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Fabio Gironi's 'Naturalising Badiou: Mathematical Ontology and Structural Realism' (pp. 158-170) *Spinoza: The Proper Order of Philosophy* (2015) Pli: The Warwick Journal of Philosophy, Volume 27.

Gironi, F. (2014). *Naturalising Badiou: Mathematical Ontology and Structural Realism*. Basingstoke, Palgrave Macmillan.

No doubt spurred on by Žižek's repeated reference to him as a 'master' figure, there is a penchant in Badiou's secondary literature to treat his figure as a target for assault. Gironi's stated aim is 'to offer a naturalist correction - something between a creative misreading and an unsolicited deliverance - of Alain Badiou's philosophy' and can be seen as following in the footsteps of Laruelle's brazenly polemic *Anti-Badiou* (2013), which also uses Badiou as a starting point for the author's own work. Gironi uses Badiou's mathematical ontology to proffer his own naturalised version, yet what is left at the end is so far removed from Badiou's work that the two positions are nearly unrecognisable. Badiou is certainly not the only theorist to share the author's position that mathematics holds a 'metaontological weight [...] put upon twentieth-century metamathematical results and on their description of a formally incomplete mathematical reality'; so why single him out? In fact, Gironi acknowledges himself that 'one of the main vices of continental philosophy is its penchant for endless, bromidic and intellectually incestuous exegesis of "master figures"'. So the question that faces the reader from the beginning of this book—and a question that is never addressed—is *why* does Gironi take aim at Badiou in the first place. *Naturalising Badiou* is not a depth study of Badiou's mathematical/ontological system at all: it is an exceptionally well supported tour (a full fifth of the page count is taken up by useful and interesting notes) through the history of mathematics and its relationship with ontology that has been bookended by synopses of Badiou's position on the issue. More importantly, it is a development of Gironi's own project towards an immanent mathematisation of being, a project which tries to avoid both the idealist trappings of Badiou's work and the issues plaguing a number of other thinkers referenced. At tactical moments throughout the exegesis, Gironi takes time to spell out his own commitments to naturalist ontology and his formation of its immanent relationship to mathematics, providing useful focal points to his synthetic exposition. Yet his attempt to target Badiou (or Badiou's simulacrum in the form of the prophetic master) is never satisfactorily justified. Is it a cynical attempt to cash in on Badiou's ever-increasing popularity and a burgeoning secondary literature? To claim so would be to undersell Gironi's efforts, for *Naturalising Badiou* excels in demonstrating the easy command Gironi has over the detailed

material at hand and the important stance that he develops in his own right. However, the arrogant tone with which he sets about ‘eviscerating Badiou’ and condescending ‘lesser postmodernists’ blots the clarity of his work.

Gironi develops his argument in five chapters. Chapter one proceeds by way of a clear overview of Badiou’s ontological position with regard to mathematics, characterised by Brassier’s term ‘scriptural materiality’ (Brassier 2005). Mathematics, for Gironi’s Badiou, constitutes the language that does not *represent* the emergence of Being, so much as acting as an index of the scriptural production of difference. In other words, it is not the fact that, for Badiou, Being consists of mathematical objectivities themselves but, rather, it is only through mathematics that we can articulate the productivity of Being itself. Gironi is at pains to point out that Badiou is really interested in the second half of the term *ontology*, the language of expressing Being, for any focus upon the ontic would risk entrapping thought within the realm of presentation. What would be wrong with that? Badiou’s oeuvre is rife with denigration of the sensible over the truth of thought and Gironi describes it through the concept of God. In *Briefings on Existence* (1998), Badiou highlights three Gods: the God of metaphysics that runs from Aristotle to Descartes, which provides the philosopher a tool to make sense of things; the God of religion which facilitates a ‘vivifying’ engagement with life and which was replaced by the God of metaphysics; and the God of the Poets. For Badiou, the death of God, which was announced by Nietzsche, was only finished by Heidegger for whom, through a “‘meta-poetic metaphorizing” the post-metaphysical philosopher hopes for a re-injection of meaning into the world and orients his own finite being towards an attentive but passive receptivity to the historical self-presencing of Being’ (Badiou 1992: 43). Accordingly, the individual can only have faith in a meaning-to-come, anchored in a poetic description of the realm of presentation which takes its place as the third God. Gironi shows that ZFC set theory is Badiou’s answer to Heidegger’s self-presencing: an immanent expression of Being that does not itself constitute an object. Set theory thus avoids any metaphysics of representation itself, whilst still being able to truthfully express Being. Furthermore, as Gironi shows, the Cartesian-inspired axiomatic decision that is Badiou’s replacement for God (following the ‘Cantorian revolution’ that revokes the finitude of the ontic in favour of the infinite set) avoids the trappings of various other versions of the One, such as a recourse to description, a repressed infinity (Heidegger/Wittgenstein) or an infinite One (Nietzsche/Bergson/Deleuze). Instead of remaining within the representative boundaries of the One, Badiou offers a ‘mathematically articulated possibility of thinking real differences between infinities’ (Gironi 2014: 32). Despite agreement with Badiou’s support of immanence and the revocation of all types of One however, Gironi finishes the chapter by pointing out three elements of Badiou’s work that he cannot accept, the first of which provides the problematic for the rest of the book. Firstly, Gironi takes issue with Badiou’s split between the empirical and the ontological. How can changes in the ontological be assumed to correspond to the empirical world? Secondly, how are non-ontological situations (i.e. situations in the every-day and non-mathematical sense) to be understood? Thirdly, what, he asks, is the relationship between the four types of situation that are characterised by Badiou’s four truth procedures (politics, science, love and

art)? Are these situations merely analogous to each other, or are there any underlying similarities? This important initial chapter balances an exposition of Badiou's position, making a good case for Badiou's contextualisation within an Althusserian and post-Platonic milieu, and a portrayal of issues in the relationship between the ontological and empirical. However, having finished the chapter, I was still unsure of Gironi's intended project and why Badiou in particular was being used to foreground the discussion. His project does become clearer in the next chapter, however this is a book that rewards a patient reading through to the end.

Gironi's second chapter opens up discussion to various perspectives in mathematical ontology, engaging with what Badiou denigrates as the 'little style', or the 'philosophy' of mathematics. Beginning with a fuller development of Badiou's inability to offer 'an intelligible account of the relationship between the ontological and the empirical' (2014: 2), Gironi aptly uses another of Brassier's terms, 'noocentrism', to point the finger at Badiou's dogmatic and reductive rationalism. The main issue for Gironi is not that Badiou distinguishes between matter and thought (Gironi himself holds to a representational/computational theory of mind which runs counter to some versions of naturalism), but that Badiou's rationalism removes the legitimacy of the natural sciences to inform thought. Gironi makes a strong argument against Badiou's revelatory theory of science: because of Badiou's unwillingness to do away with the split between the ontological and the ontic (favouring the former), novelty according to Badiou can only be a radical break from that which is already known. Yet, as Gironi explains, the progression from Galilean mathematisation (starting with observation and measurement of phenomena) towards Dirac's 'methodological revolution' (where mathematics itself became an inductive tool for new phenomenic aspects) could only come about *via* Newton's initial success at conceptualising general mathematical laws (such as the law of universal gravitation). As he concludes, 'it is simply *not true* that the mathematised concepts employed by contemporary physics retain "a relation to the world which means that they cannot be deduced from any mathematical corpus whatsoever"' (2014: 40). As a solution to Badiou's prioritisation of the rational over the empirical, Gironi takes a surprising turn to neurophysiology in order to naturalise thought. Because, for Gironi, naturalism is the removal of any supernatural causes of Being, and that 'all there is is what the natural sciences describe' (2014: 6), neurophysiology is interesting for Gironi therefore because it places the sense of mathematics and the physical world together in empirical perception. Arguing that the cognitive neurosciences hold the potential to explain the 'brain-dependent conditions of possibility of our mathematical cognition', Gironi's aim is to keep mathematics as 'the highest form of thought' but, through 'a naturalist demystification of its origin' (i.e. debunking fictionalised accounts of the creation of rationality), 'placing it on an immanent continuum with the rest of reality' (2014: 59). Mathematics remains the highest form of thought not because of Badiou's subtractive distrust of the sensible, but because it simply works with science as the way of knowing about the world.

Gironi's commitment to naturalist ontology is set out in chapters three and four, and it is here where he starts developing his own project. Chapter three presents an overview of

Gironi's commitments with regard to both metaphysics and the historicity of conceptual systems (bearing in mind that neurophysiology—as the immanent form of human investigation—is also now a key part of the system he advocates). In what is perhaps an attempt to ward off any criticism that he idealises naturalism—as Badiou idealises mathematics—Gironi reassures the reader that he holds, rather than a dogmatic 'position', a 'stance' that 'may involve or presuppose some beliefs', but that cannot simply be equated with these beliefs. By admitting that 'the logical priority goes to a mind-independent reality which must be (transcendentally) taken as condition of possibility for our access to it', Gironi removes the supernatural from his stance and immunises himself against claims to reductionism (2014: 72). It is through his cautious positioning and a clear engagement with Collingwood and Bachelard, that Gironi can show how science's 'endlessly self-critical stance' ensures that none of the claims that science makes act as mind-independent entities that lie outside the boundaries of critique. This is what Gironi calls 'transgressive naturalism' (ibid.). Following a path that Gironi draws from Kierkegaard and Heidegger to Levinas, transgressive naturalism argues that, 'reality cannot be fully grasped by the raw power of reason since it exceeds conceptual capture' (ibid.), yet science still remains the best way of developing an understanding of it. In connection with an introductory paragraph on the responsibility of science in Kant, Gironi allies himself with Bachelard in claiming that the 'mark of the scientific intellect [...] is the endless dialectical struggle against the laziness of thought' (2014: 79). Given that there 'is' a world to be known (realism) and that this 'is' is 'all there is' (naturalism), Gironi's realist metaphysics can be both naturalist and historicist; an immanent part of the world itself, the conceptual apparatus of mathematics is thought by the human but remains, as Deleuze would put it, problematic (and therefore ever questioning) in its lack of totality. Having established the immanent role that mathematics takes in understanding the mind-independent world, Gironi takes up the task in chapter four of explaining how (and precisely what) mathematics articulates. Comparing epistemic structural realism (ESR) to ontic structural realism (OSR), Gironi argues that it is only the latter to which a realist can turn in the hope of understanding the world. As opposed to Worrall's ESR and its curtailment of knowledge to epistemic structures which then have an empirical relationship to the world, OSR ontologises structures and argues that in fact there is nothing to know but structures. Building on Ladyman, French and Ross, Gironi argues that OSR provides a groundwork for natural realism through rejecting an *a priori* world of being to that which is structured in favour of a world that consists through structure alone. In lieu of atomist or epistemic structuralist accounts, Gironi helpfully shows how Ladyman and Ross both argue that one can still think naturalistically of a world really composed of, for example, protons, but where 'theories in which protons are elements characterize real structure' (Ladyman, Ross et al. 2013: 127). As a compromise between full-scale structuralism and non-structuralist Platonism then, mathematics, for Gironi, takes the role of an explanatory structure that '*at an elementary scale*' blurs with concrete reality without one being reducible to the other.

In the final chapter, Gironi sums up his position to offer, what he describes as, ‘a much needed naturalist supplementation to Badiou’s philosophy’. Given that much of the secondary literature on Badiou makes the claim that his biunivocal positioning of thought and sensibility is too strong a divide, Gironi’s argument is interesting. For him, Badiou does not go far enough and, rather than mathematics being premised on Being itself, Gironi argues that it does not present anything and stands entirely on its own weight. Summing up his stance, Gironi claims that, ‘there is nothing more to the matter/form distinction than there is to the abstract/concrete one, but rational thought is ontogenetically possible thanks to the pre-noetic existence of object and extra-mental structure: the real is the causal antecedent of the conceptual’ (2014: 120). Gironi briefly turns to Badiou’s conception of the subject as the driver for change arguing that, because his own position removes the ontological support for the mathematical veridiction of Being’s novelty, Badiou’s militant-subject cannot, in truth, be the key to political (or scientific, etc.) revelation. Given the strength of his argument throughout the book, this argument feels like (excuse the pun) a natural conclusion and a suitable critique of Badiou. However, Gironi’s attempt to outline his position by juxtaposing it to Badiou’s means that the five pages he devotes to Badiou’s truthful subject leaves a lot to be desired and his critique is not developed as fully as it could be. As even a cursory glance at a bibliography of Badiou’s works will show, Badiou’s project is primarily a political one, motivated by the desire to explain the emergence of the new from historical situations. By setting Badiou up as the straw master to be demolished, Gironi seems to miss the role that axiomatics takes in Badiou’s project: set theory is a secondary priority to his Maoist-derived philosophy, even if it is more prominent in his later work. Thus, if Gironi is to supplement Badiou’s philosophy, then what is Gironi’s theory of the militant subject? How is the individual to resist the trappings of capito-parliamentary sophistry? Given that Gironi has repudiated the status of truth in Badiou’s militant, is it now even possible to ask this question? Gironi’s focus on the relationship between mathematics and ontology is very well developed, providing an excellent overview and allowing him to put forward a novel and important thesis. It should be read by anyone interested in the topic. However the lack of further engagement with Badiou’s political project will prevent this text from being of significant use to most Badiou scholars.

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