul be equated with subjectivity or will, both of which imply a stable center of decision. Rather, the soul corresponds to the intensive multidimensionality of singularities. Singularities are defined not by what they are, but by what they can do: by the degrees of freedom that characterize a virtual field at a given moment. Their "choice" is not deliberative but performative; it consists in the orientation of lines of actualization. In *The Fold*, the transcendental—understood as the *virtual*—thus becomes inseparable from practical processes of actualization. Philosophy itself is transformed accordingly. Its task is no longer to ground structures or to secure conditions of possibility, but to accompany and articulate the processes through which singular configurations emerge.

> Folds are in the soul, and they authentically exist only in the soul. This is already true of "innate ideas": they are pure virtualities, pure powers whose act consists in habitus or arrangements—folds—in the soul, and whose completed act consists in an inner action of the soul, an internal deployment. But this is no less true of the world: the entire world is only a virtuality that currently exists solely in the folds of the soul that convey it, the soul implementing inner pleats through which it endows itself with a representation of the enclosed world. We thus move from inflection to inclusion in a subject, as if from the virtual to the real—inflection defining the fold, but inclusion defining the soul or the subject, that is, what envelops the fold, its final cause, and its completed act (Deleuze 1993, p. 23).

This transformation is inseparable from Deleuze's engagement with Leibniz, who functions in *The Fold* as a conceptual threshold. Leibniz allows Deleuze to distance himself not only from Kantian transcendentalism and Hegelian dialectics, but also from the structuralist framework that had previously informed his own work. Through Leibniz, Deleuze shifts from a philosophy centered on subjectivity to one focused on processes of subjectivation, and from an ontology of essence to an ontology of events. In doing so, he opens onto what can be described as a *metaphysics of chaos* (Movahedi 2025).

Chaos, in this context, must not be understood as disorder or indeterminacy. It designates the absence of principles: the impossibility of grounding reality in any ultimate rule or foundation. This absence does not lead to nihilism. On the contrary, it constitutes the condition of creation. Because chaos has no rules, it cannot impose a rule; because it has no essence, it cannot be exhausted by any determination. Deleuze refers to this configuration as "chaosmos" (Deleuze 1993, p. 81), a term that captures the inseparability of chaos and the local consistencies that emerge within it. Singularities arise within chaosmos as local decelerations of infinite speed: provisional stabilizations that never harden into structures.

It is against this background that Deleuze's encounter with René Thom must be situated. Deleuze explicitly acknowledges that the concept of the fold is inherited from catastrophe theory, where it designates the simplest elementary catastrophe. In Thom's work, the fold models a qualitative transition within a structured space governed by a potential function and a control parameter. It is an archetype of structural morphogenesis, subject to the conditions of topological stability and invariance.

Deleuze does not deny this lineage. Yet the philosophical use he makes of the fold fundamentally alters its status. Rather than treating it as a structurally stable form, Deleuze subjects the fold to fluctuation, infinite speed, and turbulence. The point of inflection ceases to function as a stable topological feature and becomes the site of a continuous spiraling movement, one that indefinitely approaches and withdraws from a center of curvature. From the standpoint of topology, such an operation is illegitimate, since velocity and fluctuation cannot be integrated into a discipline defined by invariants. But this illegitimacy is not a defect; it is the very condition of Deleuze's philosophical gesture.

Deleuze does not attempt to extend catastrophe theory beyond its formal limits. Instead, he forces it to reveal the point at which it can no longer account for the genesis of form. By injecting infinite speed and fluctuation into the fold, Deleuze transforms it into a limit-concept. The fold no longer functions as a model of structured transition, but as the site where structural morphogenesis collapses and gives way to a conception of genesis grounded in intensive variation.

This transformation anticipates the distinction between science and philosophy that will later be articulated explicitly. Scientific models, including mathematical ones, operate by slowing down chaos, stabilizing relations, and extracting invariants. Philosophy, by contrast, must be capable of sustaining the intensive dimension of chaosmos without reducing it to structure. The fold, as Deleuze reconfigures it, belongs to this philosophical register. It becomes the operator through which morphogenesis can be thought without structure.

4. Conclusions: Beyond a Philosophy of Mathematics

The analysis developed throughout this article allows us to clarify a point that is often obscured in the secondary literature on Deleuze: despite the central and systematic presence of mathematical references in his work, Deleuze never aims to construct a philosophy of mathematics. This claim may appear counterintuitive, given the density of mathematical figures that traverse his writings—from differential calculus and Riemannian manifolds to catastrophe theory and topology—but it becomes unavoidable once the internal logic of his project is properly reconstructed.

At no stage does Deleuze attempt to provide a foundational account of mathematics, to determine its epistemological legitimacy, or to articulate its internal norms of validity. Nor does he seek to interpret mathematics as a privileged access to truth or as a meta-language capable of grounding philosophical discourse. Even when mathematics appears to play a decisive role, it does so neither as an object of philosophical reflection nor as a model to be imitated. Rather, mathematics functions as one domain among others—alongside art, science, and politics—through which the real expresses its problematic structure.

This point becomes particularly clear in Deleuze's engagement with René Thom. Thom's catastrophe theory provides Deleuze with a rigorously elaborated morphogenetic framework, grounded in topology and defined by the principles of structural stability, classification, and invariance. Deleuze does not contest the internal coherence of this framework, nor does he attempt to extend it philosophically. On the contrary, he takes Thom's theory as a limit-case: the most advanced attempt to think morphogenesis within a structural regime. What interests Deleuze is not the mathematical validity of catastrophe theory, but the point at which its explanatory power reaches its limit—namely, where morphogenesis can no longer be contained within stable forms.

The concept of the fold, inherited from Thom, marks precisely this threshold. In Deleuze's hands, the fold ceases to function as a structurally stable catastrophe and becomes instead a philosophical operator: a way of thinking continuous variation, fluctuation, and inflection beyond any classificatory schema. The introduction of infinite speed, turbulence, and vortex-like dynamics explicitly violates the conditions of topological reasoning. Yet this violation is not accidental. It signals a change of register. Deleuze is no longer operating within mathematics, nor even alongside it, but extracting from it a conceptual tension that mathematics itself cannot resolve without ceasing to be mathematics.

This extraction should not be misunderstood as a metaphorical appropriation. Deleuze does not aestheticize mathematics, nor does he dissolve its rigor into poetic imagery. Rather, he treats mathematical structures as real processes whose philosophical significance lies not in their formal properties, but in their capacity to reveal the limits of structural explanation. Mathematics, in this sense, belongs fully to the real: it is one of the ways in which the real organizes, stabilizes, and slows down chaos. But precisely for this reason, it cannot think the virtual as such.

This is the decisive asymmetry that emerges most clearly in *What Is Philosophy?*. There, Deleuze and Guattari draw a sharp distinction between philosophy, science, and art, not as separate domains of knowledge, but as distinct modes of engagement with chaos. Science—including mathematics—constructs functions and models that actualize the virtual by imposing reference and slowing down infinite speed. Philosophy, by contrast, does not model or refer. It creates concepts that give consistency to chaos without neutralizing it. The philosophical concept does not explain the real; it intervenes within it, reconfiguring its problematic field. See from this perspective, the extensive use of mathematical notions in Deleuze's work does not indicate an ambition to mathematize philosophy. On the contrary, it reflects a sustained effort to prevent philosophy from collapsing into either scientific formalism or linguistic idealism. Mathematics provides Deleuze with exemplary cases of problem-structures, singularities, and non-totalizable fields—but philosophy alone is capable of virtualizing these structures, that is, of extracting their problematic power and extending it beyond the domain in which they were originally constituted.

This is why the recurrent temptation to read Deleuze as proposing a "philosophy of mathematics" ultimately misconstrues his project (Ardoline 2024). Such a reading risks attributing to Deleuze a foundational or epistemological concern that he consistently avoids. It also risks flattening the crucial distinction between concepts and functions, between the plane of immanence and the plane of reference. Deleuze's engagement with mathematics is neither external nor internal; it is transversal. Mathematics is not subordinated to philosophy, but neither does philosophy derive its legitimacy from mathematics.

The same conclusion applies to the broader question of morphogenesis. Deleuze does not seek to replace mathematical models of morphogenesis with philosophical ones. Instead, he shows that any structural theory of form, however sophisticated, encounters a limit when confronted with intensive variation and singular becoming. Philosophy intervenes precisely at this limit—not to correct science, but to think what science must necessarily leave unthought: the virtual consistency of the real. In this sense, Deleuze's philosophy is not a philosophy of mathematics, but a philosophy through mathematics, in the strongest possible sense. Mathematics is one of the sites where the real articulates its differential structure, and philosophy is the practice that renders this articulation thinkable without reducing it to structure, function, or model. What Deleuze ultimately defends is not the mathematical nature of philosophy, but the philosophical necessity of thinking beyond mathematics—without ever dismissing its reality.

This conclusion allows us to restate the central thesis of the article in a precise way: Deleuze's engagement with mathematics, and with Thom in particular, does not aim at grounding philosophy in formal structures, but at demonstrating that morphogenesis, if taken seriously, leads beyond structure. Philosophy does not explain this movement; it accompanies it, conceptualizes it, and pushes it further. That is why Deleuze never constructs a philosophy of mathematics—and why his thought remains irreducible both to scientific modeling and to speculative abstraction.

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Una morfogenesi senza struttura? Deleuze e René Thom

L'articolo analizza il rapporto tra Gilles Deleuze e la teoria delle catastrofi di René Thom al fine di chiarire lo statuto filosofico della nozione di morfogenesi nel pensiero deleuziano. Muovendo da una ricostruzione della morfogenesi strutturale elaborata da Thom e sviluppata da Jean Petitot, si mostra come tale paradigma rimanga vincolato ai criteri di stabilità, invarianza topologica e classificazione formale. Attraverso un'analisi approfondita di *La piega. Leibniz e il barocco*, l'articolo sostiene che Deleuze non prosegua né filosoficamente né epistemologicamente il progetto matematico di Thom, ma lo conduca deliberatamente al proprio limite. È in questo gesto che emerge una concezione di morfogenesi senza struttura, fondata su variazione intensiva, fluttuazione e differenziazione continua. Si argomenta infine che tale passaggio segna, in Deleuze, il confine tra scienza e filosofia: lungi dal proporre una filosofia della matematica, Deleuze utilizza la matematica come caso-limite per pensare ciò che eccede ogni modello strutturale, riaffermando la funzione propriamente filosofica della creazione concettuale.

Parole chiave: Deleuze, René Thom, Morfogenesi, Struttura, Filosofia e matematica.

Morphogenesis without Structure? Deleuze and René Thom

This article examines the relationship between Gilles Deleuze and René Thom's catastrophe theory in order to clarify the philosophical status of morphogenesis in Deleuze's thought. Starting from a reconstruction of structural morphogenesis as developed by Thom and extended by Jean Petitot, the article shows how this paradigm remains grounded in structural stability, topological invariance, and formal classification. Through a detailed analysis of *The Fold: Leibniz and the Baroque*, it argues that Deleuze neither philosophically nor epistemologically continues Thom's mathematical project, but deliberately pushes it to its limit. At this threshold, a conception of morphogenesis without structure emerges, grounded in intensive variation, fluctuation, and continuous differentiation. The article concludes by showing that this displacement marks, in Deleuze's work, the transition from science to philosophy: rather than proposing a philosophy of mathematics, Deleuze mobilizes mathematics as a limit-case in order to think what necessarily exceeds structural explanation, thereby reaffirming the philosophical task of concept creation.

Keywords: Deleuze, René Thom, Morphogenesis, Structure, Philosophy and Mathematics.