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Singularities and Genetic Structure in Deleuze's *Logic of Sense*

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ABSTRACT: This article presents formal correspondences between the ontological and logical structures of Deleuze's theory of sense-events in the *Logic of Sense* as a "post-Cantorian orientation of thought" (Livingston 2012), grappling with an essential incompleteness or inconsistency at the heart of both Being and thought, one which Deleuze champions positively under the equation Ungrounding = Becoming. Through it, Deleuze's sometimes slippery use of the concept of singularity (and its relation to the virtual) is elaborated, elucidating a post-Cantorian metaphysics of events, distinct from and preceding Badiou's, that concretely defines the role of the singular in Deleuze's early major works.

KEYWORDS: Deleuze, singularity, sense, event, logic

Deleuze understands the necessity of singularities for a genetic account of sense to lie in the way in which they overcome at the same time the infinite analysis of a complete concept of the individual (Leibniz) as well as the finite synthesis of the form of the person or the "I" (Kant).[1] Each attempts to provide grounds of sense, but falters in its own way by presupposing all that was in question. In the case of Leibniz, of course, it is God who organizes all the possibles and realizes the best world in accordance

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with the predicates of each individual concept, optimizing for the maximum of compossibility and hence maximum reality or perfection. The infinite comes into play, but precisely on the basis that all actualization is a pseudo-actualization since everything real is determined in advance by the Great Analyzer, even if "[e]ach and every substance is the true and real cause of its own immanent actions."[2] The Leibnizian world is in a specific sense just the divine intellectual intuition of relations of compatibility between the completely analyzed concepts of each individual. In this way, concepts and individuals are, in the final analysis, strictly identical, for Leibniz. The world is, then, an analytic continuation of series of individuals, the logical effect of their being convergent or compossible.[3]

Alternatively, Kant disposes of a metaphysical relation between God and World by appealing to the conditions of possibility of phenomena, not in the preestablished harmony of a perfectly calculating God, but in the pure forms of consciousness necessary for human empirical knowledge (space and time, the pure concepts of the understanding, etc.). Through the latter, the world regained on epistemological grounds is well lost metaphysically, about which nothing meaningful can be said, including how it is that we in fact have the transcendental forms of experience we do. Kant's "Deduction" purports to tell us *that* the subject is constructed by an *a priori* synthetic categorial unity, without beginning to tell us *how*. Through it, then, theoretical knowledge stands fixed by a *horizon* of apprehension that admits of no modification. In each case, it is a metaphysical subject (though each differing in kind) that stands at the gate of sense. As Deleuze says, what the "notorious immutability of God" is to the one the "limits of knowledge" are to the other.[4] The task of transcendental empiricism is to settle this impasse between infinite analysis and finite synthesis by understanding the infinite without the sole procedure of analysis and understanding the synthetic without the sole procedure of *a priori* limitation. It is only at the juncture of the two, in an unlimited synthesis, that singularities become concretely articulable.

So, what are singularities? Are they physical, metaphysical, or logical primitives out of which the stuff of the world and thought are built? Or are they instead relational, formal, or functional indices—fissures, cracks, breakages, points of tension and differentiation around which systems of order separate, breakdown, and crash up against their own intrinsic limits? Are they fonts of Being or points of degeneracy?

To answer these questions, we must first answer the question of what defines the notion of a *world*, relative to our notion of sense. The

shortest answer to this question is: worlds are defined by the convergence of series over which removable singularities can be analytically continued or by continuous deformations of spaces. Alternatively, we may say that a world is defined as a system of relations between entities (that is, individuals, objects, or concrete particulars), whose "essences" are owed to relations among themselves, relations that concatenate the world and determine the individuals in question. That is, the individuality of an object (or subject) is predicated on its countenancing, via these relations, the other objects (or subjects) in a world. In other words, a world is a relational phenomenology, where this latter term refers to the logic of appearing.[5]

The selective test of the objects' (or subjects') co-countenancing one another is to take the limit of series—which is why analysis (in its mathematical sense) is the operation of world-constitution—whose convergence determines a co-constituted *horizon* of entities, or their belonging to a world, and whose divergence spells the failure of this test, thereby analytically determining no world and no horizon or implying instead another, incompatible, divergent, one. As Deleuze says, "[*t*]*his convergence defines 'compossibility' as the rule of a world synthesis*. Where series diverge another world begins . . . [C]ompossibility is thus defined as a *continuum* of singularities, whereby continuity has the convergence of series as its ideational criterion."[6] Nevertheless, in performing the analytic continuation of series and the predication of individuals it makes possible, we remain at the level, strictly speaking, only of individuals and their relations—which is, for Deleuze, the level of bodies and their mixture. A third thing is yet missing. An unlimited transcendental synthesis becomes necessary in order to account for the emergence of sense, but equally for the univocity, transformation, and transition between worlds. In other words, the genesis of sense as synthesis is necessary to avoid conjuring both *a priori* epistemic limitation and *a priori* metaphysical totality, the specters of foundational notions of consistency and completeness.

Accordingly, for Deleuze, it is useless to *speak* about the actual existence and unity of a world, its individuals and their relations—in other words, useless to speak of phenomena and their appearing—unless there is something determinable (an "object = x") that supplies the sufficient conditions for the *reality* of phenomena, not merely their *possibility*. We must not fail to notice that both Leibniz and Kant take reality for granted and account only for possibility. But in order to articulate this *something* determinable (this

"*aliquid*" or "object = x"), in order to articulate real conditions to ourselves, we must first enter into and articulate the proper domain of thought from within thought. We must enter into that through which,

> the Ego as knowing subject appears when something is identified inside worlds which are nevertheless incompossible, and across series which are nevertheless divergent. . . . Only when something is identified between divergent series or between incompossible worlds, an object = x appears transcending individuated worlds, and the Ego which thinks it transcends worldly individuals, giving thereby to the world a new value in view of the subject being established.[7]

Sense appears first at the locus of a problem that cannot be dissolved in analysis. Singularities are such ideal-real conditions of phenomena, which Deleuze qualifies as signs of transcendental problems that act as grounds for the empirical realization of solutions, the contours of something determinable, an object = x. This is his first step toward a continuity thesis between thought and nature, attempting to empirically ground the ability of thought to "rise above" relations of efficient causation while at the same time only existing within them. Thus, the transcendental ground, though always inhering in empirically constituted individuals, acts via the appropriate structural relations or functional roles in some system or multiplicity as its virtual modality.[8] The "knowing" subject appears only at the site in which the confrontation with problems forces upon thought the establishment of a sense that supersedes the given order of the already-constituted world and its fields of (analytic) implication or continuation. The world is indeed all that is the case, but the speculative subject (as Gabriel Catren puts it) is not content with the world.[9] The experience of this subject cannot be reduced to what is the case; indeed, the subject cannot even be reduced to the possibility of the world—that is, not even to the subject's given "transcendental type." The virtual therefore, as the modality of a multiplicity that characterizes the special status of singularities, *does not* have any extension independent of its actualization despite its being transcendental ground of what is realized in a world. Metaphysically, this ground, moreover, as below, beyond, and within actualization is, for Deleuze, equivalent to ontological ungrounding as becoming. Singularities only have what Deleuze calls "extra-being," "non-being," "?-being," the "being of the problematic," etc. Singularities are not substances, even if they are productive of Substance.

Moreover, Deleuze's view invalidates the dichotomy between substance and process, neither of which is fundamental with respect to the other. The emergence of qualities or substances is like the emergence of tone from rhythm or frequency—it is a "persistence of vision," so to speak, on the basis of the speed of a repetition—which determines a presented continuity as a block or flow. In this sense, we can think of any individuated entity as composed of a continuous process, which itself consists of a rate of repetition of individuations that are constituted in turn by another process, and so on—something akin to a continuous but nowhere-differentiable curve, such as the Weierstrass function (composed entirely of essential singularities, that is, points at which the analytic continuation of the function for the curve would be impossible). However, such a metaphysical "curve" is amenable to differences in kind that are scale-sensitive—unlike the self-similarity of the Weierstrass function. In other words, there are dynamical thresholds of emergence or ontological course-grainings between macrological appearings and micrological configurations. Here, for instance, we may think of heat as phenomenal quality in contrast to the motion of molecules; the crash of the whole ocean wave in contrast to the *petites perceptions* of the water droplets. This is why quality *in itself* (firstness, or the monad) is in Peirce's terms pure potential or vagueness, since it cannot be given actual existence without it being nested in relations (secondnesses, dyads) and structures (thirdnesses, triads), which themselves must, in turn, appeal to firstness as relata or mediata.

Thus, ontologically, the multiplicity within which singularities operate may be construed as a system of differentials (incorporeals) around which the existence of some concrete particular (body) accrues. As early as *Nietzsche and Philosophy,* Deleuze defines the body as the product of relations of forces, which are always unequal in quantity and therefore differential in nature.[10] Logically, singularities are the points at which the analytic continuation of a differentiation is no longer possible, and phenomenologically, they represent the points at which the transformation or transition from one phase, one world, one conceptual scheme, one orientation, one horizon to another becomes necessary. Essential singularities are cracks of differentiation between and within systems, "topological solitons" or "defects" situated at the boundary between homotopically distinct logical or ontological phases, which are themselves internally determined by relations between continuous functions.[11] Singularities, in this respect, occur in the case where there is as yet nothing intelligible "outside" the boundary

of the world or conceptual scheme presented. For example, the singularities thought to exist at the centers of black holes wrought by the mathematics of General Relativity make the physical theory that gives rise to those singularities break down. Infinitesimals played the same role in analysis before Cauchy and Weierstrass tamed the calculus by defining the derivative and integral in terms of the limit of infinite series (the epsilon-delta definition) in the nineteenth century, at which the intuitionistic revival of infinitesimals in the so-called smooth infinitesimal analysis of synthetic differential geometry balks, because the former helps itself to an unconstructive understanding of the real numbers.[12] These singularities must be understood as insisting in actualized bodies (individuals), but only as the being of differentiation, points uninterpretable in terms of the self-identity of concrete particulars. In this sense, as Sean Bowden remarks, singularities must not be construed as bodies (concrete particulars), nor as abstract universals in the traditional philosophical sense, but as *abstract* particulars.[13] Because they are in this precise sense "abstract," singularities are in each case "ideal" events: they are never reducible to the individuals they inhere in; they are not reducible to their spatiotemporal actualization, despite only existing because of such actualizations.

The World is expressed in the present continuous. Thus, the translators of Heidegger are right to insist on the tortured locution of the disclosure of beings as "worlding" for Dasein. However, Being (*Être*) is expressed in the infinitive. By their articulation in thought through sense—through the device of the infinitive verb ("to cut," "to green," "to such-and-such," . . .)—singularities reside in the impassive or sterile time of eternal truth or Aion as "aleatoric points," "ambiguous signs," or "synthetic predicates" across incompossible worlds, defined analytically. They are, in other words, the "eventual" coordinates of problems that can be multiply-realized in empirically diverse situations.[14] This is why Deleuze calls singularities "pre-individual": they condition the genesis of individuals (objects and subjects) as cases of solution, while at the same time these cases condition other problems in turn; but only under the right aspect—namely that of Aion, the aspect of eternity. By the same token, singularities are the hooks of the determination of thought and its liberation from the mire of presentism. All this is to say is that sense, as infinitive, requires a strange, modally rich realization of thought and action that Deleuze calls "counter-actualization," bypassing thereby actuality on the one hand and possibility on the other.[15]

In so doing, the non-being of singularities contrasts with the linearity of empirical time (Chronos), since the latter *converts* the (supposedly) possible future into the actual present and actualized past.

> If it is true that the expressed world exists in individuals, and that it exists there only as [an analytic] predicate, it subsists in an entirely different manner, as an event, or a verb, in the singularities which preside over the constitution of individuals. . . . These rules belong to a logic of sense and the event, and not to a logic of predication and truth.[16]

In accordance with the theory of singularities, then, as opposed to the orthodox empiricist or phenomenological theory of abstract ideas (as one can find in Locke, Hume, Peirce, and Husserl),[17] the logic of the general (or rather of the generic) is derived *not* from the *particular* (taking its limit) but from the *singular*, since generic ideas rely on the "ambiguous signs" of the singularities-events, which cut across analytically defined (possible) worlds in order to gather together the properties and classes synthetically predicated of sets of particulars by the subject of knowledge or the transcendental Ego.[18] This difference is demonstrated nicely in Deleuze's example regarding the mathematical idea of a circle qua circle, which is neither particular nor general but differential or singular, understood, not in terms of general variables that can be given particular values, but in terms of the derivative of the curve for each point on the circle, constructing the curvature of the circle.[19]

> Bordas-Demoulin shows clearly the difference between these two expressions of circumference: $x^2 + y^2 - R^2 = O$, $y\,dy + x\,dx = o$. In the first, I am doubtless able to attribute diverse values to each term, but I must attribute to them one value in particular for each case. In the second, dy and dx are independent of any particular value, and their relation refers only to the singularities which define the trigonometric tangent of the angle which the tangent of the curve makes with the axis of the abscisses ($dy/dx = -x/y$).[20]

This alone would genetically warrant Kant's insistence on the objective or universal character of the concepts of the understanding in relation to the intersubjective basis of phenomena. Mere consensus of apperception between thinkers can never, in itself, suffice for a claim to genuine

knowledge. Only consequential congruence of the practical effects of acts of constructive apperception supposed as directed at an object "identified" between subjects can assuage legitimate grounds of doubt about the relative objectivity of a thought. In other words, objectivity is ultimately a matter of registration of relational powers of affection, which are nevertheless not reducible to their appearance or manifestation. Thus, to the stage of passive synthesis within which the thinking subject emerges according to Deleuze, he ascribes the "formation of a principle of a 'common sense' as the function of identification"[21] but it may be more accurate to ascribe to it a function of differential objectification, on the basis of which identification follows as a corollary.

We are finally in a position to answer the two questions about the nature of singularities above. Because Deleuze is a philosopher of unlimited synthesis—in other words, because he sees no *metaphysical* problem with an infinite regress of determination but only an *epistemic* one—there is no opposition between construing singularities as ontologically primitive virtual traits out of which the world and thought are composed and construing them as always arising out of structural or functional supervenience on individuals begotten by multiplicities of relations, themselves cashed out in ultimately differential terms. In either case, reducing logical priority to causal origin mistakes singularities as states of affairs rather than as events. It confuses Chronological time with Aionic time. From its own perspective, according to Deleuze, the question of chronological priority is irrelevant to the "static genesis" of sense. What singularities are as inhering effects of one system, they are as real transcendental conditions of another.[22] Since there is no first cause and no need of one, and so no (metaphysical) origin, there are only movements of grounding and ungrounding—and for Deleuze, this holds formally between both thought and Being since the latter must be immanent to the former, even as thought attempts to articulate Being in its turn.

NOTES

1. Gilles Deleuze, *The Logic of Sense*, trans. Mark Lester with Charles Stivale (New York: Columbia University Press, 1990), 106.

2. Gottfried Leibniz, *The Labyrinth of the Continuum: Writings on the Continuum Problem, 1671–1686*, trans. Richard Arthur (New Haven, CT: Yale University Press, 2013), 311.

3. For the relevant readings of Leibniz by Deleuze, see *Logic of Sense*, 100–118; and Deleuze, *Difference and Repetition*, trans. Paul Patton (1968; repr., New York: Columbia University Press, 1994), 42–50. See also Sean Bowden, *The Priority of Events* (Edinburgh: Edinburgh University Press, 2011), 56–94.

4. Deleuze, *Logic of Sense*, 107.

5. This understanding of a world is in a basic affinity with Badiou's. See Alain Badiou, *Logics of Worlds*, trans. Alberto Toscano (2006; repr., London: Continuum, 2009), 109–40, 199–230, 303–24; and *Second Manifesto for Philosophy*, trans. Louise Burchill (2009; repr., Cambridge, UK: Polity Press, 2011), 26–32. We leave a technical discussion of the differences for elsewhere.

6. Deleuze, *Logic of Sense*, 111.

7. Deleuze, *Logic of Sense*, 113. Much is owed in our discussion of this point to Bowden, *The Priority of Events*, 70.

8. Similarly, Terrence Deacon refers to the causal efficacy of "absential phenomena" in his naturalist account of mind. In several places, he characterizes such phenomena as "virtual." Terrence W. Deacon, *Incomplete Nature: How Mind Emerged from Matter* (New York: Norton, 2013), 1–42.

9. Gabriel Catren, *Pleromatica, Or Elsinore's Trance*, trans. Thomas Murphy (New York: Urbanomic/Sequence Press, 2023), 174–75: "Instead of restricting its inquiry to the *natura naturata* correlated to the transcendental type of the subject of science, a post-critical science should be able to reflect on the transcendental conditions of possibility of such objective nature, to effect speculative variations on the corresponding transcendental structures, to integrate the transcendental perspectives swept away by these variations, and to orient its research activities by means of the regulative idea of truth qua untyped universality. The subject of such a post-critical phase of scientificity is necessarily a *speculative subject*, that is, a subject that can perform variations of its transcendental type and integrate the corresponding transcendental perspectives into experiences endowed with higher forms of speculative depth."

10. Gilles Deleuze, *Nietzsche and Philosophy*, trans. Hugh Tomlinson (New York: Columbia University Press, 2006), 38–40.

11. The theme of the "crack" is one of major importance in *Logic of Sense* to which Deleuze devotes an entire chapter. Deleuze, *Logic of Sense*, 154: "The real difference is not between the inside and outside, for the crack is neither internal nor external, but is rather at the frontier. They are imperceptible, incorporeal, ideational."

12. For the ways in which this foundation of analysis is one constructed option among many, see Alexandre Borovik and Mikail G. Katz, "Who Gave you the Cauchy-Weierstrass Tale? The Dual History of Rigorous Calculus," *Foundations of Science* 17, no. 3 (2012): 245–76. For a primer on smooth infinitesimal analysis in synthetic differential geometry, see Michael O'Connor, "An Introduction to Smooth Infinitesimal Analysis," *arXiv pre-print* (2008), 1–14.

13. Bowden, *The Priority of Events*, 68. It is worth noting that the abstract particulars of Deleuze may be contrasted with the concrete universals of Hegel.

14. Take, for example, the relations of the cone to the equations of curves given by the conic sections, which Deleuze was fond of as illustrative of that between transcendental (virtual) problem and variable (actual) solutions. The cone is a virtual problem, but only insofar as we understand it not as an actual object (which it also is) but as articulating without actualizing the cases of the equations "embedded" in its geometry. For an exploration of the theory of problems, see Jean-Claude Dumoncel, "Deleuze Challenges Kolmogorov on a Calculus of Problems," *Deleuze and Guattari Studies* 7, no. 2 (2013): 169–93. And for a philosophical genealogy of Deleuze's theory of problems, see James Bahoh, "Deleuze's Theory of Dialectical Ideas: The Influence of Lautman and Heidegger," *Deleuze and Guattari Studies* 13, no. 1 (2019): 19–53.

15. Deleuze sees counter-actualization as inhering in actualization and thinks of possibility as constituting a retrospective horizon of thought downstream from the actual (construed in Bergson's critical terms as the actual plus existential negation.) See Henri Bergson, "The Possible and the Real," in *Key Writings*, ed. Keith Ansell Pearson and John Ó Maoilearca (London: Bloomsbury, 2014), 223–32; Gilles Deleuze, *Bergsonism*, trans. Hugh Tomlinson and Barbara Habberjam (New York: Zone, 1988), 18; and Deleuze, *Difference and Repetition*, 211–12.

16. Deleuze, *Logic of Sense*, 111. This final sentence is very clearly a critical allusion to Frege's understanding of truth-functional predication.

17. We may want to distinguish generality from genericity as two modes of abstraction: the former is the integration of the particular (by cases, or extensional generalization), whereas the latter is the differentiation of the singular (by structure, or intensional genericity).

18. Cf. Deleuze, *Logic of Sense*, 114–15.

19. Cf. Deleuze, *Logic of Sense*, 123.

20. Deleuze, *Logic of Sense*, 346n3.

21. Deleuze, *Logic of Sense*, 116.

22. Arjen Kleinherenbrink, *Against Continuity: Gilles Deleuze's Speculative Realism* (Edinburgh: Edinburgh University Press, 2019); and Dylan Vaughan and M. Curtis Allen, "Review of Arjen Kleinherenbrink, *Against Continuity*," *Deleuze and Guattari Studies* 15, no. 3 (2021), 458–69. This is partially consistent with Kleinherenbrink's reading of the virtual and the actual as "aspects" of an entity rather than "realms" within which the being of an entity is situated. Nevertheless, for Kleinherenbrink, part of the "two-fold" structure of the virtual he elaborates marks the site of the withdrawn, non-relational essence of a being. According to him, this site locates the haecceity of an entity, since he presupposes that any notion of ontological continuity makes drawing real distinctions, and thus articulating the uniqueness of any individual, impossible. I don't share this presupposition, since singularities preside over the differences between individuals (or what he calls machines), and so their individuation is not given in themselves, but only via relations with others through time. This in no way implies that individuation is lost, unless one's ontology admits no real vagueness or "zones of indiscernibility."

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