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### BOOK REVIEW | RESENHA

**Bruno Bueno Poli\***  
brunopolibueno@gmail.com

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FALKENBURG, Brigitte. *Kant's cosmology: from the pre-critical system to the antinomy of pure reason*. Cham, Switzerland: Springer, 2020. 284 p. (European Studies in Philosophy of Science, v. 12).

Falkenburg's book stands in the tradition of German commentaries on Kant initiated by Kuno Fischer, which approaches his critical philosophy by means of a genetic reconstruction of the pre-critical period and its philosophical background. The overall aim of her work is to answer as to why Kant came to reject any physical cosmology, including his own from the 1750s, "claiming that any theory of the whole universe must turn out to be contradictory" (p. VIII). To this end, the book is divided in three parts, which in turn have two chapters each. Part I analyzes Kant's pre-critical project (1747-1764). Part II shows several reasons of why this project failed and why its failures led him to propose his critical philosophy (1764-75). Part III concentrates mainly on the antinomies as presented by Kant in the *Critique of Pure Reason* (CPR, 1781).

In the first chapter, Falkenburg establishes the main lines of Kant's pre-critical project in three works from 1755-1756: *Theory of Heavens* (AA 1: 215-368), *New Elucidation* (AA 1: 385-416) and *Physical Monadology* (AA 1: 473-488). One of its premises was a methodological principle proposed for the first time in the *True Estimation* (1747, AA 1: 1-181), namely, the *irenic model* of philosophy, which demanded the reconciliation of opposing views (p. 4). With this foundation, Kant's chief intent in those works was "to reconcile Wolff's system of metaphysics with the principles of Newton's physics" (p. 11). More specifically, he sought to harmonize three intertwined levels, each corresponding to a scientific discipline: general principles (*metaphysica generalis*), dynamic principles (*metaphysica specialis*) and mathematical description (geometry) (p. 16). Kant developed this reconciliatory intent in a systematic manner resulting in a complex theory that harmonizes a reformulation of Leibniz-Wolff's basic metaphysical principles with physical influence (*New Elucidation* and *Physical Monadology*), Newtonian physics with a cosmology in Wolff's style and a theology (*Theory of Heavens*) and, finally, a theory of relational space, matter, and force consistent with the former (*Physical Monadology*). In sum, what emerged was, according to Falkenburg, a "theory of everything" (p. 28).



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\* Mestrando em Filosofia, Pontifícia Universidade Católica de São Paulo, SP, Brazil.

Falkenburg shows in the second chapter that the systematic character of this project was due not only to its unifying general principles, but also to its method. This theme was only made explicit in Kant's *Prize Essay* (1764, AA 2: 273-296). In light of the irenic model, in 1755-1756 and in 1764, Kant had to merge, albeit in different forms, Wolff's methodology with Newton's one (p. 34). Through a historical and philosophical reconstruction of Kant's background, Falkenburg shows that in his time, in the midst of much confusion, there were two main conceptions of method. The first one, proposed by Galileo and Newton, springing from Zabarella, conceived it in a two-fold step: causal and mereological analysis of given phenomena (analytic part) followed by their mathematical deduction (synthetic part) (p. 36). The second one, stemming from Descartes and culminating in Wolff, separates as a disjunction the analytical part, which is identified by the latter author with conceptual analysis, from its synthetical correlate, *more geometrico*—starting from definitions, axioms, deriving theorems etc. (p. 40).

According to Falkenburg, in 1755-1756 Kant uses Newton's and Wolff's analytic part interchangeably and somewhat rhapsodically, combining the latter with its synthetic part (p. 41). In 1764 Kant attributes his new philosophical method (analytic method) to Newton's one; nonetheless, Falkenburg is careful to state that this has to be understood by analogy: just as physics starts with phenomena from external experience, analyzes it into causal and mathematical laws and then deduces new phenomena, metaphysics begins with internal experience of some object, analyzes it conceptually and deduces other properties from its characteristic marks (p. 62). The analogy is further completed through the correlation of the evidence of external phenomena in physics and the evidence of internal phenomena in metaphysics conferred by the *cogito* (p. 63). In this way, Kant unites Wolff's method of metaphysics and Newton's method of physics according to the irenic model and its project of reconciliation.

Chapter three presents the collapse of this project. There were three things that led to it: (a) the distinction "between real and logical use of reason" (p. 76); (b) the possibility opened by his system to "phantoms and spirit seeing" (p. 79); and (c) the modification of his concept of space. Set out in the works of 1762-1763, the first one undermined the basis of his theology and part of the *New Elucidation's* general metaphysics (p. 78). The second one was clearly stated in *Dreams* (1766, AA 2: 315-374) and made him realize that "the relation between rational cosmology and rational psychology he wanted to establish with the *New Elucidation*" was fallacious (p. 79). The third one was the topic of the *Directions in Space* (1768, AA 2: 315-374), which, against the background of Leibniz's *analysis situs* (p. 87) and applying the analytic method to the concept of space (p. 85), searched for its metaphysical foundations. In a nutshell, Falkenburg argues that, starting from *our* concept of space, Kant states as a *real* impossibility that some objects do not have chirality as a property (e.g., a hand not being a right or a left hand); since the relational concept of space admits this possibility, the concept itself "has *no real possibility*" (p. 96). Therefore, relying on the distinction between real and logical ground and the analytic method, Kant undermines his earlier conception of space, one of his cosmology's pillars, accepting now an absolute non-Newtonian and intuitive view of it.

Chapter four concentrates in what is known in the literature as *Kant's critical turn*, the event that follows the pre-critical project's collapse. Falkenburg challenges the traditional reading of Erdmann, Riehl, Adickes and Kreimendahl, which, according to her, has three premises: (1) in the 1760s Kant was under the influence of Hume's skepticism, (2) by this time the skeptical method led him to discover the cosmological antinomy and (3) the "great light" of 1769 consisted in the resolution of the antinomy through the ideality and subjectivity of space and time (p. 111). There is an overlap between the first and second assumption in the confusion of Hume's influence and the use of the skeptical method; against the former and this identification, she shows that Kant carefully distinguished both, maintaining his distance from the former (p. 131). Against the second assumption, Falkenburg argues that, even if the skeptical method's apagogic proofs were applied in the 1760s to topics of what was later called dynamical antinomy, he could not have thought it as an antinomy ("unavoidable conflict of reason with itself"), since he had not by that time formulated his concept of reason (p. 115). This naturally refutes the third assumption as well.

Falkenburg's positive account of Kant's development first points out that from the mid to late 1760s Kant changed his conception of metaphysics from an objective to a subjective/epistemic one, and, in view of this, was searching for a new method, different from the analytic one (p. 117). He then started using the skeptical method, which led to the discovery of contradictions in the objective use of metaphysical concepts. In the *Dissertation* Kant avoids these contradictions and preserves a dogmatic cosmology through the distinction of sensibility and understanding, sensible and intelligible world, intuition, and concept ("great light") (p. 122). Not only is cosmology here "contradiction-free", but there is also objective knowledge of a purely intellectual world (p. 125). Therefore, in 1770, according to her, there is no antinomy.

The first step toward its formulation is the letter to Herz of 1772, in which Kant questions the condition of intellectual knowledge's adequacy (p. 133). Lacking foundation in itself, from 1772 on, objective knowledge and the real use of reason are bound to sensibility. Thus, "we cannot objectively conceive of the intelligible world without conflating it with the whole of all spatial-temporal phenomena, that is, the concept of the sensible world, and vice-versa" (p. 134). More specifically, this adequacy principle and the application of his epistemic concept of infinity (1775) to the idea of the world as a totality result in the following contradictory propositions: *the world is completely given as a spatio-temporal object* and that *it is impossible to complete the spatio-temporal synthesis of the world* (p. 141). This is what Falkenburg calls the "reversion" of the *Dissertation's* arguments, i.e., the objective or real use of the idea of the world imply confusing its sensible and intelligible versions and, thus, the strategy of separating both is precluded or at least would be sterile, since it could only give rise to a logical not-objective idea of it (p. 139). Therefore, in order to formulate the antinomy, Kant needed at least his theory of space and time, his critical theory of cognition and the epistemic concept of infinity, which conjunctively were not present in 1769-1770.

Through a logical reconstruction of the CPR's antinomies with modern logic, the fifth chapter's main purpose is to discredit the charge, suggested chiefly by Strawson, that the antinomy is a self-generated problem, i.e., generated by transcendental idealism (p. 153). In order to do so, Falkenburg has to show, as Kant intended, that each and every proof of the antinomy can be reconstructed and be sound *from the point of view of transcendental realism*—either his pre-critical or some other traditional theory. Falkenburg relies here on the elements from all the preceding chapters. Before undertaking this endeavor, however, she offers a scheme of the antinomies, not only explaining its concept (p. 155), the idea of world (p. 156) and reason (p. 157) but distinguishing between three interrelated levels of them: epistemological, semantic, and logical (p. 170-171). From the *epistemological* point of view, the antinomy consists in the aforementioned conflation of the *Dissertation's* sensible and intelligible world, which leads to four cosmological ideas and, in each case, to seemingly contradictory predicates. These predicates only *seem* contradictory, because of the *semantic* assumption that they have the same "spatio-temporal world" reference. Since that is not actually the case, what emerges are *logical* fallacies founded on the equivocation of the middle term (*sophisma figurae dictionis*). From the transcendental realist's perspective, nonetheless, they are sound.

According to Falkenburg's reconstruction, the first antinomy's proofs rely solely on elements of his theory from 1770 and arguments taken from the Leibniz-Clarke's discussion (p. 182); the second one relies on his arguments from the *Physical Monadology* (1756) and Wolff's and Baumgarten's ontology (p. 204); the third and fourth, founded on the conflation of the principle of causality and sufficient reason, rely on elements shared by "Leibniz, Wolff and Baumgarten, including French materialism and [...] naturalism or Epicurianism" (p. 205).

In chapter six, given the aforementioned results, Falkenburg concludes that only in the sense that "Kant's discovery of the cosmological antinomy emerged in the course of developing the foundations of transcendental idealism" can it be considered circular, but not because transcendental idealism is presupposed in its proofs (p. 212). Alternatively, she also shows that, thinking of it as an "experiment of

pure reason,” Kant conceived the antinomies as an independent argument in support of transcendental idealism. She interprets the expression in terms of an analogy between the natural sciences and philosophy in two main ways: first, as the natural scientist poses questions to nature through empirical experiments, the philosopher poses them to reason through mental experiments (p. 217) and, second, of its methods (p. 220). In this analogy, the question posed is the validity of the distinction between *phenomena* and *noumena*, the mental experiment is the antinomy and the method, envisioned in the two-fold analytic-synthetic steps, is realized, respectively, in the Transcendental Analytic and Transcendental Dialectic (p. 221). Falkenburg ends chapter six interrogating about what remains of the pre-critical project in the critical period. She concludes that some form of its method is retained, albeit foremost as a heuristic tool (p. 227), that, in a different form, the unification project with (a new) metaphysics at its foundation is maintained (p. 228) and that in 1781 as in 1755 (*Theory of Heavens*) he still fought against naturalism, itself a form of transcendental realism (p. 231).

Lastly, the book has three appendixes, which expand on themes already dealt with. The first one elaborates on the concept of *system* from early modern philosophy to Kant, which is a concept intimately linked to both variants of the unification project. The second one expands the discussion of the method’s problem from chapter two, particularly on Newton’s one (p. 257). Finally, the third one deals with the rationalist’s development of the concept of cognition, culminating in Kant’s view, which stems from Meier’s one, which, in turn, is closely connected to his concept of system (p. 264).

Falkenburg’s book is thoroughly engaged in debating all its topics with the secondary literature and proposes new interpretations in respect to a great deal of them. That is the case, especially, for her interpretation of the *Directions in Space* argument (Ch. 3), Kant’s *critical turn* (Ch. 4) and her reading of the mathematical antinomies (Ch. 5). Due to this characteristic, the book requires of its readers some familiarity with its subjects, both from the pre-critical and critical philosophy; therefore, it cannot be considered an introduction and may not be recommended to the beginner. For those who, otherwise, fulfill this requirement, its reading can clarify Kant’s philosophical development and offer a scheme of the secondary literature’s debate in relation to some of its topics.