# Heideggerian Mathematics: Badiou's *Being and Event*

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> Philosophy has no other legitimate aim except to help find the new names that will bring into existence the unknown world that is only waiting for us because we are waiting for it.
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> Alain Badiou[1]

> As I have often said, philosophy does not lead me to any renunciation, since I do not abstain from saying something, but rather abandon a certain combination of words as senseless. In another sense, however, philosophy does require a resignation, but one of feeling, not of intellect. And maybe that is what makes it so difficult for many. It can be difficult not to use an expression, just as it is difficult to hold back tears, or an outburst of rage.
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> Ludwig Wittgenstein[2]

## Introduction

Alain Badiou's *Being and Event* is a late product of the French reception of Heidegger's philosophy, as inflected by the philosophy program of the École Normale Supérieure (ENS). This program is a kind of forcing house for the production of a national philosophical elite, owing to its monopoly of the state funding, training, and examination of trainee philosophy teachers destined for French high schools and colleges.[3] A variety of cultural and political movements have contended for dominance of the ENS philosophy program — Christian phenomenology, Catholic existentialism, Kantian rationalism, "scientific Marxism" — yet Heideggerian thought seems to have provided a kind of matrix for the contestation itself. This brokering function has been due less to the precise doctrines

[1] Alain Badiou, "Caesura of Nihilism", in *The Adventure of French Philosophy*, trans. B. Bosteels (London, 2012), pp. 53-66, at p. 65.

[2] Ludwig Wittgenstein, *The Big Typescript, TS 213*, trans. C. G. Luckhardt and M. A. E. Aue (Oxford, 2005), p. 300e.

[3] See the indispensable discussion in Edward Baring, *The Young Derrida and French Philosophy, 1945-1968* (Cambridge, 2011), pp. 42-7, 67-80, 82-107.

of Heidegger than to the role of Heideggerianism as an underlying intellectual subculture capable of shaping basic attitudes towards doctrines, including their acceptance, contestation, and further elaboration.

For our immediate purposes the salient feature of Husserlian and Heideggerian thought is that it gave rise to a line of French philosophy in which formal languages — formal logics and mathematics — are treated as standing in some kind of relation to a domain of experience or events, hence in relation to the subject of this domain and, finally, in relation to a Being that manifests (and conceals) itself through such languages and their subject.[4] This line was thus preoccupied with the relation between "logic" and "psychology" and more broadly that between "rationalism" and "phenomenology".[5] The alternative path, as prospected by Wittgenstein, is one in which formal (and other) languages stand in no relation to a domain of experience and its subject, and are instead viewed as autonomous calculi or "grammars".[6] These are responsible for forming an array of calculative capacities by virtue of their concrete operations or uses, and thus manifest nothing beyond these operations and uses and the "ways of living" of which they form part. In treating formal languages in terms of "names" that manifest and conceal Being in the subject, Badiou's *Being and Event* emerged from the main Heideggerian stream of French philosophical culture, as this was channeled into the factional currents that flowed through the ENS. I shall show that Badiou's work took shape through the purely historical superimposition of a particular kind of philosophical mathematics — Cantor's set theory — onto the infrastructure of Heidegger's metaphysics. This gave rise to a discourse whose intelligibility is conditioned by the philosophical subculture that made this

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[4]     For a characteristic instance of this line of reception, see Jacques Derrida, *Edmund Husserl's Origin of Geometry: An Introduction* (Lincoln, 1989), first published in 1962.

[5]     For an illuminating conspectus of French philosophy written in these terms, see Knox Peden, *Spinoza Contra Phenomenology: French Rationalism from Cavaillès to Deleuze* (Stanford CA, 2014), in particular pp. 17-65, where Jean Cavaillès is discussed as promoting set theory as an "immanent rationalism" capable of resolving the tension between psychologism and transcendental formalism.

[6]     Cf., these characteristic snippets from *The Big Typescript*: "No psychological process can symbolize better than signs on paper. A psychological process can't accomplish any more than written signs on paper. For again and again one is tempted to want to explain a symbolic process by a particular psychological process, as if the psyche could do much more in this matter than signs" (221e). And: "Mathematics consists entirely of calculations. In mathematics *everything* is algorithm, *nothing* meaning; even when it seems there's meaning because we appear to be speaking *about* mathematical meanings in *words*. What we're really doing in that case is simply constructing an algorithm with those words. In set theory what is calculus ought to be separated from what claims to be (and of course cannot be) *theory*" (494e).

superimposition possible, meaning that it is restricted to the "pedagogical geography" of the ENS and to the international academic archipelago — of continental philosophy courses, literary theory programs, and associated reading groups — in which this subculture can be partially reproduced.

In proposing to develop an historical description of Badiou's discourse in these terms, my approach differs from most others in two regards. First, I do not approach the question of whether set theory is the ambivalent (manifesting and concealing) exponent of Being as something that is capable of being true or false, hence as something that an historian can or should answer. Rather, I treat this question as internal to Badiou's discourse, which means that the task of the historian is not answer it but to describe the philosophical subculture that requires it be asked, thence to cease asking. Second, I do not treat historical events as moments in which the transcendent manifests (or conceals) itself in time, but as purely temporal occurrences that have been recorded in various kinds of writing that can in turn be deciphered and interpreted within historiographic writing. I thus approach Badiou's discourse on the ambivalent manifesting and concealing of Being in set theory as a historical occurrence: more specifically as an activity, taking place in post-war French philosophical institutions, whose discursive operations and uses are open to historical description. Were this description to fulfill its envisaged aims then it would result not in the invalidation of Badiou's discourse but in the suspension of two affective attitudes towards it: namely, the desire for this discourse among those who think it capable of truth, and the disdain for it among those who think it evidently false or nonsensical.

My description will be focused on a particular reciprocal interplay that Badiou establishes between his two key intellectual sources: Cantorian set theory and Heideggerian metaphysics. On the one hand, Badiou deploys set theory as a kind of extended allegory or symbology for the basic doctrines of Heideggerian metaphysics. On the other hand, he simultaneously uses set theory to mathematize this metaphysics, transposing it from theological and poetic registers into the formal and mathematical. Badiou's central thesis that "mathematics is ontology" is thus not a statement within a particular theoretical discipline. Rather, it is a figure of thought formed in the space between the deployment of set theory as an allegory for Heideggerian ontology, and the transposition of the latter into a set-theoretic

symbolism, in a discursive operation that takes place wholly within the French Heideggerian subculture.

It is significant that Badiou himself locates his work in something like this double-sided space:

> Our goal is to establish the meta-ontological thesis that mathematics is the historicity of the discourse on being qua being. And the goal of this goal is to assign philosophy to the thinkable articulation of two discourses (and practices) which *are not it*: mathematics, science of being, and the intervening doctrines of the event, which, precisely, designate "that-which-is-not-being-qua-being".[7]

Needless to say, Badiou treats this combination of "mathematical ontology" and (Heideggerian) "doctrines of the event" as justified by the truth that it makes available to a privileged subject. I will approach it though as a pedagogical assemblage whose role is to form a subject or persona — a particular way of acceding to truth — through the administration of specific intellectual or "spiritual" exercises. In any case, I shall show that all of Badiou's key figures of thought are contained within this double-sided discourse, which exhausts the discursive space of *Being and Event*.

Proposing to treat it as a describable product of the allegorical imposition of set theory on Heideggerian metaphysics might seem like a singularly unpromising approach to Badiou's discourse. In the first place, Badiou insists that the domain of describable objects is only the presentation of something "unpresentable" or "indiscernible", and he claims that the passage from the unpresentable to the describable can only be accessed via his own "metaontological" discourse.[8] This would mean of course that Badiou's discourse could not itself be treated as an object of empirical description. Second, despite acknowledging Heidegger as the last great philosopher, there are several passages in *Being and Event* where Badiou explicitly differentiates his metaontology from Heidegger's. This occurs most emphatically in his claim that Heidegger's theme of the "poetic" unfolding of forgotten Being has been "interrupted" and superseded by "mathematical ontology" or the "matheme",

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[7]     Alain Badiou, *Being and Event*, trans. O. Feltham (London & New York, 2005), p. 13. (All further references given in text. All emphases are original).

[8]     Again the contrast with Wittgenstein's views is striking and illuminating, as we can see from the latter's succinct comment that: "Because mathematics is a calculus and therefore really about nothing, there isn't any metamathematics". Wittgenstein, *The Big Typescript*, p. 372e.

according to which Being is understood "subtractively", in terms of the formal generation of multiples (or sets) from the "void" (*BE*, 123-29).

I will not engage further with the first of these possible objections since, in presuming that the describable is the manifestation of an indescribable Being accessible only through Badiou's meta-discourse, it would foreclose that which my discussion proposes as an open question: that is, the question of *whether* Badiou's discourse is open to an empirical historical description. We can thus set aside this metatheoretical objection on methodological grounds, as question-begging, and proceed to a description that can succeed or fail in its own terms, according to whether readers find it to be an accurate and fruitful account, or not. The second possible objection must be met head-on, however; for were it to hold then our proposed description would indeed fail, owing to its inaccurate characterization of Badiou's discourse as Heideggerian. Here our response will be to show that, notwithstanding his explicit points of distanciation from Heidegger, Badiou's discourse takes place entirely within what is in fact the fundamental Heideggerian figure of thought: namely, the theme of the concealment of Being through the very forms (or beings) in which it is disclosed.[9] According to this recherché thought-figure, there is an ontological font of all things ("Being") that is only disclosed in and to a subject who calls it forth (*Dasein* for Heidegger); but this disclosure is simultaneously a concealment, for Being reveals itself only by calling the subject into existence, and hence is not something the subject knows but what it *is*.[10] This is not to deny that there are other more local sources for Badiou's discourse — in particular Lacan's psychoanalysis and Althusser's formalist Marxism — only to assert that these too take place within the Heideggerian subculture, permitting Lacan, for example, to superimpose Freud's unconscious on Heidegger's unpresentable Being.

In fact at no point in *Being and Event* does Badiou raise the question of why someone would believe that there is such a thing as Being, harboured in the "void" as unpresentable infinities, and summoned into knowable existence by a subject whom it summons into existence for just this purpose. Somewhat remarkably, he simply

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[9]  For a quite different kind of argument that Heidegger remains central to Badiou's discourse, see Graham Harman, "Badiou's Relation to Heidegger in *Theory of the Subject*", in *Badiou and Philosophy,* ed. S. Bowden and S. Duffy (Edinburgh, 2012), pp. 225-43.

[10]  For a reasonably compact and accessible formulation of this figure of thought by Heidegger, see Martin Heidegger, *Being and Time: A Translation of Sein und Zeit*, trans. J. Stambaugh (New York, 1996), pp. 56-8. And for a routine expression by Badiou, see the epigraph to this paper.

accepts this extraordinary mythopoeic figure of thought without comment or question. In this regard, Badiou's work may be regarded as embedded in a Heideggerian theology or confession. No less surprising for a non-believer is the fact that Badiou treats Cantor's "invention" of set theory as the "event" through which, for the first time in the history of humanity, it became possible for the disclosure (and concealment) of unpresentable Being to occur within a scientific discourse. It is this extraordinary allegorization of an unquestioned Heideggerian metaphysics in a formal mathematical symbology that gives Badiou's discourse its intensity and portentousness, even imbuing it with messianic and apocalyptic overtones.[11]

As we shall now see, Heidegger's figure of the simultaneous disclosure and concealment of Being in beings sits at the centre of Badiou's discourse. It forms the reciprocating hinge between his deployment of set-theoretic mathematics as a symbology for Heideggerian metaphysics, and his translation of this metaphysics into the language of formal mathematics. Badiou's discourse thus presents a picture in which the entirety of "being qua being" or "nature" is generated in the form of mathematical "multiples" or sets. These emerge in the form of "presentations" from a kind of super-calculus whose defining feature is that its operations remain "unpresentable" or "unthinkable". In this regard, set theory in Badiou's para-Heideggerian discourse plays the same role as "writing" in Derrida's, and both have been advanced as the means of diagnosing and superseding the "metaphysical" residue in Heidegger's figure of the concealment of Being in beings.[12] In treating meaning as concealed by the mechanisms that produce it, however, Badiou's super-calculus and Derrida's "arche-writing" can themselves be regarded as rival variants of this figure, each advanced by a cultural-political faction intent on detecting and denouncing the last vestiges of "metaphysics" in its competitor.

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[11] Perhaps it is their failure to fully grasp this nexus of mathematics and metaphysics that limits the otherwise helpful discussion of *Being and Event* by Ricardo and David Nirenberg. See, Ricardo L. Nirenberg and David Nirenberg, "Badiou's Number: A Critique of Mathematics as Ontology", *Critical Inquiry* 37 (2011): 583-614. In any case, the passionate intensity with which Badiou's followers adhere to his concealed revelation of Being is on full display in this response to the Nirenbergs: A. J. Bartlett and Justin Clemens, "II. Neither Nor", *Critical Inquiry* 38 (2012): 365-80.

[12] For a helpful account of Derrida's conception of "writing" as an attempt to supersede the "metaphysical" residue in Heidegger's figure of the concealment of Being in beings, see Baring, *The Young Derrida*, pp. 191-203; although Baring seems to think that this attempt makes sense in its own terms, rather than being a Heideggerian improvisation, optional and equivalent to Badiou's.

As in Heideggerian thought more generally, in Badiou's "metaontology" it is the "event" that mediates the dark passage between an unpresentable ground of Being and the beings as and in whom it is presented. Here the subject operates in a dual register: as the being that names the event, calling the unpresentable into existence as a "presentational multiple" through an "intervention", and as the being that is called into existence by a self-nominating event, in order to bear mute testimony to the disclosure of unpresentable Being: "It is certain that the event alone, aleatory figure of non-being, founds the possibility of intervention. It is just as certain that if no intervention puts it into circulation … then, lacking any being … the event does not exist" (*BE*, 209). It might seem surprising that something so ineffable could be so certain, and yet this is repeatedly the case in Badiou's discourse.

The basic itinerary of my description has thus been established. I shall begin with an account of Badiou's emblematic presentation of the "null-set" and transfinite numbers, and then discuss his meditations on the event and the subject. This will allow me to complete the paper with an account of Badiou's deployment of the model-theoretic procedure of "forcing" as a Heideggerian allegory for "discerning the indiscernible", or "naming unnamable being".

**The Null-Set and the Transfinite (Nothing and Everything)**

Badiou introduces his twin constructions of the null or empty set and the transfinite numbers in order to set the inner and outer existential limits of his discourse. Formulated by Georg Cantor at the end of the nineteenth century, Badiou deploys these constructs to allow his metaontology to frame the entire ontological universe, between nothing and everything (*BE*, 30). He thus absorbs the traditional scholastic metaphysical project of comprehending all of the domains and kinds of being within a single originary science, originally the metaphysics of God's intellection or emanation of all beings. But he transforms this into a metaontology of the emergence of multiple infinities of beings from a nothingness that anticipates them in the form of unpresentable or "inconsistent" mathematical operations (*BE*, 27-8). This provides the intellectual setting that permits Badiou to allegorize the two technical constructs by transposing them into a particular metaphysical register. He thus treats the empty set as an emblem for the existentialist conception of the emergence of beings from nothingness or the "void". And he treats Cantor's transfinite numbers as symbolic of the supposed fact that the ontological universe

consists of a single homogenous domain of the enumerable, but one so vast that it outstrips any actual "constructive" enumeration and all "regional" natural sciences (*BE*, 52-9).

In formal mathematics and logic the null or empty set is a technical construct called into existence by its operational uses, so much so that Dedekind's foundations of arithmetic could exclude it, treating '1' rather than '0' as his foundation for the number system.[13] In "extensional" set theory — that is, set theory premised on the calculation-independent existence of set members — the null or empty set, understood as the empty extension and symbolized by $\varnothing$, is a technical construct without any reference to Being or nothingness.[14] Here its primary use is to show how the natural numbers can be constructed as sets of elements built up from the empty set, such that $\varnothing = 0$, $\{\varnothing\} = 1$, $\{\varnothing,\{\varnothing\}\} = 2$, $\{\varnothing,\{\varnothing\},\{\varnothing,\{\varnothing\}\}\} = 3$, and so on, as part of the set-theoretic foundation or simulation of arithmetic.[15] In Badiou's allegorical deployment of it, however, the empty set is made to go proxy for Being, here not understood as the "one" as in Platonic and Christian metaphysics, but as a domain of unpresented or "unconscious" multiples whose "counting as one" gives rise to the sets of a presented "situation".[16] Since on this account to be presented (or thought) means to counted in or as a set, which is also what it means to exist, in not themselves being counted as one, the multiples of the empty set are both unpresented

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[13]     Richard Dedekind, *Essays on the Theory of Numbers*, trans. W. W. Beman (Chicago, 1901), pp. 33-4.

[14]     Akihiro Kanamori, "The Empty Set, the Singleton, and the Ordered Pair", *The Bulletin of Symbolic Logic* 9 (2003): 273-98, at 273-76.

[15]     The basic idea informing the extensionalist program at the beginning of the twentieth century was that all mathematical objects, numbers in particular, can be regarded as collections of abstract objects or sets, and formulated in expressions that reduce to the membership relation, $\in$. Integers ("natural numbers") can thus be treated as finite sets, rational numbers ("fractions") as pairs of integers, "real" numbers as intervals in an infinitely expanding number line, and functions as sets of pairs. See, M. Randall Holmes, *Elementary Set Theory with a Universal Set* (Louvain, 1998), pp. 25-8. Here I do not discuss the controversy as to whether set theory provides a foundation for mathematics or simply a more abstract set of notations for it, but note Wittgenstein's comment that the "logical calculus — is only frills tacked on to the arithmetical calculus". See Ludwig Wittgenstein, *Remarks on the Foundations of Mathematics*, 3rd ed. (Oxford, 1978), p. 146.

[16]     "Situation" is a central but somewhat mobile term for Badiou, combining three things that are normally kept apart: first, the (extensionalist) set-theoretic concept of "domain" as the values or *n*-tuple relations that "satisfy" a mathematical function; second, the "universe" of sets structured by first- and second-order logics as a "model" for a selected axiomatization of set theory; and thirdly and more informally an empirical state of affairs — a domain of facts, an "historical situation" — that Badiou nonetheless approaches as if it were a kind of set-theoretic domain or model.

and "nothing". For Badiou, however, this "nothing" also exists, in a special sense ("in-exists"), and is in fact the unpresentable source of all the sets (or "beings") resulting from the mathematical operation "count as one": "To put it more clearly, once the entirety of a situation is subject to the law of the one and consistency, it is necessary … that the pure multiple, absolutely unpresentable according to the count, be *nothing*. But being-nothing is as distinct from non-being as the 'there is' is distinct from being" (*BE*, 53).

For Badiou the "nothing" emblematized in the empty set is thus the unpresentable or unconscious source of all of the enumerated sets that constitute the presentable ontological domain of "being qua being". For mathematicians and mathematical logicians, however, sets have no source — no void, or domain of unpresentable Being — since the concepts of set and membership ($\in$) are treated as "primitive notions" incapable of further analysis, acting as the posits on which set theory is built through the employment of logical syntax and arithmetic operations.[17] In identifying it with the void, Badiou thus turns the empty set into an allegorical symbol of the Heideggerian link between thinkable things or beings and the unthinkable Being (or "being-nothing") from which they are supposed to emerge. This allows him to freight the otherwise variable formal-syntactic notation of the empty set, $\varnothing$, with the Heideggerian-metaphysical meaning of the "suture to being" (*BE*, 66-9). In this way, the technical role of the empty set in the set-theoretic modeling of natural numbers is transmuted into an emblem of the existentialist and Heideggerian conception of nothingness or the void, understood as the unthinkable source of all thinkable or presentable things. In a characteristically paradoxical and gnomic comment, Badiou thus proclaims that: "The void is the name of being — of inconsistency — according to a situation, inasmuch as presentation gives us therein an unpresentable access, thus non-access, to this access, in the mode of the not-one, nor composable of ones; thus what is qualifiable within the situation solely as the errancy of the nothing" (*BE*, 56).

We can note that the gnostic ineffability of this formulation pertains not just to its instantiation of the key Heideggerian thought-figure — the access to being that is also its occlusion — but also to the affective intensity with which Badiou presents it as a kind of sacred mystery at the very limits of human understanding. Badiou thus

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[17]    Thomas Jech, *Set Theory*, 3rd rev. ed. (Berlin, 2003), pp. 3-5; Paul J. Cohen, *Set Theory and the Continuum Hypothesis* (New York, 1966), pp. 3-7.

comments that in choosing the old Scandinavian symbol $\varnothing$ for the empty set, it is as if mathematicians were "dully aware that in proclaiming that the void alone is … they were touching on some sacred region, itself liminal to language" (*BE*, 69). For the moment though our attention is focused on the fact that Badiou treats the empty-set's symbolization of the Heideggerian void not as an allegory but as an eminent truth, a posture that is assumed without further reflection by his followers.[18] This of course is symptomatic of intense adherence to the Heideggerian thought-figure, which in turn leads Badiou to dismiss the fact that mathematicians do not treat the empty set as a symbol of the void as symptomatic of their failure to penetrate the unconscious grounds of their own practice (*BE*, 69).

In tandem with the empty set as symbol of the void, Badiou designates the infinite or transfinite numbers of Cantorian set theory as the "second existential seal" of his metaontology, by which he means its second point of contact with Being (*BE*, 156). This time ontological contact comes not in the form of the unpresentable multiples of the void that precede the "situation" of presented things or beings, but in the form of multiple infinities that constitute the situation yet stretch beyond it, constituting its "Other" (*BE*, 142-49). As an emblem of the Other — that is, of an incalculable plenitude of Being underpinning all calculable domains of knowledge — Badiou's transfinite numbers represent a further use of set theory as a symbology for Heideggerian metaphysics.[19] The technical complexity of Cantor's mathematical construction of transfinite numbers, however, makes the task of describing Badiou's allegorical use of them particularly challenging.

Transfinite numbers emerged towards the end of the nineteenth century in the context of the long-running project to arithmetize the geometric line; that is, to replace geometric linear continuity with non-terminal arithmetically and algebraically

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[18]    For examples, see, Justin Clemens, "Platonic Meditations: The Work of Alain Badiou", *Pli* 11 (2001): 200-29, at 217; Peter Hallward, *Badiou: A Subject to Truth* (Minneapolis, 2003), pp. 75, 101-103; Justin Clemens' and Oliver Feltham's introduction to Alain Badiou, *Infinite Thought: Truth and the Return to Philosophy*, ed. and trans. J. Clemens and O. Feltham (New York, 2003), pp. 15-16; and Ray Brassier, *Nihil Unbound: Enlightenment and Extinction* (Houndmils, 2007), pp. 104-5.

[19]    It can be noted that in an early work, in which Badiou puts Cantor's transfinite numbers to the same Heideggerian use, he characterizes the incalculable and impossible infinitude inhabiting the calculable domain not as the "Other" but as the "real", in accordance with Lacan's pairing of the "symbolic" and the "real". See, Alain Badiou, "Infinitesimal Subversion", in *Concept and Form, Volume One: Key Texts from the Cahiers pour l'Analyse,* ed. P. Hallward and K. Peden (London, 2012), pp. 187-208, at pp. 189-93.

generated numbers or values, initially conceived as abstract points on the "number line".[20] Cantor's conception of numbers as classes, sequences, or sets (*Menge*) of points marked the emergence of set theory a program for reconstructing number theory (and thence mathematics) by providing a common foundation for different number forms: natural, rational, and irrational (non-terminating and non-repeating decimal fractions such as π and the square root of 2).[21] These could all be regarded as formed from the structuration and combination of sets of "points" occupying spaces on an abstract number line. Moving beyond the notion of "point-sets", Cantor also invented two new kinds of number internal to set theory: cardinal numbers, which "counted" set size by establishing one-to-one relations between the members of equivalent sets; and ordinal numbers, which were designed to represent the order-relations holding among the members within sets. Cantor could thus integrate rational and irrational numbers in the "real number line" by treating the irrational numbers (e.g., π as 3.14159 …) as expanding endlessly towards a "limit point" — the next rational number (e.g., 3.25) — that they never reach, thereby supposedly expanding in the "gaps" of the number line and providing an arithmetic or algebraic simulacrum of the geometric "continuum". On this basis Cantor could construct "real" numbers as "gaps" or "intervals" in the number-line that are formed by the unending expansion of a sequence or set of numbers towards a "limit" number that is never reached.[22] This in turn provided the basis for the set-theoretic conception of the infinite and "transfinite" numbers, now understood as "actual" or completed (rather than "potential") infinity, since the "limit" numbers towards which they asymptotically unfolded supposedly already existed.[23] Cantor could thus treat infinity as a super-large number, rather than just as a rule of expansion. And this in turn gave him the licence to posit multiple

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[20] For pioneering papers see Georg Cantor, "Uber die Ausdehnung eines Satzes aus der Theorie der trigonometrischen Reihen", *Mathematische Annalen* 5 (1872): 123-32; and Dedekind, *Essays on the Theory of Numbers*, pp. 1-13. For a helpful overview of these developments, written for students of law and the humanities, see Robert Hockett, "Reflective Intensions: Two Foundational Decision-Points in Mathematics, Law, and Economics", *Cardozo Law Review* 29 (2008): 1967-2119. See also, Joseph W. Dauben, "Georg Cantor and the Battle for Transfinite Set Theory", American Mathematical Society (New York, 1988).

[21] See note 15 above.

[22] See Cantor, "Uber die Ausdehnung eines Satzes aus der Theorie der trigonometrischen Reihen", § 2. For a helpful commentary see Joseph W. Dauben, "The Trigonometric Background to Georg Cantor's Theory of Sets", *Archive for History of Exact Sciences* 26 (1971): 181-216, at 202-8.

[23] Joseph W. Dauben, *Georg Cantor: His Mathematics and Philosophy of the Infinite* (Princeton NJ., 1979), pp. 95-101.

infinities of different sizes or cardinalities that could be assigned algebraic symbols — the "aleph" (ℵ) symbol — and incorporated in arithmetic calculations. As we will see, Cantor's hypothesized that one of these aleph cardinals ($2^{N0} = ℵ_1$) represented the size of the continuum or set of all real numbers, giving rise to his "continuum theorem".

It is important to observe, even if only in passing, that Cantor's construction of the real number line or continuum with its limit points and transfinite numbers belongs not just to a mathematical practice but also to a particular philosophy of mathematics. In treating the infinite number sequences or sets as existing as intervals in the "real number line", supposedly prior to the algorithms or functions that "partially" expand them, Cantor's construction presumes an extensional philosophy of mathematics as a theory of independently existing mathematical entities (points) and relations such as sets. Conversely, a significant minority of mathematicians and logicians, including Brouwer and Wittgenstein, insisted that mathematical quantities and relations are arrived at only through the actual performance of definite calculations or algorithms, having no independent existence — the "intensional" or "constructivist" viewpoint.[24] This meant that they refused to accept that infinite point-sets or number sequences existed beyond the actual arithmetic operations or algebraic functions through which sequences were finitely expanded.[25] This is also why Wittgenstein rejected the notion of the real number line, since he regarded the different kinds of number that it supposedly contains — natural, cardinal, rational, irrational, and real — as the products of diverse algorithms or calculi, hence as incapable of being incorporated in a single calculus or of being regarded as "numbers" in the same sense.[26]

Badiou rejects these intensional and constructivist views out of hand because of the manner in which they divorce mathematics from ontology, leading him to dismiss them as symptoms of the "unconscious" practice of "working mathematicians" (*BE*, 247-52, 286-94). It is not our present concern to directly contest this move, only to

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[24]     For a summary statement of Brouwer's "intuitionist" view of infinity, see Michael Dummett, *Elements of Intuitionism* (Oxford, 1977), pp. 51-6. For Wittgenstein's parallel but distinct form of finitism, see Ludwig Wittgenstein, *Remarks on the Foundations of Mathematics*, 3rd ed. (Oxford, 1978), pp. 260-80.
[25]     For a helpful overview of the two outlooks, written from the perspective of a moderate extensionalism, see Hockett, "Reflective Intensions": 1990-2006.
[26]     Wittgenstein, *Big Typescript*, pp. 489e-505e.

describe its role in his discourse.[27] Badiou's discussion of transfinite numbers supervenes on this divergence within the history and philosophy of mathematics, but from a quite different, metaphysical, vantage-point. In fact Badiou's approach is framed by his rejection of the Christian ontotheological conception of infinity — in terms the human mind's finite participation in God's singular infinite intellection of all possible things — and by his refusal of Heidegger's conception of mathematics as the "forgetting of Being" (*BE*, 123-29, 142-49). Badiou argues that Cantor transformed prior ontotheological conceptions of infinity by relocating infinity *within* Galileo's quantified "nature" — that is, within the number-sequences and classes of the real number line — this giving rise to a plurality of infinities. Badiou thus appeals to Cantor's immanent multiple infinities to undermine transcendent ontotheology and to give a new disposition to Heidegger's theme of the forgetting of Being. This could now be understood in terms of the oblivion into which the multiple infinities were cast by finite "situation" constructed from them.

But Badiou gives Cantor a new disposition too. For while Badiou takes over Cantor's extensionalist conception of the transfinite numbers — as pointing towards multiple infinities of mathematical objects that are only partially revealed in any given expansion or iteration of a rule — he simultaneously reinterprets this conception in a Heideggerian manner. He thus treats the expansion of a number series via a rule or algorithm as determining the identity of multiples (sets, beings, "others") but only through an encounter with something that lies beyond all calculation and identity: namely, infinity as the Other that necessitates and outstrips all applications of the rule, ensuring they are only partial calculations (hence forgettings) of incalculable Being:

> Infinity is the Other on the basis of which there is — between the fixity of
> the already and the repetition of the still-more — a rule according to
> which the others are the same.
>
> The existential status of infinity is double. What is required is both the
> being-already-there of an initial multiple and the being of the Other which
> can never be inferred from the rule. This double existential seal is what

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[27]     For an argument that Badiou's position shares important features in common with Brouwer's intutionism, see Zachary Fraser, "The Law of the Subject: Alain Badiou, Luitzen Brouwer and the Kripkean Analyses of Forcing and the Heyting Calculus", in *The Praxis of Alain Badiou,* ed. P. Ashton, A. J. Bartlett, and J. Clemens (Melbourne, 2006), pp. 23-70.

distinguishes real infinity from the imaginary of the one-infinity, which

was posited as a single gesture" (*BE*, 147-48).

Situated in this new metaphysical context, the mathematical meaning of Cantor's limit numbers including limit ordinals — that is, their role in defining real numbers as the asymptotic limits of infinite number sequences — is radically transformed. For now Badiou deploys limit numbers as symbols of breaks in natural multiples that admit unpresentable Being in the form of an incalculably infinite Other:

Take the sequence of successor ordinals which can be constructed, via the

rule S, on the basis of an ordinal which belongs to a limit ordinal. This

entire sequence unfolds itself "inside" that limit ordinal, in the sense that

all the terms of the sequence belong to the latter. At the same time, the

limit ordinal itself is Other, in that it can never be the still-one-more

which succeeds an other. (*BE*, 154-55).

In this way Badiou has redeployed the limit number as a metaphysical symbol of an infinite Other that outstrips and hence founds the finite mathematical unfolding of "natural" beings, just as we earlier saw him redeploying the empty set as a metaphysical symbol of the so-called void from which all beings (multiples, sets) are called into existence through their mathematical enunciation.[28]

Badiou deploys the relation between the empty set and the transfinite numbers to displace the traditional metaphysical relation between the divine mind's infinite intellection of all possible things and the human mind's partial reflection of this infinity. The empty set or void is thus the hole that was once occupied by God, which allows Badiou to proclaim the atheist character of his metaontology (*BE*, 277). At the same time, however, Badiou's void or "being-nothing" continues to serve the core function of the displaced metaphysical God: to be the source of all presentable things in the cosmos, hence to be the only thing that truly exists, albeit negatively as "in-existent" and unpresentable: "It is quite true that prior to the count there is nothing because everything is counted. Yet this being-nothing — wherein resides the illegal inconsistency of being — is the base of there being the 'whole' of the compositions of ones in which presentation takes place" (*BE*, 54). *Being and Event* may thus be

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[28] It should be noted that Badiou developed this basic position — i.e., treating infinity as indicative of an unpresentable "Other" or "real" lying beyond all algorithmic calculation — 20 years prior to the publication of *Being and Event*, as can be seen his "Infinitesimal Subversion" essay, first published in 1968.

regarded as a translation of negative theology into negative ontology, which is reflected in its significant reception among theologians.[29] In deploying it as the sole threshold across which the unpresentable Being of the void finds enunciation and passes into presentation and the domain of "being qua being", Badiou elevates his "metaontology" to the status of a sacred discourse whose role is to effect the "suture to Being". This infuses his discourse with a quasi-holy aura and pre-eminence in relation to other merely historical or scientific disciplines, dictating that it be acceded to through rituals of initiation and conversion, as we shall now see.

**The Event and the Subject**

Elaborated in the dense set of meditations that comprise parts IV and V of *Being and Event*, Badiou's intricate constructions of the "event" and the "subject" constitute the work's philosophical centre. As in Heidegger's discourse, so too in Badiou's the role of the event is to effect a passage between the unpresentable and inexistent Being of the void, and the domain of presented things or beings — the "multiples" of a "situation" — that are supposed to emerge from the void via the event.[30] As such, Badiou's event is a metaphysically liminal or amphibious creature, moving unformed in the limitless ocean of unpresentable nothingness, but crossing the shoreline of presentational thinghood through a naming of the unnamable. Standing on this existential beach the subject is a similarly liminal figure, since it must be both the source of the name that calls the event into being, and a being that is called into existence by the event that it "encounters". Given the contradictory constitutions imposed by their roles in effecting the passage from the unpresentable void to the world or "situation" of presented beings, it is not surprising that Badiou's discourse

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[29] See, for example, Kenneth A. Reynhout, "Alain Badiou: Hidden Theologian of the Void", *The Heythrop Journal* 52 (2011): 219-33, whose central argument is that Badiou's void is God. See also, David R. Brockman, *No Longer the Same: Religious Others and the Liberation of Christian Theology* (Houndmils, 2011), pp. 145-51; Frederiek Depootere, *Badiou and Theology* (London, 2009); and Hollis Phelps, *Alain Badiou: Between Theology and Anti-Theology* (London, 2013), pp. 121-68.

[30] One of Heidegger's characteristic evocations of the event thus runs: "All the same, the task remains: *the retrieval of beings out of the truth of beyng*. … A projection of the essential occurrence of beyng as *the event* must be ventured, *because* we do *not* know that to which our history is assigned. Would that we might radically experience the essential occurrent of this unknown assignment in its self-concealing". See, Martin Heidegger, *Contributions to Philosophy (Of the Event)*, trans. R. Rojcewicz and D. Vallega-Neu (Bloomington IND, 2012), pp. 11-12.

on the event and the subject should take the form of a series of structured paradoxes or aporiae. These, I shall argue, are in fact "spiritual exercises" required of the reader.

The first of Badiou's liminal or paradoxical figures is that of the "evental site" (*BE*, 173-77). Like the "situation" or counted multiples, the evental site is a place or site of presentation (knowledge), yet, unlike the situation, it contains no presentable or countable elements, since it sits at the "edge of the void" from which such elements must be called into presentation and existence. It thus consists of unpresentable singularities that have escaped the "count" or mechanism of thought (*BE*, 174-75). Like Heidegger, Badiou identifies the event with "history", here understood not as temporal events but as the passage from a-temporality into time; a passage that erases all memory of a-temporality, thus echoing Heidegger's condition of "thrownness". Here acknowledging his debt to Heidegger, Badiou opposes "history" or the "historical situation" to "nature" or the "natural situation", thereby identifying the "evental site" with a thinking of the "non-natural" (*BE*, 173-74). Nature is understood as the stable unfolding of presentational multiples (sets) in accordance with a calculus, while Heideggerian "history" is construed as the "unstable" or "anomalous" place in which unpresentable singularities are called from the void. This means that "A historical situation is therefore, in at least one of its points, on the edge of the void" (*BE*, 177).

Despite their anomalous character, however, the evental sites can themselves be classified since, according to Badiou, there are just four of them. These are "love, art, science, and politics", each understood as a place where the unthought can be thought and drawn across the threshold of presentation via an event (*BE*, 17). Love, art, science, and politics are thus construed as evental sites or historical situations where the natural situation can be radically transformed by a thinking of the unthinkable that "touches the void", bringing forth new beings. Given this characterization, religion might be regarded as both a symptomatic absence and a founding presence for the four privileged points of contact with Being. For its part, as the domain of stable thought or presentation, nature is tantamount to a "forgetting of Being": "Nature, structural stability, equilibrium of presentation and representation, is rather that from which being-there weaves the greatest oblivion" (177). It is thus no accident that Badiou's term for "being-there" in this comment, *l'être-là*, is a common French

translation for Heidegger's *Dasein*, since it is the fate of human *Dasein* to bring Being into time — to make it "being-there" — at the cost of forgetting it.[31]

Badiou engineers access to the event by stationing it at the nexus of a specific contradiction or paradox, the mastery of which must be understood as a particular task and art of thought presented to the reader. He thus declares that in order to escape absorption within the stable and law-governed multiplicities of the natural situation, which would amount to a catastrophic presentation of the void, the event must arise from the unpresentable and unnamable singularities of the void itself. Conversely, if it is to fulfill its vocation of revolutionizing the domain of natural facts, then the event must itself be named and presented in the "situation", as the condition of it crossing from the void into the domain of presentable things and beings: "By the declaration of the belonging of the event to the situation [naming] bars the void's irruption. But this is only to force the situation itself to confess its own void, and to thereby let forth, from inconsistent being and the interrupted count, the incandescent non-being of an existence" (*BE*, 183). To read the central parts of *Being and Event* means in effect to practice the inner exercise or gymnastic of holding these contradictory stipulations in a kind of intellectual oscillation or equilibrium. This exercise is misunderstood by Badiou's followers no less than his detractors, since the former imagine that it opens them to something outside themselves — the "event" — while the latter dismiss the structuring paradoxes as "fashionable nonsense", with both sides forgetting that such exercises belong to a history of self-enclosed spiritual exercises.[32]

Badiou repeats this exercise in a series of carefully structured paradoxes that traverse his favoured evental sites: "the working class, or a given state of artistic tendencies, or a scientific impasse" (*BE*, 179). The historical situation of revolutionary France thus consists of a multiple of contingencies existing in a kind of pre-revolutionary void and giving rise to no necessary revolutionary event. What transforms this situation into an evental site is the appearance of the name "French Revolution" among the elements that make up the site, and its use by the participants

[31]      See, Alain Badiou, *L'être et l'événement* (Paris, 1988), p. 197.

[32]      In this regard, Badiou's text stands in a long tradition of Western Christian spiritual pedagogy, where aporiae are used as exercises in conceptual purification designed to allow the thinking of God using "human" predicates that have been suspended by paradox. For a germane account of the neoplatonic use of Plato's *Parmenides* in this kind of aporetic spiritual pedagogy, see Alain Lernould, "Negative Theology and Radical Conceptual Purification in the Anonymous *Commentary* on Plato's *Parmenides*", in *Plato's Parmenides and Its Heritage,* ed. J. D. Turner and K. Corrigan (Atlanta, 2010), pp. 257-74.

(or later commentators) to name the event. Badiou declares that this naming transforms the situation into an evental site by refracting it through the singularity of its qualification as an event (*BE*, 180). Emerging among the elements of an anonymous or unnamed multiple on the "edge of the void", the name of the event is the key to the constitution of the evental site through which it will pass into the historical situation. This means that in order to fulfill its task the event must name itself, must be a "presentation of presentation": "The event is thus clearly the multiple which both presents its entire site, and, by means of the pure signifier of itself immanent to its own multiple, manages to present the presentation itself, that is, the one of the infinite multiple that it is" (*BE*, 180).

Badiou thus stations the event at the nexus of a paradox, in regards to which he comments quite appropriately: "I touch here upon the bedrock of my entire edifice" (*BE*, 181). If the event is part of the historical situation then it has already been severed from the unpresentable and unnamable force of the void and rendered nameable and thinkable within the normal situation, thereby losing its transformative potential. If it is not part of the situation, however, then the event remains among the anonymous elements of the void, its name signifying "nothing", thence failing to constitute an evental site or transformative historical situation (*BE*, 182). By formulating this paradox, Badiou can declare the question of whether the event belongs to the situation to be "undecidable": "The undecidablility of the event's belonging to the situation can be interpreted as a double function. On the one hand, the event would evoke the void, on the other hand, it would interpose itself between the void and itself. It would be both a name of the void, and the ultra-one of the presentative structure" (*BE*, 182-83).

This undecidability can only be resolved by the notion of a self-naming event that reveals the void within the situation. It thus sets the scene for the second of Badiou's paradoxical thought-figures, that of the "intervention". After declaring the question of whether the event belongs to the situation to be undecidable, and insisting that there is no decision-procedure to resolve the paradox, Badiou introduces the figure of the intervention as the path to a decision (*BE*, 202). The intervention has two elements: first, the declaration that there is indeed an "evental multiple", or a multiple consisting of the elements of the evental site and the event itself; and second, the decision that the evental multiple is a term or name of the overarching historical situation to which it belongs. In fact, though, the crucial feature of the intervention is

that it names or interprets the event in the midst of its anonymous multiple and, in so doing, brings both the event and the historical situation into existence. To see this one must grasp the extraordinary or paradoxical character of the interventional naming of the event itself. On the one hand, the event cannot be named by first identifying it among the elements of the evental site, since it is the naming of the event that constitutes the site or historical situation. In Badiou's example, the naming of the French Revolution gives birth to "that historical situation that we call France" (*BE*, 203). On the other hand, this naming is supposedly itself impelled by something unconscious or unpresented within the evental site which, as it were, calls for its naming or thinking, such that "an intervention is to *make a name out of an unpresented element of the site to qualify the event whose site is the site*" (*BE*, 204).

In other words, in a circularity or paradox that anticipates Badiou's conception of the subject, if it is the interventional naming that "touches the void" and draws the unpresented element across the threshold of history by baptizing the event, then, at the same time, it is the event that "founds the possibility of intervention", since there can be no naming without the aleatory or unconscious intrusion of the void into the ordered space of presentation (*BE*, 209). The "undecidable" question of whether the event belongs to the situation is thus repeated within the paradoxical figure of the intervention that was meant to decide it: the event is created by the interventional naming that calls it into historical existence, and yet it is the unconscious event that calls this interventional naming into existence so that it can cross from the void into thought and history. With this circularity we are fully on the terrain of Heidegger's hermeneutic circle, and it is striking that like Heidegger Badiou declares that it cannot be escaped, only "split" and then repeated: "There is actually no other recourse against this circle than that of splitting the point at which it rejoins itself" (*BE*, 209). Given that intervention cannot found the event that founds it, then Badiou can only declare that "*the possibility of intervention must be assigned to the consequences of another event*" (*BE*, 209). And this in turn allows him to reconfigure intervention as "fidelity" or the intervenor's "faithfulness" to a prior event (*BE*, 211). But this of course only reinstates the circularity at one remove, for this prior event will also be one that is called into existence by the intervention that it calls forth.

At this point, in a remarkable swerve in his supposedly atheistic discourse, Badiou attempts to stem the unending recursion of events and interventions by positing an arche-event. This turns out to be the advent of Christ, understood as the

founding instance of the event, and as the means of explicating the recurrence of events and the nature of intervention and fidelity. The symptomatic absence of religion from Badiou's four points of contact with Being thus inverts into a founding presence. If up until this point it has been set-theoretical mathematics that has supplied Badiou with his symbology for Heideggerian metaphysics, then suddenly it is Christianity that offers him a central emblem of the event, but, in doing so, reminds us of the displaced theological character of his entire metaphysics of "touching the void". Here, though, a decidedly sectarian undercurrent breaks through the surface of Badiou's formalistic discourse, initially in a fond remembrance of his master Lacan's *bon mot* that even if no religion were true, Christianity nonetheless "came closest to the question of truth" (*BE*, 212). Badiou interprets this to mean that in Christ Christianity supplied the founding emblem of the "ultra-one" or event whose emergence from the void imbued history and the cosmos with meaning. At the same time, though, repeating his fundamental paradox, Badiou also declares that the advent of Christ depended on the intervention of the apostles, whose naming of the "Christ-event" called it into historical existence.[33]

In a demeaning but quite traditional Christian trope, Badiou identifies Judaism with the "law" and the "normal situation", declaring that the Jewish prophecies of a messiah had to be overturned by the apostolic naming of the tortured man as God, thereby enacting the "miracle" that calls forth the event, even as event calls for its apostolic naming (*BE*, 213, 216). It is thus the "fidelity" of an interventionist "avant-garde" that resolves the undecidability of the question of whether the event belongs to the situation — here, whether Jesus is God — through an act of naming that is simultaneously an act of faith: "The belief of the intervening avant-garde bears on the eventness of the event, and it *decides* the event's belonging to the situation. 'Miracle' names this belief, and so this decision. In particular, the life and death of Christ — the event strictly speaking — cannot be legitimated by the accomplishment of prophecies, otherwise the event would not interrupt the law" (*BE*, 219). Perhaps this anti-Judaism reflects Badiou's Christian existentialist formation and lends some

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[33]     This is the paradox that structures Badiou's meditation on the apostle Paul. See Alain Badiou, *Saint Paul: The Foundations of Universalism*, trans. R. Brassier (Stanford CA, 2003), where we find such pronouncements as: "For Paul, it is a matter of investigating which law is capable of stucturing a subject devoid of all identity and suspended to an event whose only 'proof' lies precisely in its having been declared by a subject" (p. 5).

plausibility to the claim that "Badiou can also be read as the last great author in the French tradition of Catholic dogmaticists that began with Pascal and Malebranche".[34]

Badiou's final meditation in the sequence dealing with the event and the subject is one that explicates the theme of "fidelity" and with it his conception of the subject. Fidelity is the term that Badiou uses to characterize the relation between the naming of the event by the interveners and the transformation of the situation — the existing intellectual, factual, or institutional situation — that results from the intervention: "I call fidelity the set of procedures which discern, within a situation, those multiples whose existence depends upon the introduction into circulation (under the supernumerary name conferred by an intervention) of an evental multiple" (*BE*, 232). The paradoxical character of Badiou's fidelity is that it combines both "discernment" of the multiples that constitute a situation and "love" of the event that has emerged from the void, in what Badiou for the first time characterizes as an "encounter" and designates as the "dialectic of being and event" (*BE*, 232). Badiou notes that "at the empirical level" there are competing fidelities to an event, as can be seen with Stalinists and Trotskyites in relation to the revolution, intensionalists and extensionalists in relation to set theory, and (twelve-tone) serialists and neo-classicists in relation to musical innovation (*BE*, 234); although it should be noted that for Badiou there is only one "true" fidelity in each of these cases. As one might expect, however, Badiou only entertains two possible "fidelity procedures": one, "dogmatic", that allows the "evental multiples" to be absorbed within the factual situation whose law-governed character Badiou identifies with the "state"; and another, "generic", that remains true to the incalculable fecundity of the event itself, injecting the situation with an uncountable infinity of multiples, and operating as an "inexistent procedure" adjacent to pure chance (*BE*, 235-36).

I shall return to this last issue below. For the moment, though, our attention is focused on Badiou's posing of the question of whether the interventionist naming of the event — or the "encounter" with it at the edge of the void — prescribes a particular form of fidelity as the mode of its unfolding in the worldly situation. Despite characterizing this as "one of the most profound questions of philosophy", it should be clear that Badiou has already pre-empted its answer, since it is only a particular form of fidelity — for example, Paul's fidelity to Christ as God — that

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[34]    Slavoj Zizek, "Psychoanalysis in Post-Marxism: The Case of Alain Badiou", *The South Atlantic Quarterly* 97 (1998): 235-61, at 244.

permits an inexistent event to make the transition into worldly existence (*BE*, 238). Nonetheless, Badiou's way of formulating this question is full of interest, and allows us to draw together the threads of our commentary on the theme of "spiritual exercises". Badiou's comment is thus:

> Philosophically speaking, the 'topos' of this question is that of Wisdom,
> or Ethics, in their relation to a central illumination obtained without a
> concept at the end of an initiatory groundwork, whatever the means may
> be (the Platonic ascension, Cartesian doubt, the Husserlian εποχη
> [*epoché*] …). It is always a matter of knowing whether one can deduce,
> from the evental *conversion*, the rules of the infinite fidelity. (*BE*, 238-39)

This is the first and only explicit reference to conversion in *Being and Event*, but it provides incipient clarification of the relation between the event and the subject. It is also the immediate context for Badiou's stipulative definition of the subject: "I will call *subject* the process itself of liaison between the event (thus the intervention) and the procedure of fidelity (thus its operator of connection)" (*BE*, 239).

This comment provides the opportunity for a significant retrospective clarification of Badiou's Heideggerian discourse on the event and the subject. After all, if we isolate Badiou's central paradox — the naming of the event is the calling of an unthought thing into existence by a subject who is simultaneously called into existence by the event — then how might this be understood other than as a "central illumination obtained without a concept at the end of an initiatory groundwork"? In other words, positioned as something that can only be acceded to via the exercises in paradox that we have just discussed, Badiou's event can be understood as the telos of a particular spiritual exercise that his readers must perform on themselves. Through the arduous inner exercise of maintaining both sides of the Heideggerian paradox, Badiou's faithful readers are to be rewarded by something far more profound than knowledge of a philosophical doctrine: namely, by the transformation of their quotidian selves into a rare subject who is spiritually qualified to receive the illumination of the truth as event (*BE*, 432-33).

To behold Badiou's event, even theoretically, is thus to undergo a conversion. If so, then *Being and Event* should be understood in significant part as a conversion discourse, which helps to explain the affective intensity imbuing its paradoxical central figures of thought. This clarifies Badiou's insistence that not all individuals

are subjects (*BE*, 285). In fact on his account only those individuals who have been renovated or converted by their encounter with a transformative event — that is, only those individuals who have passed through the paradoxes of Badiou's Heideggerian exercises — can obtain the "militant" or "avant-garde" fidelity to the event's infinite unfolding that qualifies them as subjects. Badiou's use of set theory as a symbology for Heideggerian metaphysics thus stations his discourse at the nexus of "philosophy" and "spirituality".[35] For this discourse is one that makes access to the objects of philosophical knowledge — the void and the transfinite, the event and the subject — conditional on performance of the Heideggerian conversion-paradoxes that spiritually qualify the subject to accede to "truth". It is this nexus that makes Badiou's discourse — for all its extolling of the aleatory, the unpresentable, the infinite, and the incalculable — so profoundly closed and sectarian, and so radically dependent on the making of converts and disciples.

**Discerning the Indiscernible (from Having Knowledge to Being-in-Truth)**

In the culminating stage of *Being and Event* Badiou purports to provide, for the first time in history, a formal mathematical demonstration of how the unpresentable or "indiscernible" — that emerges from the void and inhabits the transfinite gaps within nature — is brought across the threshold of discernment. This is to occur through a mathematical simulacrum of the "fidelity procedure" that mediates the subject's summoning of the event and the event's summoning of the subject. For Badiou the discerning of the indiscernible is not "knowledge", understood as the generation of multiples or sets from mathematical axioms and functions, for in this sense Being is never known. Rather it is "truth", understood as something disclosed to the subject through the subject's own coming into being in the interventional naming of the event: "The operator of faithful connection designates another mode of discernment: one which, outside knowledge but within the effect of an interventional nomination, explores connections to the supernumerary name of the event" (*BE*, 329). Discerning the indiscernible multiples of the void is thus not an act of knowledge

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[35]     Here I am drawing on Foucault's distinction between "philosophy" as the "form of thought that asks … what determines that there is and can be truth and falsehood", and "spirituality" as the "search, practice, and experience through which the subject carries out the necessary transformations on himself in order to have access to the truth", including "purifications, ascetic exercises, renunciations, conversions of looking, modifications of existence, etc.". See Michel Foucault, *The Hermeneutics of the Subject: Lectures at the College de France 1981-1982* ed. F. Gros, trans. G. Burchell (New York, 2006), p. 15.

attending the mastery of a calculus or grammar. It is an act of spiritual self-transformation in which the subject is called forth to enter the truth of Being that it has called forth.

This is a remarkably ambitious undertaking. Were it to succeed then Badiou would have transformed what remains a kind of philosophical mythography in Heidegger — the figure of Being's disclosure through the calling into existence of human being in whom it remains concealed — into a quasi-mathematical demonstration, thereby putting Heideggerian philosophy onto an entirely new basis, or perhaps superseding it. The formal-mathematical technique that he chooses to instantiate and execute the "fidelity procedure" or "operator of faithful connection" is thus crucial to Badiou's entire undertaking. It is important to observe that for Badiou this technique is not a symbol or allegory for the Heideggerian thought-figure. Instead, he regards it as the actual form in which the subject comes to unconsciously discern the indiscernible Being that has emerged from the void through the event and entered the transfinite spaces of the real number line or "continuum". The mathematical procedure that Badiou asks to bear this extraordinary metaphysical weight is the advanced set-theoretic and model-theoretic technique known as "forcing".

Forcing was invented around 1963 by the American mathematician Paul Cohen. It is a technique for constructing a certain kind of model for the standard axiomatized form of set theory, known as Zermelo-Fraenkel set theory with the axiom of choice (ZFC).[36] A model for set theory is simply a class of sets engineered in such a way as to "satisfy" its axioms and theorems. A model is thus a "universe" of abstract mathematical objects in relation to which a set-theoretic theorem can be shown to be inconsistent or consistent with ZFC, depending on whether or not its negation is satisfied by the model. Equally, a model for ZFC might show that a theorem and its

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[36]     As a non-mathematician I have drawn the following account of forcing from several standard sources, which are listed here for other non-mathematicians in order of increasing technicality, beginning with some generally accessible accounts: Thomas Jech, "What is Forcing?", *Notices of the American Mathematical Society* 55 (2008): 692-93; Paul Cohen, "The Discovery of Forcing", *Rocky Mountain Journal of Mathematics* 32 (2002): 1071-100; Timothy Y. Chow, "A Beginner's Guide to Forcing", in *Contemporary Mathematics: Communicating Mathematics,* ed. T. Y. Chow and D. C. Isaksen (Providence, Rhode Island, 2009), pp. 25-40; Thomas Jech, *Set Theory*, 3rd rev. ed. (Berlin, 2003), pp. 201-24; and Paul J. Cohen, *Set Theory and the Continuum Hypothesis* (New York, 1966), pp. 107-29.

negation are both satisfied by the model, meaning that the theorem is undecidable or "independent" of ZFC.

The theorem whose undecidability Cohen sought to demonstrate, by showing that its negation was satisfied by a particular model of ZFC, was Cantor's "continuum hypothesis", which we have already encountered in our discussion of transfinite numbers. Cantor's hypothesis is grounded in his conception of numbers as classes of sets, thence in his conception of the "natural numbers" or integers as forming a "countable infinite set" — the number of elements in this set forming its "cardinality" and being symbolized by the cardinal number $\aleph_0$ (aleph-nought). This gives rise to Cantor's hypothesis that the first "uncountably infinite number", $\aleph_1$ (aleph-1) is $2^{N0}$ (2 to the power aleph-nought), which he equated with the continuum or set of asymptotic "real" numbers as discussed above.[37] $2^{N0}$ is the cardinality of the set of all subsets (the "power set") of $\aleph_0$, or the cardinality of the (countably) infinite set of natural numbers.[38] As an algebraic combinatory of the elements of the set of natural numbers, the power set of aleph-nought, $2^{N0}$, has a hyper-large cardinality, incapable of being counted by (put into a one-to-one relation with) the natural numbers.[39] Cantor's hypothesis is thus that the cardinality of the continuum (or set of real numbers) is $2^{N0} = \aleph_1$, the first uncountably infinite cardinal in what was envisaged as a series of such cardinals, each formed by the performance of the power-set permutation on its predecessor. In 1937 the German mathematician Kurt Gödel had constructed a set model that showed that the continuum theorem is consistent with ZF. Cohen's endeavour in 1963 was to construct a set model showing that the negation of the theorem is also consistent with ZF(C), thereby demonstrating its

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[37]     Joseph W. Dauben, *Georg Cantor: His Mathematics and Philosophy of the Infinite* (Princeton NJ., 1979), pp. 96-101.

[38]     The power set is an algebraic invention that works by taking the countable elements of a set and then creating new groups of numbers ("subsets") based on all possible algebraic permutations of the original elements. The number of permutations or subsets formed in this way is two the the power of the number of the original elements. An original set of three elements thus gives rise to a power set of $2^3$, or 8 subsets. If the original set is the infinite (unending) number of natural numbers $\aleph_0$, then the power set of the natural numbers, $2^{N0}$ or $\aleph_1$, is the imagined result of an infinitude of permutations that are incapable of being performed. Here I set aside the question of whether a power set is a "set" in the same sense as the original set of elements — since it is formed through a different calculus — and hence the question of whether its number should be regarded as "larger" than that of the original set, as opposed to being counted (permuted) in a different way.

[39]     Cohen, "Discovery": 1079.

undecidability or independence. Forcing is the technique that he developed in order to construct this new set model.

For our present limited purposes, forcing may be understood as a procedure for transforming Gödel's "standard model" $M$ of ZFC by adjoining a further set, $G$, giving rise to the extended set model $M[G]$ in which the continuum hypothesis fails. Gödel had shown that the standard model for ZFC constituted an exhaustive minimal model, that is, a "constructible universe" of sets built-up exhaustively from simpler sets, and that satisfied the continuum theorem.[40] This meant that to adjoin the new set $G$ to the standard model $M$ Cohen had to invent new formulas, his "forcing conditions", which are formulas (sometimes called "names") providing information regarding membership of $G$. Meanwhile, $G$ is understood as a "generic" set, meaning that it decides the truth and compatibility of the forcing conditions, but without sharing any formula or "property" of the standard model $M$.[41]

Taking $G$ as a set of integers, Jech provides a simplified example of how $G$ is built from forcing conditions: "As forcing conditions we consider finite sets of expressions $a \in G$ and $a \notin G$ [$a$ is in $G$, $a$ is not in $G$] where $a$ ranges over the set of all integers. (Therefore $\{1 \in G, 2 \notin G, 3 \in G, 4 \in G\}$ is a condition that forces $G \cap \{1, 2, 3, 4\} = \{1, 3, 4\}$)".[42] Here "forces" should be understood as analogous to "implies", since it refers to the outcome of a special kind of equation. In this way $G$ is built by using the same primitive notions of set and membership that determine the standard model $M$, while augmenting it in a such way that the extended model $M[G]$ continues to satisfy ZFC. Once this was done, Cohen could use forcing conditions to adjoin integers to $M[G]$ that violated the continuum hypothesis, arranging, for example, that $M[G]$ contain $\aleph_2$ elements, and declaring this to be the cardinality of the continuum rather than $\aleph_1$.[43]

Odd though it will seem to mathematicians, Badiou's key strategy is to treat Cohen's forcing technique as his central instance of the "fidelity procedure" that names the event and permits the "unpresentable" elements of the void to cross the threshold of thought and existence. In order to put forcing to work in this

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[40] Kurt Gödel, "The Consistency of the Axiom of Choice and the Generalized Continuum-Hypothesis", *Proceedings of the National Academy of Sciences of the United States of America* 24 (1938): 556-57.

[41] Cohen, "Discovery": 1091.

[42] Jech, "Forcing": 693.

[43] Cohen, "Discovery": 1097.

metaphysical register, Badiou identifies the standard model ($M$) of ZFC — the "situation" in Badiou's lexicon — with "discernment" or "knowledge", which is in turn understood as the universe of constructible sets, excluding the random and aleatory, and hence the event (*BE*, 337). At the same time, he identifies the adjoined "generic" set $G$ with the unpresentable or "indiscernible" and thence with "truth". In fact Badiou equates the indiscernible with the multiple infinities that supposedly inhabit the situation (or standard model), supposedly without being discerned there, yet capable of manifesting themselves in the truth of the subject's blind encounter with the event: "The discernible is veridical. But the indiscernible alone is true. There is no truth apart from the generic, because only a faithful procedure aims at the one of situational being. A faithful procedure has as its infinite horizon being-in-truth" (*BE*, 339).

Badiou's central idea is thus that Cohen's forcing technique is a means of naming the event, thereby discerning the indiscernible truth within the merely veridical "situation" itself. He interprets this in quasi-apocalyptic terms, as the first time in the history of humanity that unnamable being has been "de jure" or formally rendered immanent to discernment:

> However, [the truth] would remain subtracted from knowledge if the language of the situation was not radically transformed. Not only is a truth indiscernible, but its procedure requires that this indiscernibility *be*. A truth would force the situation to dispose itself such that this truth … be finally recognized as a term, and as internal. A faithful generic procedure renders the indiscernible immanent. (*BE*, 342)

Without Cohen realizing it, his procedure is thus supposed to be world-changing, since like the parallel fidelity procedures in art, science, and politics it permits the naming of unnamable being: "As such, art, science and politics do change the world, not by what they discern, but by what they indiscern therein. And the all-powerfulness of a truth is merely that of changing what is, such that this unnamable being may be, which is the very being of what-is" (*BE*, 343).

It should be clear already that despite his technical command of it, Badiou's deployment of forcing has little in common with Cohen's, or indeed with the kinds of set theory and model theory on which Cohen was drawing. We have already observed that the putative ontological origin of sets is not a topic within set theory, since sets are treated as abstract objects manipulated through the syntactic rules of set theory,

and justified solely in terms of the richness of the mathematical results. Further, models of set theory, whether the "standard model" $M$ or the "generic" extension $G$, have no necessary ontological implications; that is, they are not equated with discernible beings or indiscernible Being. This is not least because ZFC set theory can be (and has been) supplied with a plurality of models, depending on particular model-theoretic objectives, as we saw with Cohen's construction of $M[G]$ in order to show the undecidability of Cantor's continuum theorem.[44] Above all, though, it is alien to Cohen's entire way of proceeding that the forcing conditions used to build the new generic set $G$ might be regarded as the discerning of a set that was somehow already present in the standard model $M$ but invisibly so.[45] This is because the forcing conditions or formulas are not part of $M$ but are added to it as the means of generating the set of integers that will be in $G$.

Here the important thing to observe is that rather than being an indiscernible set within the model or "situation" $M$, $G$ does not exist in $M$. Indeed, Cohen's forcing conditions — $n$ in $G$, $n$ not in $G$, etc. — are explicitly designed to produce a "new" set that is not already contained in $M$, as the condition of ensuring the failure of the continuum hypothesis in $M[G]$.[46] The forcing conditions for $G$ are thus not a special way of discerning ("indiscerning") something that was indiscernible in $M$ — the event, unnamable being. They are ordinary formulas adjoined to $M$ and that function as the means of adding the set $G$ to form the augmented model $M[G]$. In other words, in treating it as a "fidelity procedure" that discerns the indiscernible in the standard situation by naming the event, Badiou is deploying Cohen's forcing technique as an allegory for the Heideggerian theme of the naming of unnamable Being, while simultaneously improvising a formal symbolization for this theme. Badiou thus invents an allegorical mathematical symbolism for Heideggerian metaphysics by renaming the generic set $G$ as the "indiscernible set", then providing it with a new (Lacanian) symbol ♀ — symbolizing woman as a being beyond "phallic" knowledge.

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[44] For a helpful discussion of how pluralism in model-building precludes an ontological interpretation of set theory, see Penelope Maddy, *Naturalism in Mathematics* (Oxford, 2000), pp. 22-37.

[45] Conversely, many of Badiou's commentators simply presume that Cohen's forcing conditions are a means of discerning a generic set that is supposedly indiscernibly present in the "situation" or the ground model ($M$) of ZFC, although they rarely cite Cohen to this effect, only Badiou. See, for examples, Hallward, *Badiou*, pp. 135-39; and Sean Bowden, "The Set-Theoretical Nature of Badiou's Ontology and Lautman's Dialectic of Problematic Ideas", in *Badiou and Philosophy,* ed. S. Bowden and S. Duffy (Edinburgh, 2012), pp. at 53-5.

[46] Cohen, "Discovery": 1095-96.

This permits him to substitute S(♀) (the situation containing the indiscernible set) for Cohen's *M*[*G*] (the standard model augmented through the forcing of the generic set). Here we can see the attempt to create a Heideggerian symbolism, not as a notation for the performance of set-theoretic calculations or model-theoretic constructions, but as an esoteric symbolism for the Heideggerian recovery the unknowable through a naming that incarnates it in a subject who embodies its truth.

In treating the generic set as indiscernibly present in the standard model *M*, or basic "situation" S, however, Badiou creates a formidable technical problem for his discourse. If the generic set is to be construed as indiscernible within the standard model or situation, then the formulas or functions that "discern" the membership of the set (Cohen's forcing conditions) must themselves be present in the original model or situation. For if these conditions of discernment are not present, then the state of affairs is not one in which the generic set *cannot be seen* — i.e., is "indiscernible" — but one in which it *cannot be looked for*, since there are no criteria determining what it would mean to find it. If the conditions are present in the initial model or situation, however, then the generic set is discernible there in the normal way. This difficulty can be formulated as a dilemma. Either the formulas (forcing conditions, "names") that determine membership of the generic set *G* are present in the standard model *M* (the situation S), in which case *G* is already discernible in *M* and cannot function as a symbol for the naming of "unnamable being". Or these formulas are not present in the standard model but are added to it in the form of forcing conditions that select the membership of *G*. But in this case it is not that *G* cannot be seen (is indiscernible) in the standard model or situation but that it cannot be looked for there, while of course being unproblematically discernible in the new or augmented model *M*[*G*]. No such dilemma arises for Cohen, as it does not cross his mind to treat *G* as indiscernibly present in the ground model *M* — he is not a Heideggerian philosopher in search of symbol for the naming of unnamable being — and he simply treats the forcing conditions as additions to *M* that "discern" *G* (select its members) for the purposes of the new or augmented model *M*[*G*].

As it turns out, Badiou is explicitly aware of this dilemma confronting his project (*BE*, 375). He is not in a position to resolve it by following Cohen's path, however, for that would preclude him from treating forcing as a discerning of the indiscernible, which would in turn undo his entire attempt to formalize the Heideggerian philosopheme of naming the unnamable. Badiou thus adopts a different strategy. He

treats the conditions or formulas for discerning *G* as latently or unconsciously present in the standard model or situation, allowing *G* to be thought of as indiscernibly or unconsciously present there too:

> We will thus start from a multiple [set] supposed existent in the initial situation (the quasi-complete situation); that is, from a multiple which belongs to this situation. … This multiple will be both the basic *material* for the construction of the indiscernible (whose elements will be extracted from it), and the place of its *intelligibility* (because the conditions which the indiscernible must obey in order to be indiscernible will be materialized by certain structures of the chosen multiple). (*BE*, 357)

This allows Badiou to treat the addition of the forcing conditions as realizing a latent or unconscious element in the ground model, and thence the building of *G* as a discerning of the indiscernible. Clearly this represents a major departure from Cohen for whom the forcing conditions for *G* are not latently present in the initial situation or standard model but are a new piece of mathematical syntax whose role is not to discern something indiscernible in the situation but to adjoin a new set.

Badiou's strategy is exceedingly convoluted — few of his readers will have been able to follow it — but can be reduced for expositional purposes to two basic moves. In the first move, he does something that has no analogue in set theory or model theory but that accords with the French tradition of treating formal languages as embedded in (or as) a philosophical subject: he treats the ground model *M* (the "initial situation" S) and the augmented model *M*[*G*] (or S(♀)) as if they were worlds inhabited by different epistemological subjects. Badiou thus designates the first of these subjects as the "inhabitant of the situation S", and he characterizes this subject (sometimes the "working mathematician") as viewing the relation between the set-theoretic axioms and the situation or standard model from the "inside"; that is, from within the model-theoretic formulas that construct a model (*M*) that satisfies the axioms and theorems of ZFC (*BE*, 358-62). He then designates the subject of the augmented model *M*[*G*] (or S(♀)) as the "ontologist", and he ascribes this subject a capacity for viewing the relation between the first inhabitant and the ground model from the "outside". This is a perspective that is supposed to permit the ontologist to "see" the indiscernible set that purportedly remains invisible to the inhabitant of the standard model (*BE*, 372-75). Badiou later concedes that the notion of an epistemological inhabitant of a mathematical model is actually a "metaphor" that

would not be accepted by mathematicians: "Note that 'inhabitant of S' is a metaphor, which does not correspond to any mathematical concept" (*BE*, 411). But this is not before he has used this metaphor to convert the absence of forcing conditions in the ground model (indicating *G* cannot be looked for) into the unconscious limits of a certain kind of epistemological subjectivity (indicating *G* cannot be seen). This in turn allows the "ontologist" to be presented as discerning something that is indiscernible or unconscious for the "inhabitant" of the standard model or situation, rather than as someone (like Cohen) who invents a new syntax or calculus and with it new mathematical entities.

Mathematicians and mathematical logicians, however, do not regard the models of set theory as worlds inhabited by subjects who might have limited or unlimited epistemological access to them. They treat them instead as sets or classes of sets that are constructed by mathematicians for the technical purposes of demonstrating the (in)consistency of particular axioms or theorems. Viewed in this way, rather than being an epistemological theory of mathematical truths that are confirmed by the models, set theory is in fact a way of performing mathematical operations in a more abstract and generalized notation.[47] In Wittgenstein's pithier formulation, the only way of knowing mathematical objects is by doing mathematics, or inventing it, which means that "one cannot discover any connection between the parts of mathematics or logic that was already there without one knowing".[48] Cohen's forcing conditions were a mathematical invention. Badiou's introduction of the metaphorical epistemological inhabitant of a model is thus a way of smuggling the criteria or forcing conditions for the generic set *G* into the standard model *M* (or situation S) by treating them as unconsciously present in the subject or "inhabitant of the initial situation". This allows the absence of the forcing conditions in Gödel's *M* (the fact that they had not then been invented) to be illicitly treated as their unconscious presence in a mythical subject of *M* — as the "indiscernment" of "unnamable being". Badiou can thus portray Cohen's invention of the forcing formulas as if it were the "ontologist's" discernment of an indiscernible generic set already present in *M* or the "initial situation".

The second wing of Badiou's strategy is an even more arcane affair. It involves treating the "names" or formulas of the standard model *M* or "initial situation" S as

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[47]       Maddy, *Naturalism*, pp. 24-7.

[48]       Ludwig Wittgenstein, *Philosophical Grammar* (Oxford, 1974), p. 481.

themselves harbouring the formulas or forcing statements that produce the generic set *G* (or indiscernible set ♀). This again allows Badiou to transmute Cohen's invention of the forcing statements into a means of naming unnamable being, thus to treat forcing as a "fidelity procedure" that forces the situation to "accommodate" the indiscernible truth through the "intervention" of the subject (*BE*, 342). As we have noted, Badiou is himself aware of the dilemma that he must resolve for this strategy to succeed. If the formulas for constructing the generic set are already used in the standard model *M* (or initial situation S), then the generic set is already discerned within the initial situation, and forcing is no longer a naming of unnamable being. But if the formulas are added to the ground model for the purpose of producing a new model, as they are by Cohen, then the generic set is not something that was already present and indiscernible in the initial situation or ground model, but is simply something unintelligible there. Badiou thus comments that "The extreme difficulty of the question lies in this 'addition' having to be made with the resources of S: otherwise it would be unintelligible for an inhabitant of S" (*BE*, 375). This of course is not a problem for Cohen, as he does not require the generic set *G* to be present in the ground model or initial situation, or that it be intelligible but indiscernible for some "metaphorical" inhabitant.

Badiou's solution to the problem is thus also foreign to Cohen's forcing procedure: "The solution to this problem consists in constructing, within the situation, multiples which function as *names* for every possible element of the situation obtained by the addition of the indiscernible ♀" (*BE*, 358). We can recall that Cohen's "names" or forcing conditions are iterative formulas — similar to *n* in *G, n* not in *G*, etc. — *added to* the standard model (or situation) for the purpose of selecting the elements of the "adjoined" generic set *G* (Badiou's ♀). Badiou's solution, however, involves treating the forcing conditions or names as (simultaneously) *already present in* the standard model or situation where their role is not to adjoin a set to the basic model but to discern the indiscernible set or name the unnamable being supposedly unconsciously present there. In other words, in a crucial move, Badiou deals with what would be a destructive dilemma within model theory by transforming it into a philosophical paradox or spiritual exercise within Heideggerian metaphysics:

> The striking paradox of our undertaking is that we are going to try to
> *name* the very thing which is impossible to *discern*. We are searching for

a language for the unnamable. It will have to name the latter without
naming it, it will instruct its vague existence without specifying anything
whatsoever within it. The intra-ontological realization of this program, its
sole resource the multiple, is a spectacular performance. (376)

The are two main parts to this performance. Badiou's first move is one that has
no parallel in set theory or model theory: he treats the "multiples" or sets of the initial
situation or standard model as already harbouring the generic set (and its forcing
conditions) but in a "negative" or indiscernible form. The baroque details of this
mathematico-metaphysical construction need not detain us. Suffice it to say that
Badiou's basic procedure is to treat the formulas of the standard model or initial
situation as if they were chosen from among an indeterminate plenitude of formulas
— proxy for the unpresentable multiples of the void — rather than being syntactic
constructs *ab initio* as they are for Gödel and Cohen. The putatively "unchosen"
formulas are then treated as the negative or indiscernible conditions of those
supposedly chosen to form the sets of the standard model or situation (*BE*, 367-71). In
a simulacrum of Heidegger's "forgetting of being", this allows the "discernment" of
the sets of the initial situation or standard model to be treated as conditioned by the
"indiscernment" of the generic or "indiscernible set ♀". The indiscernible set can thus
be regarded as unnameably present within the standard model or situation *S* as the
condition of its discernment that has been hidden from or "forgotten" by the
"inhabitant of S", historically Gödel!

In a more technical (but no less metaphysical) register, this allows Badiou to
view the multiples (sets) or formulas of the initial situation or model as if they
consisted of sets of conditions, among which may be the conditions for discerning or
forcing the generic or "indiscernible" set (*BE*, 365-67). This is how Badiou engineers
the sets of the initial situation (standard model *M*) such that they will supposedly
already contain "information" regarding the indiscernible set, in the form of latent
forcing conditions that give rise to the generic set. Finally, Badiou purports to solve
the problem of which among the latent conditions supposedly present in the "base
multiples" will be chosen to discern the generic set. He does this by presuming that
the generic set has already been identified, which means that the "correct set" of
forcing conditions is the one that "aims at" the generic set (*BE*, 365). In other words,
he treats the generic set as a Heideggerian "projection", and the forcing set as the
"always already present" set of conditions of the projection. In Cohen's construction,

however, the generic set *G* cannot be known in advance of the forcing conditions and then used to select the "correct" conditions from among those supposedly already present in the initial model or situation. Here the generic set is itself formed by forcing conditions (formulas) that have been added to the initial model as a new piece of mathematical syntax from which the generic set will be constructed as a new set.

The second part of Badiou's "spectacular performance" consists in his attempt to show how the "intelligibility" of the indiscernible (generic) set can be derived by "manipulating" the sets or formulas of the initial situation (standard model) itself, allowing the generic set to be thought of as present but indiscernible there rather than being generated as a new model. Once again I shall only be concerned with the major stops in Badiou's labyrinthine and scarcely traceable itinerary. Badiou's key move here is to treat the forcing conditions as already latently present in the "names" or sets ("basic multiples") of the initial situation or ground model, as it were allowing the names to function as the point where the occluded negative or "forgotten" conditions can be made to surface or "materialize". He does this simply by stipulating that the names of the basic multiples of the ground model will themselves consists of ordered pairs of names and conditions $<u, \pi>$, among the latter being the conditions of the generic or indiscernible set itself (*BE*, 376). This satisfies Badiou's need for the forcing conditions to be present in the initial situation (so that the indiscernible set is intelligible), but to be latently or unconsciously present (so that the indiscernible set cannot be discerned by the inhabitant). He thus comments that "It is with these names that we are going to construct a situation S(♀) to which the indiscernible ♀ will belong. A case in which it is literally the name that creates the thing" (*BE*, 378). Badiou then specifies the manner in which the "names" of the initial situation S give rise to the generic or indiscernible set ♀ by introducing a binary function $R_{♀}$. This "reference function" operates on the paired names and conditions $<u, \pi>$, such that the resulting "referential value" determines ♀ as a "referent" of the names that are supposedly "in S" (*BE*, 378-80). Badiou represents this as $R_{♀}(u) = <u, \pi>$, which might one day be collected as rare curio in the history of formal languages: a one-off attempt to formulate a mythopoeic "equation" for symbolizing the Heideggerian discerning the indiscernible.

By this point, however, the problems besetting Badiou's construction — if conceived as formal model theory rather than as Heideggerian philosophy — are starting to cascade. We have already noted that Badiou's embedding of the

indiscernible set within the ground model or initial situation — by treating the formulas of the latter as amnesic selections from the infinite multiples of the void — represents a Heideggerian intrusion into model theory. Now we can now observe that the introduction of the symbol ♀ — woman as impervious to "phallic knowledge" — represents the importation of a foreign "semantic" symbol into the formal-syntactic order of set theory and model theory. For if we consider it in a purely formal-syntactic manner, then nothing about the operation of a binary function on the pairs of names and conditions $<u, \pi>$ indicates that the resulting "referential value" $R_♀(u)$ will be the indiscernible set; nothing, that is, apart from the illicit semantic use of the ♀ symbol itself. If however we suspend the semantic meaning of ♀, and view Badiou's generation of the generic set from the "names" in a purely formal-syntactic manner, then the dilemma haunting his account returns in full force. For, now, either the functional names are part of the standard model or initial situation, in which case their sets are generated or "discerned" unproblematically but do not constitute an indiscernible or generic set. Or the names are indeed Cohen's forcing conditions that have been added to the ground model as a new piece of mathematical syntax. But this means that the "adjoined" generic set was not intelligible yet indiscernible in the ground model or initial situation, since the conditions permitting it to be "looked for" had not yet been added.

We can conclude then that Badiou can interpret Cohen's forcing procedure as a discerning of the indiscernible — and thus as an instance of the "fidelity procedure" that names the unnamable and changes the world — only through the deployment of three philosophemes that transform forcing into a Heideggerian allegory: first, Badiou's introduction of the epistemological subject ("the inhabitant of S") into model theory, permitting the absence of the conditions for "looking for" the generic set to be transmuted into the subject's "unconscious" failure to see or discern it; second, his treatment of formulas "discerning" the standard model $M$ or initial situation S as if they were selections from an infinity of amnesed formulas in the void, these remaining indiscernibly present as the latent conditions of discernment of the indiscernible or generic set; and third, his treatment of the forcing conditions as contained within the sets or "names" of the initial situation or ground model — rather than being added as a new piece of mathematical syntax — and thus able to function as a discerning of the indiscernible set ♀ and as the naming of unnamable being.

Situated in this hybrid metaphysical-mathematical discursive space, the twin subjects of Badiou's allegory of forcing are locked into an unbreakable Heideggerian embrace. On the one hand, the "inhabitant of S" can discern his world only on the basis of formulas or names that conceal the unnamable infinite multiples from which they have been drawn and are buried in them. On the other hand, in naming the unnamable by the "aleatory" procedure of forcing in which the "name creates the thing", the "ontologist" makes room for the event as the "being of truth", but does so blindly, since his fidelity to the event brings this subject into existence: "What must be recognised therein, when it inexists in the first situation under the supernumerary sign ♀, is nothing less than the purely formal mark of the event whose being is without being; and when its existence is indiscerned in the second situation, is nothing less than the blind recognition, by ontology, of a possible being of truth" (*BE*, 387). What this means of course is that the subject's naming of the unnameable event creates the conditions for discerning the indiscernible ♀, while the aleatory encounter with the unnameable event creates the conditions or the subject in which the indiscernible will be discerned. In short, we end with the paradox of the subject whose naming summons the unnameable Being that summons the subject — the paradox mediated through the spiritual exercise of Heidegger's hermeneutic circle — which is the point at which we began.

**Concluding Remarks**

In fact I began by proposing to offer a description of Badiou's discourse as formed at the nexus of the allegorical deployment set theory as a symbology for Heideggerian metaphysics, and the transposition of this metaphysics into a kind of mythopoeic mathematical symbolism. In the course of this description we have encountered a recurrent dilemma. Here Badiou's claim to treat set theory formalistically, as producing its objects from its "names" or formulas, encounters the contradictory claim that these names or formulas have the role of articulating objects that already exist but are indiscernible.[49] Were Badiou's discourse to be what he claims it is — a "metaontological" use of set theory and model theory proving the thesis that "mathematics is ontology" — then this dilemma would be destructive of his undertaking, for within those mathematical disciplines it can only point to an

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[49] For the identification of a parallel dilemma between Badiou's ontological and truth-theoretic interpretations of set theory, see Fraser, "The Law of the Subject", pp. 67-70.

insurmountable contradiction. I have shown though that Badiou's discourse is not grounded in these disciplines but in the discipline of Heideggerian metaphysics, and that here the recurrent dilemma does not play-out as a contradiction. Rather, it is systematically transmuted into a paradox whose central form is that the act of mathematical naming of the "event", by which the subject summons unpresentable Being into thought and existence, is simultaneously the moment in which the event summons the subject into existence as the being in which Being is disclosed and concealed.

This paradox is the fundamental Heideggerian thought-figure that I have identified lying at the core of Badiou's *Being and Event* and organising its basic discursive operations. In the course of our description however we have learned that this figure of thought is also a type of spiritual exercise. In fact it is an inner gymnastic required of Badiou's readers so that they may pass beyond merely "veridical" knowledge and encounter the "truth" in its highest and most paradoxical form: as an encounter with unnamable Being that calls them into existence as its "subject", even as their naming of Being calls it into existence in and as the world of beings. Those who have sought to mock Badiou's discourse as "fashionable nonsense" could hardly be more mistaken or less effectual, since the staging of such spiritual exercises reaches all the way back to the "psychagogies" of the early Christian and neoPlatonic schools.[50] What is modern about Badiou's discourse is that it emerged as a pedagogical instrument at the pinnacle of a highly centralized state education system, where it played a part in the spiritual grooming of a national philosophical elite.[51]

Like those other spiritual exercises that he names — "Platonic ascension, Cartesian doubt, the Husserlian [*epoché*]" — Badiou's too can be understood as an "illumination obtained without concept at the end of an initiatory groundwork" (*BE*, 238-39). In Badiou's case initiation occurs through his students and readers learning the fundamental Heideggerian paradox itself — a difficult enough undertaking — and then using it to transform their relation to themselves such that they become subjects

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[50]     See, for examples, Lernould, "Negative Theology and Radical Conceptual Purification"; and Theresia Hainthaler, "The 'School of Antioch' and Theological Schools in the Area of the Patriarchate of Antioch", in *Christ in the Christian Tradition, Volume Two, Part Three: The Churches of Jerusalem and Antioch from 451 to 600. In Continuation of the Work of Alois Grillmeier,* ed. T. Hainthaler (Oxford, 2013), pp. 218-51.

[51]     For more on this, see Baring, *The Young Derrida and French Philosophy.*

open to illumination by the event; although the only thing that actually happens here is the act of self-transformation itself. The reason then that Badiou and his followers never treat the Heideggerian thought-figure as a contestable doctrine is that it is the means of initiation into his extraordinary mathematico-metaphysical regimen, even though this figure of thought brings with it almost the entirety of Christian metaphysics transposed into a negative ontology. One thus accedes to Badiou's paradoxical discourse not by testing its theoretical or empirical credentials but by converting to it and then using it to groom a self for illumination. As an extended spiritual exercise Badiou's discourse thus can neither be falsified nor validated, but it can be described in a manner that might help dampen the desire to undertake it.