Kant, wolff, and the method of philosophy

(Article begins on next page)

07 January 2023

Kant, Wolff, and the Method of Philosophy

Gabriele Gava (Goethe University Frankfurt)

Abstract

Both in his pre-critical writings and in his critical works, Kant criticizes the Wolffian tradition for its use of the mathematical method in philosophy. If we limited our attention to this generic observation concerning the relationships between the methods of philosophy and mathematics, it would be easy to conclude that Kant and Wolff proposed two opposing and incompatible methods of philosophical arguing. I argue that, the apparent unambiguousness of this opposition between Kant and Wolff notwithstanding, the problem of ascertaining the relationship between Kant's and Wolff's methods in philosophy cannot be dismissed so quickly. Only a close consideration of Kant's different remarks on Wolff's approach and a comparison of the methods that Wolff and Kant actually used in philosophy can allow us to determine when Kant's criticisms are justified and where the differences in their methodological proposals for philosophy actually lie. I first situate Kant's criticism of Wolff's application of the mathematical method to philosophy in the context of other remarks Kant makes on Wolff's approach. Then, I present Wolff's account of the mathematical method and compare it with the procedures that Kant proposes for mathematics and philosophy respectively. We will see that Kant's account of philosophical method has in fact some elements in common with the Wolffian paradigm, even though there are also relevant differences. To finish, I discuss in more details the analysis of given concepts that both for Wolff and Kant seems to constitute the beginning of a philosophical investigation.

1. Introduction

Both in his pre-critical writings and in his critical works, Kant criticizes the Wolffian tradition for its use of the mathematical method in philosophy. Kant argues that only mathematics can begin its proofs with definitions, while philosophy can only obtain definitions at the end of its investigations. By contrast, Wolff is famous for proposing a model of philosophical arguing based on Euclidean geometrical demonstrations, where philosophy should start from clear and distinct definitions and from indisputable principles, in order to develop deductively valid conclusions by means of demonstrations. If we limited our attention to these generic statements concerning the relationships between the methods of philosophy and mathematics, it would be easy to conclude that Kant and Wolff proposed two opposing and incompatible methods of philosophical arguing. It

would be thus quite difficult to understand why Kant, in the preface to the second edition of the *Critique of Pure Reason*, identified Wolff's method as the appropriate method for a future system of metaphysics (that is, the system of philosophy that the critical estimation of reason's powers made possible) (KrV: B xxxvi).[1]

In fact, Kant's and Wolff's general statements about the relevance of a mathematical model of demonstration for philosophy cannot be employed to obtain an accurate account of the relationships between their respective accounts of philosophical arguing. There is one main reason that justifies this latter claim: in his prohibition to use mathematical procedures in philosophy, Kant uses his own understanding of mathematical demonstration, which is very different from Wolff's. An indication that Kant and Wolff have different things in mind when they speak of the mathematical method is provided by Kant's claim that mathematics and philosophy should be distinguished because the first proceeds synthetically, whereas the second advances analytically.[2] If thus, on the one hand, Kant characterizes the mathematical method by its syntheticity, on the other hand, Wolff rarely uses the terms 'analytic' and 'synthetic,'[3] and when he does that, he actually stresses that some of his books on mathematics were composed also using analytic, or mixed, procedures (cf. *Latin Logic*,[4] GW: div. 2, vol. 1.3, § 885).[5] We should of course keep in mind that Wolff and Kant used the distinction between the analytic and the synthetic in quite different terms.[6] However, the fact that for Wolff the distinction is not at all relevant for pointing out characteristics of philosophy and mathematics suggests that his views on the mathematical method are different from Kant's.

---

[1] References to Kant's KrV will be given indicating the pages of the first [A] and second [B] original editions. References to KGS will be given indicating volume and page. Translations are from: P. Guyer, A. Wood (eds.), *The Cambridge Edition of the Works of Immanuel Kant* (Cambridge: Cambridge University Press, 1992-).

[2] This claim can be striking when it is read together with Kant's contention in the *Prolegomena* that the *Critique of Pure Reason* proceeds synthetically (cf. KGS: 4, 274-5). The contrast between these claims suggests that Kant uses a different understanding of the distinction between the analytic and the synthetic method in the *Prolegomena*. I cannot investigate this issue further here. On the distinction between the synthetic and the analytic method in Kant see: W. de Jong, 'How is Metaphysics as a Science Possible? Kant on the Distinction Between Philosophical and Mathematical Method,' *Review of Metaphysics*, 49 (1995) 235-74; M. M. Merritt, 'Science and the Synthetic Method of the 'Critique of Pure Reason,'' *Review of Metaphyisics*, 59 (2006), 517-39; and G. Gava, 'Kant's Synthetic and Analytic Method in the *Critique of Pure Reason* and the Distinction between Philosophical and Mathematical Syntheses' ['Kant's Synthetic and Analytic Method'], *European Journal of Philosophy*, 23 (2015), 728-49.

[3] This is even more surprising if we consider that the distinction between a synthetic and an analytic method was quite common in 17th and 18th century philosophy and mathematics. See G. Tonelli, 'Der Streit über die mathematische Methode in der Philosophie in der ersten Hälfte des 18. Jahrhunderts und die Entstehung von Kants Schrift über die 'Deutlichkeit,'' *Archiv für Philosophie*, 9 (1956) 37-66, and 'Analysis and synthesis in XVIIIth century philosophy prior to Kant,' *Archiv für Begriffsgeschichte*, 20 (1976), 178-213.

[4] *Philosophia rationalis sive logica, methodo scientifica pertractata*.

[5] References to Wolff's GW will be given indicating division [*Abteilung*], volume [*Band*] and either page or paragraph number.

[6] For Wolff, the distinction between a synthetic, an analytic, and a mixed method has to do with the order in which the 'dogmata' of a science are presented (cf. *Latin Logic*, GW: div. 2, vol. 1.3, § 855). Even though Kant sometimes also uses the distinction between a synthetic and an analytic method for indicating the order of presentation of a science (cf. LVII: 492-3), for him the distinction concerns in the first instance two different ways of obtaining definitions and developing demonstrations. Moreover, in the critical period, he applies the analytic/synthetic distinction to judgments, which is something that was original to him.

Besides, Kant's critique of Wolff's application of the mathematical method is also problematic because it is difficult to square with other remarks that Kant makes on Wolff's approach to philosophy. Given this situation, if we want to gain a proper understanding of the relationships between Kant's and Wolff's philosophical methods, we must thus accomplish various tasks: First, we must determine which elements of Wolff's method Kant has exactly in mind when he criticizes his use of mathematical models. Second, we must find out how this critique can be made consistent with other remarks Kant makes on Wolff's method. Third, we must establish if Kant's criticisms are in fact justified. And fourth, we must determine whether Kant's explicit observations conceal elements of continuity that are relevant for our discussion of Wolff's and Kant's methods.

I will accomplish these tasks as follows: I will begin in section 2 by situating Kant's criticism of Wolff's application of mathematical procedures in the context of other remarks that Kant makes regarding Wolff's approach. This will allow determining what Kant exactly means with his criticisms and how these can be made consistent. Section 3 will introduce some of the chief characteristics of Wolff's mathematical method, whereas section 4 and 5 will then compare Wolff's account of the mathematical method to Kant's understanding of mathematical and philosophical investigations respectively. Thanks to this comparison, we will see that, when properly understood, Kant's criticisms are often justified, even though they conceal important elements of continuity, especially concerning the account of philosophical definitions. To finish, in section 6 I discuss in more details the analysis of given concepts that both for Wolff and Kant seems to constitute the beginning of a philosophical investigation.

2. Kant on Wolff's Method in Philosophy

Kant advances various criticisms of Wolff's philosophy, but an evaluation of these is difficult, since he often directs his remarks not to Wolff's position directly, but rather to what he calls the 'Leibniz-Wolffian school.' This means that it is not easy to determine whether, when making a particular point, Kant has primarily Leibniz, Wolff, or some of Wolff's followers in mind.[7] In this section, I will consider three criticisms that Kant advances against Wolff's method in the critical period. I will first analyse Kant's attack to the application of the mathematical method in philosophy in more detail. Then, I will consider Kant's claims that Wolff failed to distinguish between analytic and synthetic judgments, and that he gave a wrong account of the difference between sensible and

---

[7] For a useful listing of Kant's criticisms of Leibniz, which can be often extended to the Leibniz-Wolffian school in general, see A. Jauernig, 'Kant's Critique of the Leibnizian Philosophy: Contra the Leibnizians, but Pro Leibniz,' in D. Garber, B. Longuenesse (eds.), *Kant and the Early Moderns* (Princeton: Princeton University Press, 2008), 41-63, at 45-8.

intellectual cognitions. After considering these criticisms, I will try to make sense of Kant's praise of Wolff's method in the 1787 Preface of the *Critique of Pure Reason*.

1. I have already contended that Kant's critique of Wolff's application of the mathematical method to philosophy is likely to be misleading for a proper understanding of the relationship between their methods. Still, it is interesting to see what Kant has to say in this respect because it opens a bundle of questions regarding how he actually interpreted Wolff's mathematical method. For example, in lectures notes from the early 1790s, and in particular in the *Dohna-Wundlacken Logic*, we find the following statement:

While enumerating methods earlier we forgot the *mathematical*. This is none other than the synthetic method, which proceeds from the first grounds of a cognition and stops at the last consequences. The first thing with this method, now, is definition, then axiom, theorem, problem, etc. […] Wolff expounded philosophy in accordance with this method, which cannot be done (KGS: 24, 783).

Here Kant uses two features to characterize the mathematical method: 1) its synthetic character, and 2) the particular order in which certain elements are to be found in a mathematical demonstration. As we will see in section 4, when Kant, in the critical period, speaks about the synthetic character of mathematics, he has different things in mind. First, he means that mathematical definitions have a certain genetic power, because they create the concept they define and are able to immediately provide an instance of this concept. Second, he means that mathematical principles and demonstrations do not rely only on the principle of non-contradiction, but need constructions in pure intuition to be established. So, when Kant says that Wolff expounded philosophy according to the mathematical method, it is not clear if he is attributing to Wolff the attempt to emulate both of these features. It is quite clear that Kant attributes to Wolff the attempt to imitate the order of the elements of a mathematical demonstration, since he explicitly complains that Wolff puts definitions at the beginning in philosophy (cf. KGS: 24, 918-9). What is unclear is whether he saw Wolff as attempting to use in philosophy a synthetic procedure – in Kant's sense of the term. The textual evidence in this respect is inconclusive. In the *Metaphysics Vigilantius* we find Kant claiming that Wolff 'built his success in philosophy at random on mathematical presuppositions, and by application of the mathematical method confused *a priori* cognitions from pure ideas with mathematical cognitions, because he believed himself able to operate with them by the construction of concepts from *a priori* intuition just as in mathematics' (KGS: 29, 959). This passage is striking in many ways, but first of all because Kant seems to ascribe a concept of pure intuition to Wolff. We could of course attribute the oddity to the inaccuracy of the student who took the notes. But still, we might think that the student got at least right that Wolff, according to Kant, wanted to

introduce some synthetic element into philosophy by means of the application of the mathematical method. This passage is however in sharp opposition to some where Kant criticizes Wolff for wrongly assuming that mathematics itself proceeds analytically, that is, by means of the analysis of given concepts and syllogisms. For example, Kant complains that Wolff's definition of the similarity of triangles is in fact more philosophical than mathematical, because it is based on the analysis of the concept (cf. KGS: 24, 858, 922-3). Thus, if we take into consideration Kant's direct criticism of Wolff's application of the mathematical method to philosophy, it remains unclear whether Kant only complained that Wolff ordered the elements of a philosophical demonstration like those of a mathematical one, or whether Kant also thought that Wolff tried to use in philosophy something similar to what he called constructions of concepts.

2. The possibility that Kant could have attributed to Wolff the attempt to introduce in philosophy synthetic procedures is rendered doubtful when we consider a second criticism advanced by Kant. In the *Prolegomena to any Future Metaphysics* Kant laments that Wolff, together with Baumgarten, failed to distinguish between synthetic and analytic judgments:

This division [between analytic and synthetic judgments, *my note*] is indispensable with regard to the critique of human understanding, and therefore deserves to be *classical* in it; other than that I don't know that it has much utility anywhere else. And in this I find the reason why dogmatic philosophers […] neglected this division, which appears to come forward of itself, and, like the famous Wolf, or the acute Baumgarten following in his footsteps, could try to find the proof of the principle of sufficient reason, which obviously is synthetic, in the principle of contradiction (KGS: 4, 270).

Kant argues that the distinction between synthetic and analytic judgments is essential to a critique of pure reason, where this means that its relevance is not easily grasped if one does not adopt a critical standpoint. Lacking the latter standpoint, dogmatic philosophers like Wolff and Baumgarten failed to acknowledge this distinction. Now, according to Kant, this failure to distinguish between synthetic and analytic judgments generated the misguided attempt to demonstrate that irreducibly synthetic principles, like the principle of sufficient reason, are in fact conceptual truths, which for Kant are analytic in the sense that they are only based on conceptual analysis and syllogisms. Assuming that Kant's contention concerning Wolff's proof of the principle of sufficient reason could be extended to other parts of Wolff's philosophy, this would mean that Kant attributed to Wolff the attempt to render many, if not all, philosophical truths conceptual truths. However, this would be incompatible with ascribing to Wolff the application of mathematical synthetic procedures to philosophy. So, it seems plausible that when Kant laments that Wolff used the

mathematical method, he simply meant that he wrongly assumed that he could start with definitions.

3. The latter impression is confirmed if we take into consideration a related criticism that Kant moved against Wolff. The criticism concerns the error of treating the distinction between sensible and intellectual cognitions as only dependent on the degree of clarity of the cognitions in question. According to Kant, this mistake was common to all philosophers belonging to the 'Leibniz-Wolffian Tradition,' including Wolff (cf. KrV: A 44/B 61-2). Accounting for the distinction between sensible and intellectual cognition as only a matter of clarity is tantamount to rendering conceptual clarity the paradigm of knowledge. If sensible cognition is distinguishable from intellectual cognition only because it cannot reach the degree of clarity that is possible for the latter, it means that thoroughgoing conceptual analysis is regarded as perfect and complete cognition, where knowledge is identified either with strict conceptual analysis or with further consequences logically derivable through inference. It is easy to see how this criticism is related to the previous one. As in the case of the failure to distinguish between analytic and synthetic judgments, the differentiation between sensible and intellectual cognition as merely a matter of clarity has the consequence of treating every possible philosophical truth as a conceptual truth, obtainable by conceptual analysis and the application of the principle of non-contradiction.

Therefore, if we consider these criticisms together, it seems plausible to conclude that, when Kant complains that Wolff was wrong in applying the mathematical method to philosophy, he simply meant that Wolff should not have started with definitions. Besides, Kant probably feared that Wolff's claim that philosophy should proceed mathematically could generate the false belief that it could in fact use constructions, even though this was not what Wolff meant according to him. To this critique, he associated another more fundamental, that is, the charge of treating all philosophical truths as analytic and conceptual truths, which resulted in the use of synthetic principles as if they were analytic ones. Reading Kant's criticism in such a way allows attributing to him a coherent position on Wolff's method. What we should however still determine is whether these criticisms are justified and whether they leave unexplored relevant elements of continuity or discontinuity between Wolff's and Kant's philosophical methods. Before we move to our comparison between Wolff's and Kant's positions, there is however another issue that we should address. As I have already mentioned, in the Preface to the B edition of the *Critique*, Kant says that metaphysics, after the critique of pure reason is completed, should proceed according to the Wolffian method:

In someday carrying out the plan that criticism prescribes, i.e., in the future system of metaphysics, we will have to follow the strict method of the famous Wolff, the greatest among all dogmatic philosophers, who gave us the first example […] of the way in which the secure course of a science is to be taken, through the regular ascertainment of the principles, the clear determination of concepts, the attempt at strictness in the proofs, and the prevention of audacious leaps in inferences; for these reasons he had the skills for moving a science such as metaphysics into this condition, if only it had occurred to him to prepare the field for it by a critique of the organ, namely pure reason itself (KrV: B xxxvi).

How should we understand this statement in relation to Kant's criticisms analysed above? If the metaphysics that the critique of pure reason makes possible can follow the Wolffian method, does this mean that it is only in pursuing this critique that we should be careful to not fall in Wolff's mistakes? Should metaphysics instead emulate the model of mathematical demonstrations and start with definitions? Should it proceed only using conceptual analysis and syllogisms? But if this is the case, what would be the role of the critique with respect to metaphysics?

In this article, I will be able to answer to only some of these questions. In this respect, let me conclude this section with three brief remarks, two of which will be further developed below: First, if we consider the structure of works such as the *Metaphysical Foundations of Natural Science* – which might be considered as part of Kant's 'metaphysics proper' –, it seems that Kant in fact uses a model that reminds Wolff's mathematical method, starting with definitions and proceeding to principles and demonstrations (cf. KGS: 4, 467-565). However, it might be maintained that this structure has more to do with the *exposition*, than with the *method*, while these two aspects were not clearly distinguished in Wolff.[8] Second, one aspect of the quoted passage can probably be spelled out by saying that Kant fundamentally agrees with Wolff's idea that philosophy must be systematic.[9] Third, Kant sometimes suggests that while the critical part of philosophy identifies and justifies fundamental synthetic a priori principles regarding 'objects of experience in general,' its 'doctrinal' part should instead show how these principles are further specified when they are applied to some 'given' object. Accordingly, the metaphysics that comes after the critique could be 'Wolffian' in the sense that, if the synthetic principles are secured by the critique, the further consequences attainable when we use a *thicker* conception of the object can in fact be obtained deductively, once this new concept of the object is acquired through analysis and is added to our premises. Having said that, let us see if we can obtain some support for these remarks thanks to a comparison of the methods that Wolff and Kant propose.

---

[8] On the distinction between exposition and method see: G. Gava, 'Kant's Synthetic and Analytic Method.'
[9] On the role of systematicity in Kant's account of science see: G. Gava, 'Kant's Definition of Science in the Architectonic of Pure Reason and the Essential Ends of Reason,' *Kant-Studien*, 105 (2014), 372-93.

3. Wolff's Mathematical Method

Wolff's mathematical method should be first distinguished from the inquiries that are actually pursued by mathematicians. The former identifies a general method of demonstration that is universally valid for the sciences. This does not mean that the sciences, including mathematics and geometry, cannot have their peculiarities and specificities. Wolff refers to this general model of demonstration of the science as the 'mathematical' method because mathematics is certainly the best example of the application of this model.[10] However, it cannot be excluded that mathematics, in following the latter model, specifies its general methodological principles in ways that are different from, and incompatible with, other sciences. Wolff accordingly stresses that 'if one wants to attain an aptitude in the exercise of logic through mathematics, this does not depend on mathematical truths, but on the way of presentation, that is, on the observance in all things of the rules of a true logic' (*German Logic*,[11] GW: div. 1, vol. 1, p. 247). In what follows I will focus on Wolff's mathematical method understood as his general model of science, because this is the method that he urges to apply in philosophy and thus the direct target of Kant's criticisms. I will avoid considering the procedures Wolff actually applies in his mathematical works, except when this is relevant for understanding if Wolff's method in mathematics bears more similarities to Kant's account of mathematical demonstrations than his general account of the mathematical method does.

In his *Short Lesson on the Mathematical Method*[12] Wolff argues that this method 'starts from the definitions, proceeds to the axioms, and from here to the theorems and the problems' (GW: div. 1, vol. 12, § 1). This description well exemplifies Wolff's attempt to derive a methodological model from the structure of Euclid's geometrical demonstrations. Wolff argues that the derivative structure of mathematical proofs exemplifies a logical model that should become a universal standard of scientific inquiries. In order to attain the status of science philosophy should thus conform to this standard. Accordingly, in the *German Logic* Wolff reinterprets the structure of Euclidean proofs and proposes a method essentially based on three elements: definitions (*Erklärungen*), axioms (*Grundsätze*), and syllogisms (*Schlüsse*). Moreover, he maintains that demonstrations should always have a syllogistic form (*German Logic*, GW: div. 1, vol. 1, p. 200). In this framework, each

---

[10] In the *Kurzer Unterricht von der mathematischen Lehrart* (*Short Lesson*) placed at the beginning of the *Anfangsgründe aller mathematischen Wissenschaften*, Wolff notes: '[b]ut we call it [the method, *my note*] mathematical, sometimes also the geometrical method [*Methode oder Lehrart*], because until now almost only the *mathematici*, particularly in geometry, made use of it in all things in the most meticulous way' (GW: div. 1, vol. 12, § 51). On this point see: J. I. G.Tutor, *Die wissenschaftliche Methode bei Christian Wolff* (Hildesheim: Olms, 2004), 20, 32-6.

[11] *Vernünftige Gedanken von den Kräften des menschlichen Verstandes und ihrem richtigen Gebrauche in Erkenntnis der Wahrheit.*

[12] *Kurzer Unterricht von der mathematischen Lehrart.*

step in the process of going from definitions to demonstrated conclusions should follow directly and necessarily from the preceding one.

For the purposes of our discussion I will here focus on three fundamental characteristics of Wolff's mathematical method:

1)   A demonstration should always start with definitions of concepts. These concepts can be obtained either through reflection, abstraction, or arbitrary determination;

2)   The steps of a proof should follow by the simple application of the principle of non-contradiction;

3)   The mathematical method requires a systematic and hierarchic ordering of cognitions.

As far as point 1) is concerned, Wolff, in developing Leibniz's account of cognition, identifies definitions with concepts that are clear, distinct, and complete (*German Logic*, GW: div. 1, vol. 1, 141). A clear concept is a concept that we are able to apply appropriately (*German Logic*, GW: div. 1, vol. 1, 126), even though we might not be able to discern the essential sub-concepts – the 'marks' in Wolff's terminology – that the concept entails. If we have a clear representation of the marks that allow us to recognize the things to which our concept applies, then we have a distinct concept (*German Logic*, GW: div. 1, vol. 1, 128). If these marks are sufficient to correctly apply the concept in any circumstance, then our concept is complete (*German Logic*, GW: div. 1, vol. 1, 129). A definition of a concept is therefore obtainable by analysing and making clear what are the fundamental marks that constitute a concept. This seems to apply in particular to what Wolff calls 'definitions of words' (German Logic, GW: div. 1, vol. 1, pp. 143-4), which for him 'give an adequate ground of proof in the sciences' (German Logic, GW: div. 1, vol. 1, 145). This sentence should not be understood as claiming that in science we just need 'nominal definitions,' whereas what Wolff calls 'definitions of things' or 'real definitions' is superfluous. Rather, the sentence should be understood as contending that scientific definitions must always include a 'nominal' part, which identifies the fundamental marks of a concept by means of analysis. If thus a real definition can show that an object is 'really possible,' it is only in the nominal definition that we can grasp the essential marks of the concept of the object.

While concepts are defined in this way, they can be obtained by following three different methods, which in the *Latin Logic* are called reflection, abstraction, and arbitrary determination (*Latin Logic*, GW: div. 2, vol. 1.2, § 716).[13] In the *German Logic* Wolff characterizes them by

---

[13] It should here be emphasized that Wolff, both in the *German Logic* and the *Latin Logic* keeps separated the methods of obtaining concepts and the methods of obtaining either 'definitions of words' or 'definitions of things.' By contrast, in the *Short Lesson* he only distinguish between the methods for obtaining 'definitions of words' and 'definitions of things' (GW: div. 1, vol. 12, § 2ff.) In fact, the way in which he here characterizes the method for obtaining 'definitions of words' has many similarities to his descriptions of the methods of obtaining concepts in the *German Logic* and the *Latin Logic* (GW: div. 1, vol. 12, § 15ff.). Probably, in the *Short Lesson* Wolff had not yet clearly developed his

saying that concepts can be obtained either through the senses (*German Logic*, GW: div. 1, vol. 1, 124ff.), or by abstracting what different concepts have in common (*German Logic*, GW: div. 1, vol. 1, 136-7), or also by modifying a concept adding some property to it or determining some of its existing properties in a different way (*German Logic*, GW: div. 1, vol. 1, 139). Reflection is used to obtain the concept of a thing that we have experienced through the senses. By contrast, abstraction acquires class concepts by discerning what is common to various concepts, and the arbitrary determination of a concept creates new concepts by modifying or combing in a different way previously known concepts. The concepts defined at the beginning of a demonstration can be obtained by means of each one of these procedures.

As I have suggested, Wolff's general description of the mathematical method should be distinguished from Wolff's views on the actual method of mathematics and geometry. It is thus here appropriate to ask whether Wolff admits the use of reflection and abstraction in mathematics and geometry, or if they are methods that are only permissible in other sciences and thus recognized as possible in Wolff's general account of the scientific method. In fact, there are passages which suggest that Wolff considers these methods of finding concepts permissible in mathematics and geometry. For example, in the *Short Lesson*, he uses examples from geometry suggesting that geometrical concepts can be obtained through abstraction (cf. *Short Lesson*, GW: div. 1, vol. 12, § 17) and he advocates that we can ascertain whether a geometrical concept is actually possible by experience (cf. *Short Lesson*, GW: div. 1, vol. 12, § 20).[14] This indicates that he considered abstraction and reflection acceptable methods in mathematics. That said, we can leave this question open and concentrate on Wolff's understanding of the mathematical method as a general model of science, insofar as it is this understanding of the mathematical method that Wolff applies to philosophy.

Concerning point 2), Wolff interpreted the procedures involved in Euclid's proofs as purely syllogistic (*German Logic*, GW: div. 1, vol. 1, 173) and as simply resting on the principle of non-contradiction (*German Logic*, GW: div. 1, vol. 1, 165).[15] According to Wolff, the mathematical

---

distinction between methods for obtaining concepts and methods for obtaining definitions of words, but this is a distinction we should make if we take into consideration Wolff's later writings. While what he calls alternatively 'definitions of words' or 'nominal definitions' seems to always involve, at least indirectly, the process of analysis just described, he recognized methods of obtaining what he calls either 'definitions of things' or 'real definitions,' which sometimes are not reducible to the model of analysis (cf. *German Logic*, GW: div. 1, vol. 1, 148ff.; *Latin Logic*, div. 2, vol. 1.2, § 734ff.). But insofar as, as just stated, science requires that a definition of a concept always includes its nominal definition, this means that scientific definitions are always fundamentally analytic, even though we might have to prove that the concept they define are really possible with the help of a real definition.

[14] On this point see for example: K. Dunlop, 'Mathematical Method and Newtonian Science in the Philosophy of Christian Wolff,' *Studies in History and Philosophy of Science*, 44 (2013), 457-69, at 463.

[15] Accordingly, Lisa Shabel ('Kant's Philosophy of Mathematics,' in P. Guyer (ed.), *The Cambridge Companion to Kant and Modern Philosophy* (Cambridge: Cambridge University Press, 2006), 94-128, at 95-6) notes how, for Wolff, mathematical reasoning rests on syllogisms and conceptual analysis.

method was thus characterized by starting with definitions of concepts and by proceeding deductively to various conclusions accessible by the simple application of the principle of non-contradiction. Given point 1) and 2), it seems that Kant was thus right in attributing to Wolff the view that every philosophical truth must be a conceptual truth, since for Wolff these truths should be obtainable simply by means of conceptual analysis and syllogism.

Now turning to point 3), Wolff believes that characteristics 1) and 2) are relevant in science only if they contribute to the construction of a system of cognitions hierarchically ordered. The terms 'system' and 'grounded science' are treated as being almost synonyms. Thus, in his *Ausführliche Nachricht von seinen eigenen Schrifften* Wolff presents his works as a *Systema veritatum*, where 'the truths are presented in such a connection to one another as is required to grounded cognition' (GW: div. 1, vol. 9, § 34).[16] In *De Differentia intellectus systematici et non systematici*, which is certainly the text where Wolff carries out his more thorough analysis of the concept of system, Wolff explicitly connects the latter concept to his deductive model of science. Accordingly, he claims that a systematic understanding 'connects universal propositions to one another,' in such a way that 'the truth of one proposition is only proved through other propositions that we recognize as true' (GW: div. 2, vol. 34.1, 108-9).

Wolff elucidates his understanding of a system with an analogy that will be relevant in our discussion of Kant. In the *Ausführliche Nachricht*, he connects the order of demonstration he used in his ontology to the idea of a system and he claims that in this discipline 'all teachings are connected to one another as the limbs in the human body' (GW: div. 1, vol. 9, § 78).[17] A similar example is used in *De Differentia*, where Wolff refers to an animal body in order to clarify the relationships obtaining between the parts of a system. Here he argues that 'an animal body presents a system, in which the organs and their parts are ordered according to the same law through which truths must be ordered in a system' (GW: div. 2, vol. 34.1, 148).[18]

As we will see, Wolff's description of the mathematical method presents various elements that are in contrast to Kant's account of mathematics, to which our attention now turns. These differences will, on the one hand, help us explaining Kant's criticisms. On the other, they will provide some evidence for what I have already suggested: when Kant complains that Wolff should not have applied the mathematical method to philosophy, he does not attack anything substantial in

---

[16] This *Systema veritatum* is then associated to Euclid's model of mathematical demonstrations (GW: div. 1, vol. 9, § 34; see also *De Differentia intellectus systematici et non systematici*, GW: div. 2, vol. 34.1, § 6).

[17] Waibel ('Die Systemkonzeptionen bei Wolff und Lambert' ['Die Systemkonzeptionen'], in J. Stolzenberg, O.P. Rudolph, *Christian Wolff und die europäische Aufklärung* (Hildesheim: Olms, 2007), vol. 2, 51-69, at 64) notices how Wolff's logical consideration of systematicity is grounded in his metaphysics.

[18] On *De Differentia intellectus systematici et non systematici* see: M. Albrecht 'Einleitung' ['Einleitung'], in C. Wolff, 'De differentia intellectus systematici & non systematici/Über den Unterschied zwischen dem systematischen und dem nicht-systematischen Verstand,' translated, introduced, and edited by M. Albrecht, *Aufklärung*, 23 (2011), 229-45.

Wolff's procedures. Since Kant's account of the mathematical method is fundamentally different from Wolff's and Kant sees his position as original, Kant cannot attribute to Wolff the mistake of having applied to philosophy what he considered to be distinctive of his own approach to mathematics.

4. Kant on the Method of Mathematics

When they respectively intimate and prohibit to use the mathematical method in philosophy Wolff and Kant have different things in mind. Wolff, as we have seen, refers to a general model of demonstration for the sciences, whereas Kant is thinking of actual procedures in mathematics and geometry. In this section I will discuss the similarities and differences between Kant's account of the method of mathematics and Wolff's mathematical method, understood as a general model for the sciences. I will take as a starting point the three aspects of Wolff's position I have discussed in the previous section.

There is one respect in which Kant's characterization of the method of mathematics agrees with Wolff's account of the mathematical method, and this corresponds to what I have identified as characteristic 3) of Wolff's account. Kant thinks that the method of mathematics is necessarily systematic, and he maintains that at least in this regard the methods of mathematics and philosophy should be similar. Therefore, even though mathematics and philosophy should be sharply distinguished for their particular ways of arguing, mathematics can nonetheless provide an example of how to build a system of coherently interrelated cognitions.[19] Accordingly, in the *Preface* to the second edition of the *Critique of Pure Reason* Kant famously identifies mathematics as a model of scientificity for philosophy (KrV: B x-xii). Mathematics, thanks to a 'revolution in the way of thinking' (KrV: B xi), was able to inaugurate a new approach to the discipline which allowed the construction of a coherent system of mathematical cognitions. In the same way, philosophy should try to accomplish a similar revolution, in order to become itself a coherent system of philosophical cognitions. Therefore, it is probably partially with reference to Wolff's insistence on systematicity that Kant claimed, in the passage quoted at the end of section 2, that Wolff's method should be taken as a model for metaphysic (KrV: B xxxvi).

---

[19] Kant claims that both mathematics and philosophy should become systems. Accordingly, in the *Vienna Logic*, after having stated that cognition is either from concepts or from the construction of concepts, he stresses that '[t]he system of the former is called philosophy, of the latter mathematics' (KGS: 24, 797).

Wolff's influence on Kant in this respect finds confirmation in Kant's description of the characteristics of a proper system of cognitions, where he uses an analogy that we have already found in Wolff:[20]

I understand by a system, however, the unity of the manifold cognitions under one idea. This is the rational concept of the form of a whole, insofar as through this the domain of the manifold as well as the position of the parts with respect to each other is determined *a priori*. The scientific rational concept thus contains the end and the form of the whole that is congruent with it. […] The whole is therefore articulated (*articulatio*) and not heaped together (*coacervatio*); it can, to be sure, grow internally (*per intus susceptionem*) but not externally (*per appositionem*), like an animal body, whose growth does not add a limb but rather makes each limb stronger and fitter for its end without any alteration of proportion (KrV: A 832-3/B 860-1).

Even though the continuity between Kant and Wolff is thus considerable with respect to their insistence on systematicity in science, there are important differences to be pointed out. First of all, Kant does not consider systematicity as a characteristic obtainable only through the application of a method common to all the sciences. Accordingly, in the *Metaphysical Foundation of Natural Science*, systematicity is identified as a condition of science in a broad sense, also including empirical sciences, even if it is of course even more essential in the case of apodictic sciences, that is, of sciences that are systems of a priori cognitions of reason (KGS: 4, 648ff.). By contrast, Wolff thought that systematicity was only attainable by means of one method, that is, his mathematical method of demonstration: 'we name systematic understanding that understanding which connects universal propositions to one another. Propositions are however connected when one is demonstrated through another, just as through principles' (*De Differentia*, GW: div. 2, vol. 34.1, 108). Wolff thus associated systematicity with the deductive model of derivation which we analysed in the previous section. Kant did not follow him in this respect. That is to say, he emancipated the notion of system from its link with a deductive method,[21] and he described systematicity simply according to the particular parts-whole relationships it requires. In this way,

---

[20] Manfred Baum ('Systemform und Selbsterkenntnis der Vernunft bei Kant,' in H.F. Fulda & J. Stolzenberg (eds.), *Architektonik und System in der Philosophie Kants* (Hamburg: Meiner, 2001) 25-40, at 28) points out this parallelism between Wolff and Kant. On the relevance of the concept of system in Wolff's philosophy and its influence on Kant see: M. Albrecht, 'Einleitung'; N. Hinske, *Zwischen Aufklärng und Vernunft: Studien zum Kantschen Logikcorpus [Zwischen Aufklärng und Vernunft]* (Stuttgart: Fromann-holzboog, 1998), 103-7. See also: G. Zöller ''Die Seele des Systems': Systembegriff und Begriffssystem in Kants Transzendentalphilosophie,' in H.F. Fulda & J. Stolzenberg, *Architektonik und System in der Philosophie Kants* (Hamburg: Meiner, 2001) 54-72, at 55-6.

[21] Hinske (*Zwischen Aufklärng und Vernunft*, 107ff.) notices how Kant's notion of system is not deductive. He also claims that the originality of Kant's notion of system lies in its essential teleological character. Waibel ('Die Systemkonzeptionen,' 54ff.) insists on the similarity between Kant's teleological account of systematicity and Lambert's claim that *Absichten* constitute a relevant feature of systems.

the hierarchical ordering of cognitions we find in a scientific system does not necessarily reflect the way in which these cognitions have been obtained. Kant could thus stress, at the same time, that every rational science must be systematic and that different sciences, as mathematics and philosophy are, must proceed according to different procedures.

If Kant agreed with Wolff on the very general point that science in general, and thus mathematics, required systematicity, his account of mathematical demonstrations diverges in many respects from Wolff's interpretation of the mathematical method. Thus, as far as characteristic 1) of Wolff's mathematical method is concerned, in a similar way Kant maintains that mathematical proofs should start with definitions of concepts, and this fact reflects his acceptance of Euclid's model of demonstration. However, Kant's description of the definitions of concepts at the beginning of a mathematical proof is very different from Wolff's account of definitions in his general account of the mathematical method. Wolff maintained that the definitions of concepts at the beginning of a demonstration should result from the analysis of the essential 'marks' constituting the concepts in question. Moreover, for him, these concepts could be obtained either through reflection, abstraction, or arbitrary determination. By contrast, Kant excludes that in mathematics we could obtain our concepts by either reflection or abstraction. Already in the so-called *Prize Essay*[22] of 1764, he claims that mathematical definitions can only be obtained by the 'arbitrary combination of concepts' (KGS: 2, 276), where the continuity with Wolff's notion of 'arbitrary determination' is easy to detect:

There are two ways in which one can arrive at a general concept: either by the *arbitrary combination* of concepts, or by *separating out* that cognition which has been rendered distinct by means of analysis. Mathematics only ever draws up its definitions in the first way. For example, think arbitrarily of four straight lines bounding a plane surface so that the opposite sides are not parallel to each other. Let this figure be called a *trapezium*. The concept which I am defining is not given prior to the definition itself; on the contrary, it only comes into existence as a result of that definition. […] In this and in all other cases the definition obviously comes into being as a result of *synthesis* (KGS: 2, 276).

It is difficult to grasp what Kant and Wolff exactly meant by their respective formulations, but it is clear that they wanted to point out a procedure for obtaining new concepts simply by using concepts we already possess (like the concepts of line, angle, etc.).[23] What is distinctive in Kant's

---

[22] *Inquiry Concerning the Distinctness of the Principles of Natural Theology and Morality.*

[23] Engfer suggests that the idea of arbitary combination of concepts derives from the notion of the so-called *ars combinatoria* (cf. *Philosophie als Analysis. Studien zur Entwicklung philosophischer Analysiskonzeptionen unter dem Einfluss mathematischer Methodenmodelle im 17. Und frühen 18. Jahrhundert [Philosophie als Analysis]* (Stuttgart: Fromann-holzboog, 1982), 64; 'Zur Bedeutung Wolff für die Methodendiskussion der deutschen Aufklarüngsphilosophie: Analytische und synthetische Methode bei Wolff und beim vorkritischen Kant' ['Zur

'arbitrary combination' is that it is not only a method of *obtaining* concepts, but also a way of *defining* them. That is to say, in synthetic definitions the act of creation of concepts and the act of definition exactly coincide. Here the definition does not result from a successive analysis of the essential marks of the concept at issue: '[i]n mathematics, namely, I have no concept of my object at all until it is furnished by the definition. In metaphysics I have a concept which is already given to me, although it is a confused one' (KGS: 2, 283). In the *Critique of Pure Reason* Kant further characterizes this synthetic method of definition for its capacity to immediately warrant that concepts have corresponding objects: a capacity that for Kant is precluded to disciplines other than mathematics. If in other disciplines we combine concepts in order to generate new concepts, in no way would we have an immediate guarantee that the latter concepts have in fact corresponding objects (cf. KrV: A 729/B 757). But how can mathematics provide this guarantee? According to the critical Kant, mathematics can do that because our definitions are obtained by immediately providing an instantiation of the concepts in sensible intuition. In the *Prize Essay* (KGS: 2, 292), the role of sensibility in mathematics is only partially recognized. This is due to the fact that Kant had not yet developed his concept of pure intuition. By contrast, in the *Critique of Pure Reason* Kant identified mathematical syntheses with constructions of concepts and he characterized the latter by the peculiar way in which they are related to pure intuition (cf.KrV: A 713/B 741).[24] For Kant, to construct a concept means to be able to directly produce an intuition of an object corresponding to the concept we are defining. This procedure is only possible because, through our intuition of space and time as infinite magnitudes, we can exhibit relationships that are universally valid. For example, if I consider the definition of a triangle, I am able to obtain a corresponding object by simply drawing a figure that corresponds to it (in paper or imagination, cf. KrV: A 713/B 741), and this figure instantiates relationships between the parts of a triangle that are universally valid (at least in an Euclidean space). In mathematics we can thus be immediately sure of the objective validity of arbitrarily defined concepts because we can find an immediate instantiation of them in our intuition, where this individual instantiation has the capacity to reveal universally valid relationships:

Thus there remain no other concepts that are fit for being defined than those containing an arbitrary synthesis which can be construed *a priori*, and thus only mathematics has definitions. For the object that it thinks it also exhibits *a priori* in intuition, and this can surely contain neither more nor less than the concept, since through the explanation of the concept the concept is originally given (KrV: A 729-30/B 758-9).

Bedeutung Wolff'], in W. Schneiders (ed.), *Christian Wolff 1679-1754. Interpretationen zu seiner Philosophie und deren Wirkung mit einer Bibliographie der Wolff-Literatur* (Hamburg: Meiner, 1986), 49-65, at 50). This notion was introduced by Lullus' *ars magna*, was then developed by Leibniz and marginally used by Wolff.
[24] On the innovations introduced by the first *Critique* with respect to the distinction between the mathematical and the philosophical method see: B.S. von Wolff-Metternich, *Die Überwindung des mathematischen Erkenntnisideals: Kants Grenzbestimmung von Mathematik und Philosophie* (Berlin: de Gruyter, 1995), 36ff.

If thus Kant's account of the method of mathematics agrees with Wolff's description of the mathematical method in saying that we should begin with definitions, they have very different views on these definitions. Wolff thought that, insofar as the definitions at the beginning of a science have always a 'nominal' part in which they identify the essential 'marks' of a concept by means of analysis, these definitions are fundamentally analytic. By contrast, for Kant mathematical definitions are directly synthetic and create an object in the very act of defining it. To be fair, Kant's synthetic definitions, especially in his pre-critical understanding of them, bear some resemblance to Wolff's description of the third method of obtaining concepts, that is, arbitrary determination. However, at least in the *German Logic* and in the *Latin Logic*, Wolff does not identify this act of creation with a particular method of definition. Moreover, in his critical period, Kant specifies the conditions under which an objectively valid arbitrary concept is obtainable in a more precise way, claiming that we can be immediately sure of the objective validity of an arbitrarily created concept only when we can directly construct a corresponding object in intuition.[25] According to Kant, only mathematical objects are obtainable in this way. Besides, Wolff's mathematical method differs from Kant's account of the method of mathematics in that it allows room for concepts obtained through reflection and abstraction, which are forbidden by Kant in mathematics.

If we now turn our attention to characteristic 2) of Wolff's account of the mathematical method, we will appreciate that his views on the kind of inferential relationships that we find in scientific demonstrations are in various ways incompatible with Kant's account of mathematical proofs. We saw that Wolff considered the steps of a demonstration developed according to the mathematical method to consist in syllogisms based on the principle of non-contradiction. Kant, in the *Prize Essay*, would have probably said similar things concerning proofs in mathematics and geometry, limiting the syntheticity of mathematics to its definitions.[26] By contrast, in the *Critique of Pure Reason*, he maintains that the elements of a mathematical proof, including definitions, axioms, and demonstrations (KrV: A 727-35/B 755-63), cannot be reduced to an application of the principle of non-contradiction and requires constructions in intuition. Accordingly, Kant thought that we could not derive the proposition stating that the sum of the internal angles of a triangle is necessarily 180° simply by using the general definition of a triangle and basic geometrical principles as premises, and by then applying the principle of non-contradiction to obtain our conclusion (cf. KrV: A 716-

---

[25] Wolff recognizes that we need to identify conditions of validity for concepts arbitrarily determined (cf. *German Logic*, GW: div. 1, vol. 1, 140), but he does not refer to anything comparable to Kant's construction of concepts in pure intuition.

[26] Cf. *Refl*. 1634, KGS: 16, 55.

7/B 744-5).[27] Each element in this proof, that is, the identification of the definition, the formulation of the principles, just as the carrying out of the demonstration, is dependent on a construction in intuition and thus not reducible to a simple application of the principle of non-contradiction.

From this brief analysis of Kant's account of mathematical demonstrations in relationship with what we have previously discussed regarding Wolff's mathematical method, it is clear that the former and the latter are different in many respects, even though there are also some elements of continuity. One of these can be identified with the systematicity that both Wolff and Kant requires to every science and that is thus an essential element of the mathematical method for Wolff and a characteristic of mathematics for Kant. Moreover, definitions should be placed at the beginning according to both Kant's account of mathematical demonstrations and Wolff's mathematical method. We have also seen that Wolff's account of the arbitrary determination of a concept anticipates in some respects Kant's pre-critical and critical descriptions of the synthetic definitions of mathematics.

These elements of continuity notwithstanding, the differences are much broader: both in the *Prize Essay* and the *Critique of Pure Reason*, Kant maintains that in mathematical proofs definitions are necessarily synthetic, while for Wolff the definitions of concepts at the beginning of demonstrations are essentially analytic. Even though the arbitrary determination of concepts anticipates some aspects of Kant's synthetic definitions, it is only one possible method of obtaining concepts according to Wolff's mathematical method. Other methods he allows room for, like the method of reflection, seem to describe concepts given in experience, whose use for Kant cannot be permitted in mathematical proofs. Moreover, Kant's critical account of synthetic definitions is relevantly different from Wolff's arbitrary determination of concepts, insofar as it specifies the conditions for obtaining this kind of definition in the possibility of a construction in pure intuition. A further relevant difference lies in their accounts of the steps of a demonstration. According to Wolff's mathematical method, these steps rest only on the principle of non-contradiction. By contrast, for the critical Kant, mathematical proofs essentially involve a construction in intuition at every step and they cannot be reduced to the simple application of the principle of non-contradiction.

We can thus conclude that Wolff's account of the mathematical method differs from Kant's views on the method of mathematics in many respects, especially if Kant's critical position is taken into account. While these differences partially explain why for Kant mathematical procedures cannot be applied in philosophy, they reinforce our claim that when Kant complains that Wolff should not have applied the mathematical method to philosophy, he does not attack anything

---

[27] A proposition which of course he thought was necessarily true.

substantial in Wolff's approach. Kant could not attribute to Wolff the mistake of applying to philosophy procedures which he considered to be a distinctive feature of his own account of mathematics. Now, this opens up the question whether underlying continuities between Wolff's and Kant's philosophical method can be detected once more substantial aspects of Wolff's mathematical method are taken into account. For, if Kant's criticisms concerning the application of the mathematical method only concern how the elements in a demonstration are ordered, it might be that these criticisms conceal some deeper similarities.

5. Kant on the Method of Philosophy

I have already stressed in the previous section that Kant considered systematicity a general requirement of science, and this of course applies also to philosophy. As long as we confine Wolff's intimation to proceed in every science according to the mathematical method to what we have identified as characteristic 3) of his method, that is, to the request to proceed systematically, Kant has nothing to object to Wolff, even though we have to keep in mind that Kant does not think that systematicity is only obtainable by means of a deductive derivation.[28] As far as characteristic 3) of Wolff's mathematical method is concerned, Kant would therefore at least agree with Wolff on the requirement that philosophy should be systematic.

The relevant difference between Kant's and Wolff's account of the method we should use in philosophy seems to lie in their claims about definitions. As we have seen, Wolff claims with regard to characteristic 1) of the mathematical method that definitions of concepts should always come at the beginning of a science. By contrast, Kant claims that in philosophy we cannot start with definitions, because we cannot be in possession of clear and distinct concepts at the very beginning (cf. KrV: A 727ff./B 755ff.). In philosophy we always start with concepts confusedly given to us and we try to clarify them in the process of our investigation, without the possibility of being sure that the definitions we thus develop are really correct and exhaustive.[29]

Here a clarification is required: for Kant concepts can be given either empirically or a priori and philosophy has to do with the latter.[30] A priori given concepts are for example substance, cause, right, etc. They are concept that we cannot arbitrarily obtain through construction, but that nonetheless are not inductively derivable from experience. Philosophy has the task to clarify these

---

[28] As I have already stressed in the previous section, Kant identifies systematicity also as a requirement of empirical sciences (cf. KGS: 4, 648ff.), even though these sciences of course are not deductive.

[29] This seems to agree with the view defended by Merritt ('Analysis in the *Critique of Pure Reason*,' *Kantian Review*, 12 (2007, 61-89), who argues that much in the *Critique* is obtained through conceptual analysis.

[30] Kant distinguishes between given concepts and concepts that are made. Both kinds of concepts can be either a priori or a posteriori. Mathematical concepts are concepts that are made a priori, whereas philosophical concepts are concepts given a priori. Cf. KGS: 9, 93, 141-2; 24, 756-9, 914, 917-8.

concepts, but it cannot ever be sure, unlike mathematics, that it has reached an exhaustive definition:

[S]trictly speaking no concept given *a priori* can be defined, e.g., substance, cause, right, equity, etc. For I can never be certain that the distinct representation of a (still confused) given concept has been exhaustively developed unless I know that it is adequate to the object. But since the concept of the latter, as it is given, can contain many obscure representations, which we pass by in our analysis though we always use them in application, the exhaustiveness of the analysis of my concept is always doubtful, and by many appropriate examples can only be made probably but never apodictically certain (KrV: A 728/B 757).

It is thus certainly true that Wolff and Kant advance different claims about the place of definitions in a philosophical investigation. However, we must keep in mind that Kant, both in the pre-critical and critical periods, stressed that only in mathematics can we have definitions at the very beginning because he thought that only for concepts arbitrarily obtained through synthesis can we be sure that our definition is correct and exhaustive. By contrast, Wolff thought that concepts obtained by means of other methods, including reflection and abstraction, could also be made distinct and complete. Thus, in Wolff's own framework, definitions of concepts that are not arbitrarily obtained can be placed at the very beginning of a science. This seems to imply that Wolff could place at the beginning of a philosophical investigation definitions of concepts that were first confusedly given to us. As we saw, Kant's criticism of Wolff's application of mathematical procedures was mainly directed against the way in which he organized the elements of a philosophical proof. Kant was right in emphasizing this difference between their views. However, this superficial dissimilarity in fact conceals some deeper continuity in their accounts of philosophical definitions. They both thought that in philosophy we need to start with analyses of given concepts. I will investigate this problem in the next section.

Now turning to characteristic 2) of Wolff's method, we have seen that Wolff thought that the steps of a demonstration rested on the principle of non-contradiction. The pre-critical Kant seems to hold a similar view, where he however distinguishes between the role played by the principles of identity and non-contradiction (cf. KGS: 2, 60-1). By contrast, the critical Kant thinks that philosophical arguments often, but not always, proceed this way. Accordingly, in the *Critique of Pure Reason* Kant stresses that 'criticism is not opposed to the dogmatic procedure of reason,' but to dogmatism, where the latter is 'the dogmatic procedure of pure reason, without an antecedent critique of its own capacity' (KrV: B xxxv). Now, Kant often associates the dogmatic method to Wolff (cf. A 856/B 884) and he describes it by saying that it 'lays down as a basis certain general and accepted propositions and infers the rest from them' (KGS: 29, 779). This suggests that what

distinguishes the critical from the dogmatic procedure is that the former legitimates the synthetic a priori principles that are then used as premises for further inferences in the latter. Thus, what remains 'dogmatic' in Kant's method seems to be the model of derivation of further consequences from given principles, a model that appears to be deductive, given its association with Wolff. If this is true, it means that for Kant the dogmatic procedure of metaphysics (that is, the science that is made possible by the completion of the critical task) is based simply on the application of the principle of non-contradiction, while it accepts as given synthetic a priori principles demonstrated by the critique. As I have suggested in section 2, when Kant, in the B Preface, stresses that the future system of metaphysics should follow Wolff's method, he is probably also making a similar point.

But what about the demonstrations that we find in the *Critique of Pure Reason*? These do not seem to be reducible to an application of the principle of non-contradiction, since they must prove the validity of transcendental synthetic a priori propositions. A justification of such propositions needs to show that in certain cases we can a priori 'go beyond' the simple meaning of the concepts involved (and the consequences we can logically derive from it), where it seems that a proof simply based on conceptual analysis and syllogisms could not do the trick. Accordingly, in the Discipline of Pure Reason, Kant argues that '[i]n the transcendental logic […] although of course we can never immediately go beyond the content of the concept which is given to us, nevertheless we can still cognize the law of the connection with other things completely *a priori*, although in relation to a third thing, namely possible experience, but still *a priori*' (KrV: A 766/B 794).

In this context, a clarification on two issues is in order. First, we need to understand how a proof of the validity of a transcendental synthetic a priori principle looks like according to Kant. Second, we need to better explain how critique and metaphysics are related to one another. Regarding the first point, Kant sometimes describes the justification of synthetic a priori principles that we find in the first *Critique* as involving a particular kind of 'analysis.' For example, in the Introduction, he claims that the *Critique* takes 'the analysis only as far as is indispensably necessary in order to provide insight into the principles of *a priori* synthesis in their entire scope' (KrV: A 12/B 25-6). It is difficult to understand what Kant means by analysis in this context. It seems implausible that he means conceptual analysis, for the latter would be able to show relationships between concepts that rest solely on the principle of non-contradiction, but it would not show how we can, to use Kant's expression, a priori 'go beyond' the meaning of the concepts involved. I take it that what Kant means by analysis here is something different. It is not simply the analysis of concepts, but the analysis of the use of some concepts in some judgments, where these judgments, without being analytic, nonetheless display a necessity in our cognition that we cannot set aside.

While through conceptual analysis we can clarify the meaning of the concepts involved, like for example cause, substance, etc., it is through this 'analysis' in a broader sense – which we might call transcendental analysis – that we show what enables us to use these concepts a priori in synthetic judgments. So, the method of the critique seems to involve both conceptual analysis, because we need to clarify what we can analytically derive from the concepts in questions,[31] and transcendental analysis, because we need to see what enables us to use these concepts in synthetic a priori judgments. Of course, this does not explain what transcendental analysis is, but this is not my purpose here. What is relevant in the context of this section is that transcendental analysis is not reducible to the simple application of the principle of non-contradiction. Moreover, it seems to starts by taking the use of some concepts in synthetic a priori judgments as given (cf. KrV: B 20), while it asks how this use is possible and justified.

Now turning to the relationship between critique and metaphysics, I think that a passage from the third *Critique* might be helpful:[32]

Thus the principle of the cognition of bodies as substances and as alterable substances is transcendental if what is meant by that is that their alteration must have a cause; it is metaphysical, however, if what is meant by that is that their alteration must have an external cause: for in the first case the body may be conceived of only through ontological predicates (pure concepts of the understanding), e.g., as substance, in order for the proposition to be cognized *a priori*; in the second case, however, the empirical concept of a body (as a movable thing in space) must be made the ground of this proposition, from which, however, it can then be understood fully *a priori* that the latter predicate (of motion only through an external cause) applies to the body (KGS: 5, 181).

Kant introduces here a distinction between transcendental and metaphysical principles. These are different because in the former we do not take as given any empirical concept of an object. Rather, we consider the object only as an object of possible experience in general which, as such, can be thought by means of the categories. Insofar as this object can be thought through the categories, we can use synthetic a priori judgments vindicated by the critique to judge upon it. By contrast, a metaphysical principle would not consider objects only as objects of possible experience in general, but would instead attribute to these objects further characteristics which depend on a partly empirical concept. Once this 'thicker' concept of the object is introduced, we obtain metaphysical

---

[31] Messina ('Conceptual Analysis and the Essence of Space: Kant's Metaphysical Exposition Revisited' ['Conceptual Analysis and the Essence of Space'] *Archiv für Geschichte der Philosophie*, 97 (2015), 416-57) well clarifies how in the *Critique of Pure Reason* this conceptual analysis is performed for the concept of space.

[32] I will here limit my attention to the relationship between critique and metaphysics in theoretical philosophy. It seems to me that giving an account of this relationship in practical philosophy is further complicated by the fact that the synthetic a priori principle identified by the *Critique or Practical Reason* is not described as a transcendental principle.

principles by specifying the synthetic a priori principles vindicated by the critique for the object so defined. In doing this, however, we do not introduce completely new synthetic a priori principles. Rather, we assume the synthetic a priori principles vindicated by the critique as given and we derive the consequences that follow deductively from them when a 'thicker' concept of the object is assumed. This thicker concept of the object seems to be obtainable through conceptual analysis.

What does this all mean for our comparison between Kant's and Wolff's philosophical methods? As we have seen, one of the main tasks of the critique of pure reason is that of clarifying how certain synthetic a priori judgments are possible. The reason why we need this clarification is that a number of these judgments appears to have an undisputed validity in some domains – as for example the judgment saying that every effect has a cause –, but then give rise to unsolvable disputes when used to derive various metaphysical claims. For this reason, Kant maintains that philosophy, before venturing in any metaphysical speculation based on such synthetic a priori judgments, should first clarify the conditions to use a priori given concepts in synthetic a priori judgments of this kind.[33] As is well known, in the *Critique of Pure Reason*, the identification of these conditions rests on the indication of the domain in which these synthetic a priori judgments are valid, that is, the domain of possible experience.

In section 2 we observed that Kant criticized Wolff for considering any philosophical truth a conceptual truth, that is, a proposition derivable through only analysis and syllogisms. In section 3 I suggested that Kant is right in attributing this view to Wolff. Now, for Kant, a consequence of Wolff's position is that synthetic a priori judgments, like for example the principle of sufficient reason, are treated as if they are analytic (cf. KGS: 4, 270),[34] as if they are analytically derivable from definitions of concepts.[35] In so doing, Wolff then built arguments on these judgments without respecting their conditions of valid application. This of course marks a relevant difference between what Wolff and Kant prescribe to philosophers, one that Kant was right in pointing out. Wolff considered every judgment in philosophy to be based (analytically) on definitions, while the further steps of a philosophical proof had to rest on syllogisms based on the principle of non-contradiction.

---

[33] Here, it is interesting to note that for the critical Kant the conditions of application of mathematical concepts in mathematical synthetic a priori judgments can be made immediately evident, insofar as each of these judgments rests on the construction of concepts in intuition. When we thus attribute to a mathematical concept properties that were not analytically derivable from its definition, we can be certain that our attribution is correct because our mathematical construction provides immediate evidence that this is the case (cf. KrV: A 736-7/B 764-5).

[34] 'A great part, perhaps the greatest part, of the business of our reason consists in analyses of the concepts that we already have of objects. […] Now since this procedure does yield a real *a priori* cognition, which makes secure and useful progress, reason, without itself noticing it, under these pretenses surreptitiously makes assertions of quite another sort, in which reason adds something entirely alien to given concepts and indeed does so *a priori*, without one knowing how it was able to do this and without such a question even being allowed to come to mind' (KrV: B 9-10).

[35] Accordingly, Kant stresses that the principles identified in the 'Analogies of Experience' could not be obtained dogmatically from mere concepts, a method he often associated with Wolff. These principles could only be justified in connection to the conditions of time determination for the objects given to us in possible experience (KrV: A 216-7/B 263-4).

By contrast, for Kant, many judgments that we use as premises in philosophy are in fact synthetic a priori and for this reason require the individuation of the conditions of application of the concepts they employ.[36]

From this comparison between the method that Kant proposes for philosophy and Wolff's mathematical method we can thus conclude that there are some similarities between the procedures of philosophical argumentation that the two thinkers recommend. They both think that philosophy should be systematic. In the *Critique of Pure Reason* Kant would also still concede that much in philosophy can be obtained by the simple application of the principle of non-contradiction. Both the critique of pure reason and the metaphysics that it makes possible obtain their concepts by analysis. Moreover, metaphysics proper seems to proceed deductively for Kant. However, it assumes as given synthetic a priori propositions. With respect to the latter, the critique has the double task of justifying them and of clarifying their conditions of valid application. It is here that a first relevant difference between Wolff's and Kant's accounts of the method of philosophy is to be found, since Wolff treated all philosophical truths as if they were conceptual truths. Consequently, he did not require a special kind of demonstration for synthetic a priori principles. By contrast, Kant thought that these principles needed a special kind of proof which does not seem to be reducible to an application of the principle of non-contradiction. Another difference between Wolff's and Kant's account of philosophical arguing, taking into consideration both the pre-critical and the critical writings, is the fact that the former maintains that definitions should always be placed at the beginning of an investigation, while Kant claimed that this is impossible in philosophy. However, we have seen that they put very different requirements on the definitions that they think can be placed at the beginning of a philosophical proof. This fact conceals deeper similarities between the definitions they use in their respective philosophical systems.

6. Analytic Definitions in Wolff's Mathematical Method

As we saw, Wolff did not think that only synthetically (or arbitrarily) obtained concepts could be defined at the beginning of a scientific proof. Rather, at the beginning of a demonstration we can also use definitions derived from concepts that are first confusedly given to us. This is the case because, unlike Kant, Wolff thought it was possible to obtain correct and exhaustive definitions by means of the analysis of confusedly given concepts. In fact, even though Wolff recognizes the possibility to obtain concepts by means of an arbitrary determination, for him definitions are for the most part definitions of given concepts, and of concepts that are *empirically* given indeed.[37] In this

---

[36] This is why we need to ask: 'How are synthetic judgments *a priori* possible?' (KrV: B 19).
[37] Engfer (*Philosophie als Analysis*, 245, 254-5; 'Zur Bedeutung Wolff,' 58-9) has insisted on this characteristic of Wolff's definitions. Cataldi Madonna (*Christian Wolff und das System des klassischen Rationalismus* (Hildesheim:

way, even if they figure at the very beginning, they can result from a process of analysis that renders unclear concepts clear and distinct. Thus, Wolff claims in the *German Logic* that in order to develop a distinct concept, for example of the will, we should first analyse particular cases in which we have used that concept. He stresses: 'if we want to have a distinct concept of the will, then we must represent an example in which we have wanted something for the first time, and give accurate attention to what happens in our soul until we want it' (*German Logic*, GW: div. 1, vol. 1, 133). To illustrate this characteristic of Wolff's method I will here briefly introduce one aspect of his account of the method of philosophy in the *Preliminary Discourse*.[38] In particular, I will discuss his claim that philosophical and mathematical cognitions rest on historical cognition.

In Wolff's vocabulary, historical cognition is cognition of facts. It is 'cognition of those things which are and occur either in the material world or in immaterial substances' (*Preliminary Discourse*, GW: div. 2, vol. 1.1, § 3), whereas philosophy is 'the cognition of the reason of things which are and occur' (*Preliminary Discourse*, GW: div. 2, vol. 1.1, § 6). Wolff completes this picture by defining mathematics as the 'cognition of the quantity of things' (*Preliminary Discourse*, GW: div. 2, vol. 1.1, § 14).[39] Leaving aside Wolff's discussion of mathematics, it is here interesting to focus on the relationship between historical and philosophical cognition. In this context Wolff argues:

Historical cognition provides the foundation for philosophical cognition insofar as experience establishes those things from which the reason can be given for other things which are and occur, or can occur (*Preliminary Discourse*, GW: div. 2, vol. 1.1, § 10).

Philosophical cognition thus depends on historical cognition for its inquiries into the reasons of things. Besides, in order to obtain philosophical cognition of anything, we must start by defining our concepts, where the analysis of concepts and their essential marks is an essential step. This suggests that the analysis of concepts given in historical cognition is an essential step in the search for the philosophical reasons of things. Even though Wolff recognizes the possibility to obtain

---

Olms, 2001), chs. 1, 2; 'Erfahrung und Intuition in der Philosophie von Christian Wolff,' in J. Stolzenberg, O. P., *Christian Wolff und die europäische Aufklärung*, (Hildesheim: Olms, 2007), vol. 2, 173-93) has emphasized the role of experience in the formation of philosophical definitions. Rudolph ('Das Fundament des Wolffschen Systems der Philosophie,' in J. Stolzenberg, O. P., *Christian Wolff und die europäische Aufklärung*, (Hildesheim: Olms, 2007), vol. 2, 15-24) also recognizes the role of experience in Wolff's method and he connects it to a kind of coherentism, since it is not a single experience, but an 'Erfahrungszusammenhang,' that could count as a premise in Wolff's proofs. Concepts could thus be first recognized as given in experience and then the role of philosophy could be considered that of obtaining definitions and further propositions by means of conceptual analysis and syllogisms.

[38] *Discursus praeliminaris de philosophia in genere*.

[39] This definition of mathematical cognition marks another difference with Kant. In the *Critique of Pure Reason*, Kant argues that those who stress that philosophical and mathematical cognition are distinguished because the former deals with qualities and the latter with quantities of things 'have taken the effect for the cause' (KrV: A 714/B 742).

concepts through an arbitrary determination, this way of gaining concepts is only secondary, where the main way in which concepts are given to us is through experience.[40] If this is true, it means that philosophy must begin with concepts that are confusedly given in experience according to Wolff.

It must here be noted that Kant argued that philosophy should start with concepts given a priori, whereas here Wolff seems to refer to concepts empirically given. In this context, we must keep in mind that Kant and Wolff had different understandings of the distinction between a priori and a posteriori cognitions. For Wolff, unlike for Kant, a priori does not mean unjustifiable through experience. For him, an a priori cognition is a cognition that is not directly derived from experience, but depends on reflection and reasoning (*Latin Logic*, GW: div. 2, vol. 1.2, § 710ff.). Still, this does not mean that it cannot rest indirectly on experience. Therefore, we cannot really compare what Kant says on a priori given concepts with Wolff's emphasis on empirically given concepts. The most we can say is that the distinction between a priori and a posteriori cognition was not as relevant to Wolff as it was to Kant.

Nevertheless, both Kant and Wolff think that in philosophy we should start by analysing concepts that are given to us, where there seems to be an important continuity between their accounts of analysis in this regard, taking in consideration both the pre-critical and the critical Kant. Of course Kant developed the distinction between the analytic and the synthetic in relevant ways with respect to Wolff. As we have seen, unlike Wolff, already in the pre-critical writings he applied the term 'synthetic' to the discussion of mathematical definitions. Moreover, he further specified his account of synthetic definitions in the critical period, when he also started to apply the distinction between the analytic and the synthetic to judgments. Without neglecting the importance of these novelties in Kant's use of the terms 'synthetic' and 'analytic,' we must also keep in mind that Kant, when he talks about the analysis of concepts both in his pre-critical and his critical writings, describes a process of clarification of marks (cf. KrV: A 730/B 758), which, as we have seen, was also the way in which Wolff treated the topic.[41]

---

[40] On the secondariness of other methods of obtaining concepts with respect to reflection see: Engfer, *Philosophie als Analysis*, 254.

[41] In this respect, de Jong ('Kant's Analytic Judgments and the Traditional Theory of Concepts,' *Journal of the History of Philosophy*, 33 (1995), 613-41) has emphasized that Kant's notion of analyticity should be read on the background of the early modern discussion of the grades of clarity of concepts, which Wolff contributed to develop in relevant ways. On the relationship between Kant's account of analyticity and the Wolffian tradition see also: L. Anderson, 'The Wolffian Paradigm and its Discontents: Kant's Containment Definition of Analyticity in Historical Context,' *Archiv für Geschichte der Philosophie*, 87 (2005), 22-74. Other scholars, like Messina (['Conceptual Analysis and the Essence of Space,' 438-40) have argued that Kant's account of the analysis of concepts owes as much to Crusius as it does to Wolff. In particular, Kant, like Crusius and unlike Wolff, would maintain that analysis should not always employ concepts that are more abstract than the analysandum. Kant would thus use Crusius to broaden Wolff's conception of analysis. This is an interesting point that needs to be investigated further, but it would deviate too much from the focus of this paper. What all these thinkers seem to agree on is the idea that philosophical inquiry should start with the analysis of given concepts.

Thus, even though Wolff claims that philosophy, in following the mathematical method, should start from definitions, he also maintains that these definitions in most of the cases should be obtained from the analysis and clarification of concepts that are confusedly given to us in experience. This seems to be really close to Kant's claim that in philosophy we should start by analysing concepts that are given to us, where this applies to philosophy both in its critical and metaphysical parts. What is different is Wolff's confidence that by means of an analytic procedure of this kind we could obtain definitions which are both correct and exhaustive, a confidence that is lacking in Kant.

7. Conclusion

In this paper I have shown that Kant's critique of Wolff's application of the mathematical method to philosophy can be misleading in various ways. On the one hand, this critique is sometimes difficult to square with other remarks that Kant makes on Wolff's method. On the other, it conceals important continuities between Wolff's and Kant's account of philosophical argument, especially regarding their accounts of definitions. When Kant's criticism of Wolff's application of the mathematical method is analysed in the context of other relevant remarks that Kant makes on Wolff's approach, it becomes apparent that this criticism does not pick up anything substantial in Wolff's method. Rather, it is directed against the way in which Wolff orders the elements of a philosophical proof. In this way, Kant does not attribute to Wolff the attempt to introduce in philosophy the synthetic procedures that he saw as characteristic of mathematics. Instead, he simply accused him of wrongly starting with definitions. Besides this critique, he advanced a more fundamental one: he lamented that Wolff treated all philosophical truths as conceptual truths, where for Kant this resulted in the use of synthetic principles as if they were analytic. An examination of Wolff's account of the mathematical method and a comparison with Kant's account of mathematical and philosophical investigations shows that Kant's criticisms, when properly understood, are justified, especially in the case of the latter charge. However, Kant's criticisms also conceal important elements of continuity between Wolff's and Kant's views on the method of philosophy. This can be maintained, with the required specifications, for both the pre-critical and the critical Kant. Wolff's use of the mathematical method in philosophy prescribed systematicity and relied for the most part on methods of definition based on the analysis of given concepts. These are both characteristics that we also find in Kant's pre-critical and critical accounts of the method of philosophy. Moreover, whereas the pre-critical Kant agrees with Wolff that philosophical demonstrations are always deductive, the critical Kant still thinks that a considerable part of philosophy is deductive. In this respect, however, in the *Critique of Pure Reason*, he is right in

pointing out a relevant difference between him and Wolff. Wolff considered the judgments used as premises in philosophical proofs as analytically derived from definitions. Philosophy could then derive conclusions from these premises by simply applying the principle of non-contradiction. However, we saw that for the critical Kant many of the judgments that we (just as Wolff) use in philosophy are in fact synthetic a priori, and need for this reason a specification of the conditions of application of a priori concepts in such judgments. Only in this way can we determine if we have made a legitimate use of these concepts and judgments.

Abbreviations to be added

KANT

KrV   *Kritik der reinen Vernunft* (First edition: Riga, 1781; second editon: Riga 1787).

KGS   *Kants gesammelte Schriften* (Berlin: De Gruyter, Reimer, 1900-).

LVII   Tillmann Pinder (ed.)*, Logik-Vorlesung, Unveröffentlichte Nachschriften II: Logik Hechsel, Warschauer Logik* (Hamburg: Meiner, 1998).