

# **Kant's Doctrine of Schemata**

By

Joseph L. Hunter

Thesis submitted to the faculty of  
Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

**MASTERS OF ARTS  
IN  
PHILOSOPHY**

**APPROVED:**

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Eric Watkins, Chair

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Roger Ariew

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Joseph C. Pitt

August 25, 1999  
Blacksburg, Virginia

**Keywords:** Kant, Schemata, Experience, Knowledge, Categories, Construction, Mathematics.

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### **(ABSTRACT)**

The following is a study of what may be the most puzzling and yet, at the same time, most significant aspect of Kant's system: his theory of schemata. I will argue that Kant's commentators have failed to make sense of this aspect of Kant's philosophy. A host of questions have been left unanswered, and the doctrine remains a puzzle. While this study is not an attempt to construct a complete, satisfying account of the doctrine, it should be seen as a step somewhere on the road of doing so, leaving much work to be done. I will contend that one way that we may shed light on Kant's doctrine of schemata is to reconsider the manner in which Kant employs schemata in his mathematics. His use of the schemata there may provide some inkling into the nature of transcendental schemata and, in doing so, provide some hints at how the transcendental schemata allow our representations of objects to be subsumed under the pure concepts of the understanding. In many ways, then, the aims of the study are modest: instead of a grand-scale interpretation of Kant's philosophy, a detailed textual analysis and interpretation are presented of his doctrine of schemata. Instead of providing definitive answers, I will suggest clues as to how to begin to answer the questions that previous commentators have left unanswered about the doctrine.

## ACKNOWLEDGEMENTS

Completing this thesis would not have been possible without several individuals that I would like to here acknowledge and to express my gratitude towards. I am extremely grateful to have received the support and guidance of my family, my friend, Camika Lynn Bailey, the faculty of the Department of Philosophy at The University of Dayton, and the faculty and staff of the Philosophy Department of Virginia Polytechnic Institute and State University. While it is not possible to adequately describe how deeply I am indebted to these people, I would like to impart here the role that they have played in my professional and personal development.

I would first like to thank my mother, Sharon L. Hunter, and my brother, Jeffrey L. Hunter. They have been with me, giving me a world of support and love, in everything that I have ever done. There are no words to describe how much love and respect I have for each of them.

Next, I would like to express my gratitude to Camika Lynn Bailey. I have only known Camika for a year now, but she has quickly become the truest friend and dearest companion that I have ever had the privilege to have. She has stood behind me in good times and in bad.

I would also like to thank the members of the philosophy department at The University of Dayton. The scholars that I had the fortune to work with there while completing my undergraduate degree continue to prove that they are invaluable in their influence. Professors Patricia Johnson, Daniel Fouke, John Inglis, and Kurt Mosser, shared with me a love that they have with Philosophy that I now will always possess. I am proud to call each of these scholars my teachers and my friends.

I would like to express a special gratitude to the professors of Philosophy at Virginia Polytechnic Institute and State University. My admiration and respect run very deep for professors Joseph Pitt, Roger Ariew, Harlan Miller, and Patrick Croskery. They have each, in their own way, been there for me (when I needed it the most) and taught me volumes full. It was an honor to work with them and to get to know them personally.

Finally, I would like to give thanks to Professor Eric Watkins. As my advisor and the professor that I have worked the closest with in my academic career, I cannot sufficiently describe how gracious he has been. No one could have been more patient, understanding, and considerate as Eric. There is truly no one that I respect as much as a scholar, and there are few that I respect as much as a person. In writing this thesis and in working with Eric over the course of the last two years, I learned more than I had ever aspired to. He not only helped me to become a better thinker and writer (though there is still a world's worth of room for improvement), he also taught me more than I would have ever expected about myself. I am forever in his debt for many things. I look forward to a much longer relationship with Eric as we part professional paths.

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## **CHAPTER ONE: INTRODUCTORY REMARKS**

Immanuel Kant falls into a long tradition of philosophers who inquired into the relation between thinking and being. Yet Kant took quite a different approach to the inquiry than that of his predecessors. Western philosophers had tried to solve the problem of the possible heterogeneity and identity between thinking and being by suggesting either that reality is a copy of an ideal world (Leibniz) or that our conceptual ideas are an abstraction from sensuous experience (Hume, Locke). Instead Kant suggests that our conceptual thinking should be connected to reality and that our sensuous experience should be subject to the organizing principles of the intellect. In his words: "Thoughts without content are empty, intuitions without concepts are blind" (the *Critique of Pure Reason*, A51/B75).<sup>1</sup>

On Kant's view, objectivity is rooted in the synthetic character of human cognition, but it has its foothold in reality itself. However, reality does not, in itself, render any objective knowledge. Reality must be determined by our cognitive activity in order to be an object of possible experience. That is to say, according to Kant, experience demands an intellectual *and* a sensible component. As Kant puts it: "It is...just as necessary to make our concepts sensible, that is, to add the object to them in intuition, as to make our intuitions intelligible, that is, to bring them under concepts" (ibid.). In this spirit, Kant charges Leibniz with the "intellectualization" of appearances and Locke with the "sensualization" of all of the concepts of the understanding (C1,

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<sup>1</sup> All quotations from the *Critique of Pure Reason* are based on the translation of Norman Kemp Smith (*Immanuel Kant's Critique of Pure Reason*, 2<sup>nd</sup> Edition. London: Macmillan, 1933). "C1" will denote such references, followed by the pagination of the original text that Smith includes.

A271/B327). Both the understanding *and* sensibility are necessary for experience. The two faculties can yield objectively valid judgments of things only in conjunction with each other.

Yet while Kant is clear that these two faculties must work together, it is not clear how. Kant's doctrine of schematism, largely developed in the "Schematism of the Pure Concepts of the Understanding" chapter of the *Critique of Pure Reason*, was devised in order to address this worry. With it, he attempts to show how our conceptual framework (the categories) is related to reality and how reality (as appearance) is organized and determined as the possible object of experience. However, at the most important steps in elucidating this apparently weighty facet of Kant's system, his language and arguments become obscure and it is difficult to grasp the real meaning he intends.

In fact, this facet of Kant's system is notorious for its opaqueness and obscurity. F. H. Jacobi says that Kant's doctrine of schematism is the "most wonderful and most mysterious of all unfathomable mysteries and wonders."<sup>2</sup> Schopenhauer characterized the doctrine as a curiosity "which is famous for its profound darkness, because nobody has yet to make sense of it."<sup>3</sup> And, at the same time, it is one of the most important parts of his system. Hegel praised the Schematism chapter as "one of the finest pages of Kant's philosophy."<sup>4</sup> Heidegger regarded the chapter as "the essential part" of the whole of

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<sup>2</sup> Jacobi, F. H. *Werke*. Requoted in: E. Shaper. "Kant's Schematism Reconsidered." Review of *Metaphysics* 18, (1964): Page 270.

<sup>3</sup> Schopenhauer. "Critique of Kant's Philosophy." *The World as Will and Representation*. Trans. E.F.J Payne. New York, NY: Dover Publications, 1966. Page 552.

<sup>4</sup> Hegel. *Philosophy of Right*. Trans. T. M. Knox. Oxford: Clarendon press, 1958. Page 115.

Kant's work.<sup>5</sup> Even Kant himself regards it as a key part of his system and an increasing number of references to 'schema' and 'schematism' appear in the *Opus Postumum*.<sup>6</sup>

The following is a study of what may be the most puzzling and yet, at the same time, most significant aspect of Kant's system: his theory of schemata. I will argue that Kant's commentators have failed to make sense of this aspect of Kant's philosophy. A host of questions have been left unanswered, and the doctrine remains a puzzle. While this study is not an attempt to construct a complete, satisfying account of the doctrine, it should be seen as a step somewhere on the road of doing so, leaving much work to be done. I will contend that one way that we may shed light on Kant's doctrine of schemata is to reconsider the manner in which Kant employs schemata in his mathematics. His use of the schemata there may provide some inkling into the nature of transcendental schemata and, in doing so, provide some hints at how the transcendental schemata allow our representations of objects to be subsumed under the pure concepts of the understanding. In many ways, then, the aims of the study are modest: instead of a grand-scale interpretation of Kant's philosophy, a detailed textual analysis and interpretation are presented of his doctrine of schemata.<sup>7</sup> Instead of providing definitive answers, I will suggest clues as to how to begin to answer the questions that previous commentators have left unanswered about the doctrine.

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<sup>5</sup> Heidegger. *Kant and the Problem of Metaphysics*. Trans. James Churchill. Bloomington, IN: U Indiana Press, 1962. Page 108.

<sup>6</sup> See: Kant, I. *Opus Postumum*. Trans. Eckart Forster and Michael Rosen.. New York: Cambridge University Press, 1993. AAXX 68, 90, 174, 291, 367; AA XXI 20, 25, 331, 494-5, etc.

<sup>7</sup> However, this study does not deal with all aspect of Kant's theory of schemata. The study is restricted to Kant's theory of schemata as related to his theoretical philosophy. For Kant speaks of the idea of schema not only in the first *Critique* but also in the *Critique of Practical Reason* and the *Critique of Judgment*. He even says in a passage of *Religion within the Limits of Reason Alone* that the church is the "schema" of an invisible Kingdom of God on earth (A 188).

## **CHAPTER TWO**

### **METAPHYSICS, TRANSCENDENTAL PHILOSOPHY, AND SCHEMATA**

For the present study, I would like to consider how Kant's theory of schemata might fit into his theoretical philosophy, and thus his metaphysics, considered as a whole. I pay particular attention to two things: first, Kant's conception of metaphysics as a science; and, second, the role of transcendental philosophy for the foundation of metaphysics as science in providing an analysis of the nature and limits of human experience. In this chapter, I present the general framework in which Kant's doctrine of schemata is conceived.

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Kant regards all efforts up to his time to establish certainty in metaphysics as failures. The failure of traditional metaphysics was due to the very nature of reason. In the beginning of the Preface to the first *Critique*, Kant says:

Human reason has this peculiar fate that in one species of its knowledge it is burdened by questions which, as prescribed by the very nature of reason itself, it is not able to ignore, but which, as transcending all powers, it is also not able to answer (C1, A vii.).

Yet, human reason has a tendency to transcend its possible area of experience and to fall into darkness and contradiction. This is due to the fact that the "principles of which human reason is making use transcend the limits of experience" so they "are no longer subject to any empirical test" (C1, A viii). Considering metaphysical questions is not for the sake of recreation but, rather,

it is deeply rooted in the very disposition of the faculty of reason (*Prolegomena*, Section 60).<sup>8</sup> These questions have their origin in a human ‘need’ (C1, B 22) that ultimately leads one into illusions if one tried to satisfy this need without discipline (*ibid.*).

Metaphysics as a natural disposition provides materials in which Kant seeks the ground of the possibility/impossibility of metaphysics as a *certain science*. He learns, from considering mathematics and physics (both of which have “entered the secure path of science”), that there must be a change in the way of thinking. This is not to say that metaphysics must follow the particular models or methods of mathematics and physics. Rather, this means that metaphysics could be capable of being made a science if a change in our point of view occurs. Kant expresses this idea in the following way:

Hitherto it has been assumed that all of our knowledge must conform to objects. But all attempts to extend our knowledge of objects by establishing something in regard to them *a priori*, by means of concepts have, on this assumption, ended in failure. We must therefore make trial whether we may not have more success in the tasks of metaphysics, if we suppose that object must conform to our knowledge. This would agree better with what is desired, namely, that it should be possible to have knowledge of objects *a priori*, determining something in regard to them prior to their being given (C1, B xvi-xvii.).

Here, Kant is explaining that the *apparent* characteristics of reality are due to the mind of the knower. We can only know *a priori* of things that which we ourselves put into them (C1, Bxiii.). Regarding the possibility of

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<sup>8</sup> All references from the *Prolegomena* are to: Kant, I. *Prolegomena to Any Future Metaphysics*. Trans. James W. Ellington. Indiana: Hackett Publishing Company, 1985. “PR” will denote such references, followed by the pagination.

metaphysics as science, Kant here argues that the foundation of metaphysics as science could be laid not through the analysis and investigation of objects but through the investigation of human reason itself. After this inward turn, the epistemic subject no longer stays a mere spectator. Moreover, objects no longer sit idle, simply pressing themselves upon us. Our conceptual framework transforms them. From these considerations, Kant is optimistic about metaphysics following the secure path of a science at least in its “first part,” i.e., in ontology (C1, Bxviii). He says this because the “new point of view enables us to explain how there can be cognition *a priori*, and, in addition, to furnish satisfactory proofs of the laws which form the *a priori* basis of nature (C1, Bxix).

Thus, it can be said that (transcendental) philosophy, for Kant, is the analysis of the *limits* of human cognition (C1, Axii). In the Transcendental Analytic section of the first *Critique*, Kant describes the constitution of human cognition and, so with it, explains these limits.

According to Kant, cognition must first consist of passively received stimuli from objects. These stimuli, ‘empirical intuitions,’ are structured according to the ‘pure forms of intuition.’ These pure forms of intuition (space and time) allow the manifold of stimuli, the rhapsody of ‘stuff’ that we have received from outside of us, to take on a certain spatio-temporal character. Once structured as such it is ‘grasped’ by us, intellectually, as stimuli of ‘something.’ This grasping is possible, on Kant’s account, because certain innate and fundamental concepts (the pure concepts of the understanding) are

applied to the passively received intuition. That is, we ‘understand’ the stimuli as something, e.g., as standing in a causal relationship. Experience requires both this intellectual (the pure concepts of the understanding) and sensible (the empirical intuition) component. This is the horizon of human experience/cognition.

In the “Schematism of the Pure Concepts of the Understanding” chapter of the first *Critique* (and the Analytic of Principles section of the text of which the Schematism chapter is a part) Kant focuses on how this application of the pure concepts of the understanding or categories to empirical intuitions occurs. Such a focus is significant because it is this application that makes cognition possible. Thus, we should expect a section that explains the particulars of that application to be quite weighty. The section is also substantial because Kant introduces a problem there that, as he indicates, would prevent him from demonstrating that the intellectual and sensible conditions for experience can work together, and thus such a failure would undermine or at least severely weaken his theory of knowledge. It seems that if he does not solve the problem, then he fails to show that we can have experience/knowledge.

The problem stems from the manner in which Kant derives the pure concepts of the understanding in the Metaphysical Deduction that shows they are purely logical in nature. They are abstract and universal. For example, Kant describes the pure concept of ‘substance’ as “that which is always a subject and never a predicate.” Intuitions, by contrast, stem from sensibility; and so they are sensible in nature. The categories and the intuitions that are to be brought under them for the purpose of experience do not seem at

all commensurate, and it seems as if they should be, since we must apply the former to the latter. As Paul Guyer puts the problem:

At this stage of the argument...[the pure concepts of the understanding] are merely logical forms and have not yet been cast in terms of properties or relations that can actually be manifested by objects as they are given to us through the forms of sensibility...[they] have thus far only been specified as correlates of the forms of judgment—that is, as propositional forms which the concepts and objects must embody if the propositional forms countenanced and required by general logic are to be applicable to them (Guyer, Page 162.).

The point here seems to be that the heterogeneity between the concepts and intuitions leaves open the question as to whether the application of the former to the latter is possible, as there is no manner at all in which they stand on common terms. After all, it is not as if we receive our empirical intuitions with labels attached so that we know which category could be applied to it. Similarly, our abstract concepts, e.g., "that which is a subject and never a predicate," do not include images to show us how to apply that concept to an intuition when we receive it.

Kant attempts to answer the problem by suggesting that it must be the case that it is not our categories per se that apply to intuition. It is a different mental representation that does. It is the categories after having been "schematized" by the imagination that apply as such. Once schematized, the concepts take on a different form. According to Kant, these representations mediate between our intuitions and the categories because they relate to both. That is, the schemata are thought to establish the homogeneity that is needed between the categories and intuitions. They do so in that they share a common feature with both of these other types of mental representations: time. It is in this way that they are akin to the pure concepts of the understanding, since both are pure/*a priori*.

And, since time is the pure form of all of our intuitions, the schemata are also akin to our empirical intuitions (which are always temporal).

The role of the transcendental schemata lies precisely in its unification of intuitions and the categories. By means of the transcendental schemata, according to Kant, we experience a spatio-temporal world and the categories obtain an objective reality, i.e., these objects accord with the categories. It can be said, then, that the schemata play a vital function in that they allow the two necessary ingredients of human cognition to collaborate.

Yet Kant's theory of schemata, the solution to the problem of the Schematism chapter, is anything but clear. I am not alone in thinking this, as indicated in my opening remarks. However, few scholars have given this issue much consideration and the section is easily dismissed. Or, as is more often the case, Kant's theory of schemata is simply ignored and abandoned as a puzzle.

I would argue instead that the theory is extremely obscure on many levels. It is not clear how, exactly, the transcendental schemata solve the problem that Kant introduces. How, exactly, do they provide a common ground between the pure concepts and intuitions allowing the former to be applied to the latter? How does application take place *through* the schemata? Even what Kant has in mind as this 'third type' of representation is unclear. He offers many descriptions throughout his work, some of which do not even seem compatible. From this obscurity, it seems that we can even ask whether he actually solves the chapter's problem at all. Further, as some have suggested, are we to be sure there is a problem of concept-application in the first place? Has Kant

illegitimately separated the question of the possession of the categories from the question of their use?<sup>9</sup>

### **CHAPTER THREE: INTERPRETATIONS OF KANT'S DOCTRINE OF SCHEMATA**

For the sake of completeness, before I become too involved in my study of Kant's theory of schemata, I would like to discuss some of the research that has been done on the topic by Kant's commentators. Surprisingly, relatively few scholars have carefully considered this weighty facet of Kant's theoretical philosophy. Jonathan Bennett (in *Kant's Analytic*), Paul Guyer (in *Kant and the Claims of Knowledge*), and Henry Allison (in *Kant's Transcendental Idealism: An Interpretation and Defense*) are among the commentators that have addressed the chapter other than superficially.<sup>10</sup> Because these scholars have dealt with Kant's ideas about the transcendental schemata, I would like to devote the third chapter of this study to addressing their ideas and highlighting the strengths and weaknesses of their interpretations.

#### **A. JONATHAN BENNETT**

I want to begin by discussing the ideas that Jonathan Bennett has about Kant's theory of schemata. In his *Kant's Analytic*, Bennett is clearly not sympathetic to this facet of Kant's theoretical thought. Though he has a reading that is appealing, he ultimately

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<sup>9</sup> Both Prichard (*Kant's Theory of Knowledge*. Oxford: Clarendon Press, 1909) and Warnock ("Concepts and Schematism." *Analysis* 8 (1949): Pages 77-82) suggest this.

<sup>10</sup> Allison, H. *Kant's Transcendental Idealism: An Interpretation and Defense*. New Haven: Yale University Press, 1980; Guyer, Paul. *Kant and the Claims of Knowledge*. New York: Cambridge

suggests that Kant does not solve the problem of concept application that he raises in the Schematism chapter. While I am not concerned to defend Kant's solution at this place in the study, I am concerned to show the weaknesses of Bennett's reading. I will do so after a presentation of his interpretation.

According to Bennett, the schemata are to be understood as a "representation of a universal procedure [(a rule)] of imagination in providing an image for a concept" (Page 141). He emphasizes the fact that the schemata allow for something to be provided, an image, which is an active process of the imagination. Kant's theory of schemata, according to Bennett, explains "how we are able to recognize, clarify, describe" objects (Page 143). If, for example, the object before us stands in a causal relationship, then "an adequate schema of the concept will generate...at least one image which corresponds closely enough to the object now before me to justify my going ahead" and saying that this object stands in a causal relationship (Page 143).<sup>11</sup>

Bennett criticizes this manner in which Kant understands concept-application. He says,

to insert an intermediary image between a concept and a putative instance of it is only to replace one concept application by two. For the single question 'Is that object a dog?' it substitutes the pair of questions "Does this image correspond to that object?" and "Is this image an image of a dog?" (Page 144).

There can be no account of concept-application as such, according to Bennett, since "the implementing of a *technique* requires the application of concepts" (Page 145, emphasis mine). Kant's mistake lies in intending to relate concepts to their *instances*. This notion

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University Press, 1987; Bennett, Jonathan. *Kant's Analytic*. New York: Cambridge University Press, 1966.

of a “*referential rule*,” to use Bennett’s term, is illegitimate, and Kant’s theory of schemata purports to describe how such rules are possible (Page 147). Thus, on Bennett’s reading, schemata are to be understood as a type of concept that correspond to one of the pure concepts of the understanding and simply have “the condition of temporality added” (Page 151).

In reply to this difficulty, Bennett suggests that underlying Kant's theory of schemata, there is a modest point that though “plagued with mistakes” might have been valuable (Page 152). This point is that the categories are extremely general concepts and cannot be applied to the empirical world *unless* they are accompanied by the application of other concepts as well. Since these will always include temporal ones, then we might as well adjoin temporality to each of the categories from the outset (Page 151). I take it that Bennett is expressing here the point that all rules must be non-referential, i.e., such that they do not attempt to relate concepts to something other than other concepts, to their instances.

Bennett's general reading of the Schematism chapter seems misguided to me. Kant introduces the chapter by saying "we must be able to show how pure concepts can be applicable to appearances" (C1, A138/B177). Thus Kant does seem to have in mind what Bennett calls "referential rules." After all, Kant has introduced the schemata to solve the very problem of how an abstract universal can apply to a concrete particular, the same problem that faced Berkeley. The problem that he is wrestling with is a legitimate problem, then, regardless of whether his solution is satisfying.

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<sup>11</sup> I think that even this way of speaking of concept-application in Kant’s theoretical philosophy is misguided.

However, the interpretation of Kant's Schematism chapter that underlies his criticism of Kant's position encounters an important difficulty. By saying that all of our concepts must be non-referential, i.e., that they cannot relate to something other than other concepts, Bennett seems to be avoiding the question of how abstract universals apply to concrete particulars. We do seem to make sense of our appearances in terms of causality, substance, etc., and Bennett seems hard-pressed to explain how we do this. Also, I think that Bennett's idea about their being a "modest point" that underlies Kant's "mistaken" theory of schemata is wrong. It does not seem correct to say that Kant is implying that the categories cannot be applied to the empirical world *unless* they are accompanied by the application of other concepts as well.

Moreover, if we look at the schemata as general concepts, which seems plausible given that Kant describes them as "*universal*" and as constituting an "*a priori* rule" (C1, A138/B177, emphasis mine), then two options seem plausible. Either Kant has in mind that we apply the categories along with or perhaps through the schemata, in which case, I am not sure why Bennett is disagreeing with Kant's ideas in the Schematism chapter. Or Kant has in mind that the schemata are a third type of representation, different from both the categories and our empirical intuitions, and so Kant would not be making the point that Bennett suggests that he does. That is, he would not have to resort to describing how one concept "applies" to or is alongside of another, for our pure concepts simply apply to our empirical intuitions via a third class of mediating representations, the schemata.

**B.**  
**HENRY ALLISON**

Another philosopher that has dealt with Kant's theory of schemata is Henry Allison. He devotes a chapter to Kant's theory of schemata in his groundbreaking text, *Kant's Transcendental Idealism: An Interpretation and Defense*. In the chapter, he suggests an interpretation of the theory of schemata whereby the schemata are best understood as pure, determined intuitions. I believe this is perhaps the most compelling reading that has been suggested, yet I also believe that it is open to the same damaging criticism as Bennett's reading.

In his book, Allison presents a wide range of ways in which Kant describes the schemata. Two seem most important for him. The first way is when he defines a schemata as a "formal and pure condition of sensibility to which the concept of understanding is restricted" (C1, A 140/B179). The second is when schemata are "the true and sole conditions under which these concepts obtain relation to objects and so possess significance." From these two passages, Allison offers that the schemata should be understood as pure, determinate intuitions. He argues that this reading is consistent with all of the ways in which Kant describes them, with Kant's theoretical philosophy considered more generally, and with several passages outside of the first *Critique* wherein Kant discusses the transcendental schemata (e.g., passages in *the Critique of Practical Reason* and the *Critique of Judgment*).

On Allison's interpretation, the schemata are determinate, or conceptualized, pure intuitions. But Allison distinguishes between two senses of "pure intuition." These two senses correspond to Kant's own distinction between space as a mere form of intuition or sensibility and an actual representation of space (as in geometry), which is a formal intuition. Only the former can be purely sensible. An illustration might help. Every

determinate space is represented as a part of the one unbounded space. The former is a determinate intuition, whereas the latter is indeterminate. The latter is the representation of space at issue in the Transcendental Aesthetic. The determinateness of the determinate intuition of time allows for it to mediate with the categories since Kant defines the categories as "concepts of an object in general, by means of which the intuition of an object is regarded as determined in respect of one of the logical functions of judgment" (C1, B128, emphasis added).

Allison's interpretation also seems unsatisfying. I am particularly concerned with why, on Allison's reading, the categories are needed in Kant's account. That is, if Kant's claim in the Schematism chapter is that our intuitions are subsumed under the categories in virtue of the schemata as Allison has described them, it would seem that one intuition (empirical) works together with another type of intuition (pure, determined intuitions) for the purpose of judgment. What work are the categories doing? Why are not the sensible conditions sufficient for knowledge?

### C. PAUL GUYER

Paul Guyer sees the problem of the Schematism chapter as the problem that the pure concepts of the understanding do not include any predicates which designate any properties of pure or empirical intuition (Guyer, 165). That is, they are not yet rules that can be satisfied by objects of intuition. He suggests that what is required to make the categories homogenous with experience is some aspect of those experiences which does three things. First, it must hold of them universally so that by its means the categories can indeed be made applicable to all experiences. Second, it must be known *a priori* so

that the *a priori* application of the categories can be preserved. Finally, it must contain sufficient diversity so that the different logical properties and relations from which the categories are derived (in the Metaphysical Deduction) can all be assigned an interpretation by means of this intermediary (Guyer, 166). Kant suggests time as that which meets these conditions. We can differentiate within it properties or relations that can be both associated with the logical import of the categories and exemplified in actual appearances. These properties or relations can then function as the schemata of the categories (Guyer, 166-7).

Yet on Guyer's reading, it seems that Kant's theory of schemata is open to a criticism. Even if we can show that the categories can be applied to all of our intuitions through schemata that involve time, that does not show that all aspects of our appearances can be represented via the categories schematized. In other words, Kant is concerned to show that the categories apply to all objects of empirical intuition, but he in no way shows that they must be applied to all aspects of these objects, but rather only their temporal aspects. But it may be possible that there are aspects of what is given in empirical intuition that cannot be represented by the categories. This raises the question of whether Kant really needs the kind of universal coverage of objects by the categories that Guyer suggests.

It seems to me, however, that Guyer's interpretation has a more serious weakness. It is that because Guyer sees the schemata as simply the categories that demonstrate a property that picks out some aspect of our intuitions, time, his views seem unsatisfying for explaining how Kant solves the very problem that motivates the Schematism chapter. The question of how an abstract universal (the categories that demonstrate this required

property) can apply to a concrete particular is still left unanswered. For if the schemata are simply the pure concept so modified, then Kant would seem to be right back where he started--in the position of having to solve the problem of concept-application that he raises in the Schematism chapter.

I argue that Guyer and Allison seem to be open to the same general criticism. On each of their readings, Kant intends the schemata to be a variety of either an intuition or concept/rule. Guyer describes them as categories that have been made (that involve some property) to pick out some aspect of our intuitions, time. Allison says that the schema are determinate, or conceptualized, pure intuitions. But because Kant recognizes a gap between the intellectual and sensible conditions for cognition, it would then seem strange for him to think of the representations that mediate between the intellectual and sensible conditions as simply being one or other of these very same representations.

On Guyer and Allison's interpretations, it is not clear that Kant's escapes the very problem that motivates the Schematism chapter. No one, in fact, to my knowledge has been able to explain how exactly the categories are able to apply to our appearances on Kant's theory of schemata or, for that matter, what type of representation the schemata are exactly. It is surprising, then, that even though Kant's theory of schemata seems so very crucial to his theory of knowledge, it still remains so puzzling.

Kant's doctrine of schemata just is too intricate and enigmatic to have been oversimplified as it has among Kant's commentators. A complete, careful study of the doctrine of schemata has yet to be written. Thus we have yet to fully appreciate the importance and complexity of the doctrine. While the present study is in no way

intended to provide definitive, complete answers to the puzzles that surround the doctrine, it may be seen as a step somewhere along the way of doing so.

In the next chapter, I suggest one way that Kant's theory of schemata might be made clearer. That is, we might be able to look at the nature and function of the schemata that he discusses in his philosophy of mathematics. The two uses of the idea of schemata seem quite congruent in many ways. Thus, the mathematical schemata may serve in a heuristic role in finding the transcendental schemata. Let me set up this heuristic by describing, in the chapter that follows, how Kant uses schemata in his philosophy of mathematics.

#### **CHAPTER FOUR: THE MATHEMATICAL SCHEMATA**

In this section, I would like to explicate Kant's use of schemata in his philosophy of mathematics. In doing so, I will tie his idea of the "mode of the givenness of intuition" with schematization, i.e., the construction of a concept and the determination of intuition. Just as Kant requires that there be a 'corresponding object' for the pure concepts of the understanding, he also requires that there be a corresponding object for mathematical concepts. As is well known, Kant maintains that mathematical propositions are synthetic judgments, so he is concerned in his philosophy of mathematics to show that such a judgment is established by constructing the corresponding figure in space, where construction is an act of synthesis.

If we can come to terms with how Kant understands the *a priori* synthesis that takes place in mathematics, then we may make sense of the function of schematism in his

epistemology, especially with respect to the possibility of synthetic *a priori* judgments. I begin, then, with an account of the *a priori* synthesis that takes place in mathematics.

## A. SYNTHETIC PROPOSITIONS AND CONSTRUCTION

In the *Prolegomena*, Kant raises the question “How are synthetic *a priori* judgments possible?” and says that transcendental philosophy attempts to provide a complete solution to this question (PR, A 46). Physics and mathematics both consist in synthetic judgments, and so too must metaphysics if it should be a science. So it is crucial to understand in what sense the synthetic judgments of metaphysics may be understood. Moreover, it is possible to make a connection between the question of *a priori* synthesis and the theory of schemata.<sup>12</sup> Kant wrote to Reinhold:

[T]his principle [the principle of synthetic judgment] is completely unambiguously presented in the whole *Critique*, from the chapter on the schematism on, though not in a specific formula. It is: all synthetic judgments of theoretical knowledge are possible through a relation of a given concept to an intuition.<sup>13</sup>

The crucial thing concerning the synthetic judgment is the relation between a given concept and the intuition of an object. Since mathematics, physics, and metaphysics have their distinct concepts and objects, an inquiry

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<sup>12</sup> Both Daval and Allison observe this close relationship by referring to Kant’s own testimony. See: Daval. *LA Metaphysique de Kant*. Paris: Presses Universitaires de France, 1951. Allison, H. “Transcendental Schematism and the Problem of the Synthetic A Priori.” *Dialectica* 35 (1981): Pages 57-83.

<sup>13</sup> Daval, Page 141.

into the conditions of *a priori* synthesis cannot be successful unless both the difference and common ground of such *a priori* syntheses are clearly brought to light. Kant's theory of schemata has different content but the same function in all of these kinds of *a priori* synthesis.

There are few things that are important in making sense of how Kant understands any type of synthetic judgment. First, the criterion of truth for synthetic judgments is different than it is for analytic judgments. While, according to Kant, the principle of non-contradiction serves as the criterion for the truth of analytic judgments (it will become clear how this works in the next chapter), the same criterion becomes dubious in the case of synthetic judgments, because they are assumed to consist in two heterogeneous elements. That is, they consist of a subject that is different than the predicate. For example, in the judgment "Snow is purple," the predicate 'being purple' cannot be substituted for the subject, i.e., 'snow.'

Second, the idea of *containment* is important. Kant understands a synthetic judgment as a judgment in which the predicate is not contained in the concept of the subject and thus is in need of other elements besides the subject-concept. In the proposition/judgment, "The cat is white," the predicate, "being white," is not present/contained in the subject, "cat." There is no way of considering this subject such that "being white" follows from it. Meanwhile, an analytic judgment is one in which the concept of the predicate is already contained in the subject-concept (C1, A 6/B 10; PR, Section 2). The judgment "All bachelors are unmarried males" has a subject that entails the predicate.

This criterion can initially be seen as a reaction to Leibniz's analytic theory of judgment. According to his theory, in *every* true judgment, the predicate is contained in the subject. This includes mathematical judgments. So the predicate of a mathematical judgment is contained in the concept of the subject. Kant, however, is of the opinion that mathematical propositions are synthetic judgments. He says this because in the judgment "The interior angles of a triangle equals  $180^\circ$ ," the predicate-concept '180°' is not contained in the subject-concept "the interior angles of a triangle." Such a judgment is only possible, on Kant's account, through the *construction* of a triangle in space (e.g., drawing it on a chalkboard) and other auxiliary means to prove it (C1, A 716/B745). In this respect, non-Euclidean geometric propositions are possible, contrary to Leibniz's view, because the possibility of geometric judgments does not depend on the definition and analysis of a concept, but upon its being able to be constructed.

Finally, we should understand that, according to Kant, synthetic judgments are '*informative*' or '*ampliative*,' while the analytic judgments are to be understood as '*explicative*' (C1, A 7/B 11; PR, Section 2a). The former judgment gives us information about things through experience. The latter one lets us clearly represent what lies implicitly in our knowledge. In a synthetic judgment, one "goes over" the subject-concept and seeks other properties and 'adds' something new to the known concept. "Going over something" and 'addition' are the essential activities of a judging subject. Contrary to this 'transcending' act of going outside of a given concept, Kant assumes that an analytic judgment is based upon the act of the resolution of a concept into its 'constituent concepts' (C1, A 7/B 11). The ground of this transcending act is *time*, in which experience can be constituted as a *determined* experience. Transcendental

apperception, transcendental imagination, and the senses are, as it were, at work here as can be seen in the function of a schema that is at work in the construction.

It is interesting that Kant raises the question “How are synthetic judgments *a priori* possible?” in mathematics prior to the question “How is metaphysics as a science possible?” I contend that Kant raises the former to find the *ground* of the possibility of pure mathematics, which is real, unlike a question of the possibility of metaphysics as science, which still does not exist. This analytic question does not, however, aim at simply modeling metaphysics as mathematics, but rather aims at ‘revealing’ the source and ground of *a priori* cognition.

Kant looks for the possibility that mathematics enters “the secure path of science” in its methodological character. The true method of mathematics is:

...not to inspect what he [the mathematician] discerned either in the figure, or in the bare concept of it, and from this, as it were, to read off its properties; but to bring out what was necessarily implied in the concepts that he had himself formed *a priori*, and had put into the figure in the construction. If he is to know anything with *a priori* certainty he must not ascribe to the figure anything save what necessarily follows from what he has himself set into it in accordance with his concept (C1, Bxxi.).

The act of determining the concept in mathematical cognition (in time) Kant calls ‘construction.’ This constructive act is not to ‘read off’ the property of the concept from experience and figure. Rather it is to ‘read’ it in accordance with the transcendental act of the subject. In other words, cognition of a mathematical concept is not produced by the confrontation with the figures and experience of things. It is produced by the reading-off and interpreting the properties of a concept through *alphabets* or *signs*, e.g., point, line, plane, number, etc., provided by the faculty of cognition (C1, A 717/B 745).

Since this reading-off and interpreting is regarded as independent of experience, i.e., *a priori*, Kant maintains that mathematical cognition as science has an apodictic necessity that it is a *pure* product of reason (a construction) *and* that it consists of synthetic judgments (PR, Section 6). Then, how is such a construction possible? In what sense does mathematics consist of synthetic judgments?

The act of construction is an act through which both a mathematical concept and an object are constituted. When Kant speaks of the mathematical concept as a ‘made concept’ this means that the mathematical concept is constituted, at the same time, in pure intuition by a spontaneous productive act of reason. The constructive act is also described as a ‘presentation.’ When Kant maintains that a mathematical proposition is a synthetic judgment, his concern is to show that such a judgment is established by ‘presenting’ the corresponding figure in intuition, i.e., in space. Here, construction is an act of synthesis.

Finally, the construction of a concept is an act of providing a concept with objective reality. In other words, the act of construction is a semantic rule of mathematical cognition. It makes possible a meaningful use of mathematical concepts on the one hand, and it restricts the valid sphere of mathematical knowledge to the sensible world on the other (PR, Section 13, note). The presentation of a concept in intuition provides the concept with sense and meaning (PR, Section 8). Thus, construction has the same function as the transcendental schema both in its realizing and restricting of the pure concepts at the same time (C1, A 147/B187).

**B.**  
**KANT'S USE OF SCHEMATA IN  
HIS PHILOSOPHY OF MATHEMATICS**

Kant gives the impression that by the mathematical schemata he means a concrete figure drawn, e.g., on paper. He suggests that the universal characteristic of a mathematical figure can be inferred from a concrete, drawn figure that provides a 'particular instance,' i.e., an intuition. Kant's argument for the synthetic nature of arithmetic judgments also seems to be like this—one first counts to 5 and then to 7, using one's fingers, in order to know the sum of these two numbers. Yet if Kant is properly understood, then this reading becomes groundless, because by intuition, construction, and schema, Kant does not mean concrete figure or sensible presentation. Rather, these are the results or products of the construction of mathematical concepts in space.

Thus, both images and schemas are the products of the imagination. Kant is of the opinion that the act of schematization underlies the production of the concrete figures in geometry and the sensible representation of arithmetic. A concrete image that is drawn on paper, for example, is in no way primary in Kant's idea of schematization. This is because the synthesis of imagination whose product is a schema does not aim at a particular intuition, but rather at a unity in the determination of sensibility alone (C1, A 140/B 179). Kant writes:

Since...the synthesis of imagination aims at no special intuition, but only at unity in the determination of sensibility the schema has to be *distinguished from the image*. If five points be set alongside one another, thus, ....., I have an image of the number five. But if I think only a number in general, whether it be 5 or 100, this thought is rather a representation of a method whereby a set, for instance a thousand, may be represented in an image in conformity with a certain concept, than an image itself. For with such a number as a thousand the image can hardly be surveyed and compared with the concept. This representation of a universal procedure of imagination in providing an

image for a concept, I entitle the schema of the concept (C1, A 140/B 179-80).

In this passage, some important features of the mathematical schemata can be found. First, a schema is not identical to an image. Rather, it is a *representation of a universal procedure and the representation of a method* (ibid.). Nowhere is the rule character of the schema more clearly visible than here. Our representation of a number or figure *in concreto* is a rule-governed activity primarily made possible by the faculty of imagination. Here, the process of learning numbers, for instance, by means of digits is not excluded, but rather is founded on the rule-governed activity of the learning subject that Kant assumes to be ultimately based on the *a priori* rule of continuity.

Second, the schema as a representation of method and the universal procedure of the imagination is not opposed to image in general. It still has an image-character, however this image is not empirical but pure. A pure image can be represented as ‘imaginability’ or ‘constructability’ rather than as a concrete particular instance. In this sense, schemata do not lie in reality so as to be available as instruments to construct mathematical concepts. Rather, they lie in thinking (C1, A 141/B 180), in the representation of a rule, i.e., a rule of the imagination. The number ‘five’ can be represented by means of five points, but this constructed image itself is not a schema. A schema is rather a methodic representation of *how* to construct a sensible image. The number ‘five’ can be represented either in the form of “ $5 = 1 + 1 \dots$ ” or in the form of a proposition such as “the number ‘five’ is the fourth natural number from number ‘one’.” These representations are not pictorial but rather methodical, i.e., represented by

means of a *rule*. Thus, to learn to count is precisely to learn the rules to do so. One does not have to draw a thousand dots in order to represent the number ‘one-thousand,’ because the number can be presented by knowing the rules of mathematics, e.g., “ten sets of ten, ten times.”

One might ask from this second point how such mathematical rules are possible. How is mathematical schematization possible? How does it exist in thinking? Kant is not sure about how to answer these questions because schematization is an “art concealed in the depths of the human soul whose real modes of activity nature is hardly likely ever to allow us to discover and to have open to our gaze” (C1, A 141/B 180-1). No matter how difficult it may be to grasp the real mode of the schematizing activity, Kant seems to presuppose the constructive activity of the human mind even if it is only known through its products.

Lastly, the above-quoted passage provides us with one of the most essential features of schemata. Since the synthesis of imagination does not aim at a particular intuition, but only at the unity in the determination of sensibility, it can be said that mathematical cognition determines reality as a magnitude through the mediation of the schema. The manifold in reality is determined by mathematical cognition in homogenous intuitions, i.e., time and space. In other words, reality is numerically identified and organized in a uniform space. An object, if it may be a determined object, must be given by intuition in order to be thought. At least in Kant’s theory of mathematics and physics, a mathematical understanding of reality is fundamental, because a thing is

quantitatively determined as an object in time and space by a transcendental act of subjectivity. Since an object must be given in intuition if it is to be cognized, this would mean that an object must be quantitatively ‘imagined’ in time and space so that it can be identified by human consciousness.

In closing this section, I want to mention something about the relationship between mathematics and metaphysics with respect to the idea of construction. I have tied the mode of the givenness of intuition to the schematization, i.e., the construction of a concept and the determination of intuition. The schema thus has a double function—it presents a concept in intuition, on the one hand, and it determines the intuition on the other. This double function of the schemata presupposes the pure forms of cognition, space and time (as the pure forms of intuition) and the categories (as the pure forms of thought). This function is completely congruent with that of the transcendental schemata. The ground of this congruence, however, must not be seen as implying that metaphysics imitates the mathematical procedure. Rather, this ground lies in the essence of the mind, i.e., in its constructibility. The mathematical schemata are informative and helpful for a proper understanding of the transcendental schemata as another element of Kant’s system, as will be demonstrated in the next chapter of this study.

## **CHAPTER FIVE: TRANSCENDENTAL SCHEMATA**

In this chapter, I will discuss the place and the function of Kant's theory of schemata. After discussing in greater length Kant's formulation of the problem of concept-application, I will consider the different characterizations that Kant gives of the transcendental schemata. This will allow me to set up the final chapter of the thesis wherein I make use of the heuristic of Kant's use of schemata in his mathematics.

### **A. THE PROBLEM OF THE SCHEMATISM CHAPTER: SUBSUMPTION AND HOMOGENEITY**

I want to begin by discussing how Kant formulates the problem of concept-application. The initial grounding of the problem seems to lie in the opening section of the *Prolegomena*. Kant there makes a distinction between a *judgment of perception* and a *judgment of experience*. He makes this distinction on the basis of criteria of necessity and universality. Judgments such as "That curry is spicy," and "When the wind blows here, it gets cold" are judgments of perception, according to Kant's view, because they depend on the individual and the particular situation (PR, Sections 18-19). According to Kant, these judgments are derived from the frequent perception of such phenomena. If, however, you say "Wind affects temperature" you have made a judgment of experience. 'Perception' is here transformed into 'experience' by a necessary and universal

representation of a state of affairs (PR, Section 20). This judgment is, according to Kant, necessary and universal. It holds for everyone and everywhere (PR, Section 19).

In Kant's view, the transformation of judgments of perception into judgments of experience is only possible by *subsuming* private and situational perceptions under the universal rules of the categories. In other words, the private subject must be subject to, and subsumed under the public subject (i.e., 'consciousness in general') in which the categories have their 'seat' (PR, Section 21). Categories represent the general rules under which perceptions of objects and their connection can obtain necessary and universal validity. The point here is that perceptual experience must be subsumed under the categories in order to be objective experience. In Kant's mind, the set of perceptions is no more than an 'aggregate of sensuous impressions' (PR, Section 26) or a 'rhapsody of perceptions' (C1, A 156/B195). This indicates that objective experience, in contrast to mere perception, is a system that is *articulated* and *organized*. It is not a mere collection of several materials, but a well-built and interrelated structure (PR, Section 33). The subsuming of perceptions under the general rules of the categories is a process of *building the whole of experience*.

To use different imagery, the categories serve to spell out phenomena in order to be able to *read* them as experience (PR, Section 30). We could use the term 'cataloging' or 'indexing' to mean the providing of a meaningful structure interconnected and articulated to nature (and also providing of particular names) in order to read it in a systematic way. The system of experience in Kant's philosophy is congruent with the system of nature itself, because the latter is ordered and experienced by means of the prescription of law of human reason (PR, Section 36). The category is here a rule of the

ordering of phenomena, in order to read them in a meaningful and consistent way. I will later show how these images of ‘indexing’ are relevant to the problem of subsumption and schematism with respect to the notions of ‘system’ and ‘monogram.’

In the scholastic logic that was prevalent in Kant’s time, the term ‘subsumption’ is used to indicate a judging activity that brings a minor proposition under a major proposition. For example, consider the following syllogism:

All men are mortal.  
Socrates is a man.  
∴ Socrates is mortal.

In this judgment, the conclusion, “Socrates is mortal,” is possible by means of the subsumption of the minor premise, “Socrates is a man,” under the general condition of the major premise, “All men are mortal.” In this case, the subject of the minor premise, “Socrates,” and the universal notion, “all men,” of the major premise are mediated by the intermediary term, i.e., “man.” In other words, the minor premise can be subsumed under the general rule of the major premise only if the subject of the former is *contained* in the subject of the latter.

However, the question of subsumption with which Kant deals in the Schematism chapter is not merely logical. Rather, it is fundamentally epistemological and ontological, concerning the necessary unity between the human cognitive powers and reality. Kant tells us:

In all subsumptions of an object under a concept, the representation of the object must be homogeneous with the concept. In other words, the concept must contain something which is represented in the object which is subsumed under it (C1, A137/B176).

Here, Kant raises the question of subsumption to achieve the homogeneity of the concept and the representation of objects. This is a variation of the question of the unity of being and thought.

Yet why does Kant raise the question of homogeneity between being and thought in terms of subsumption? Well a couple of reasons seem plausible. First, the employment of the logical term ‘subsumption’ seems to be due to the syllogistic structure of the *Transcendental Analytic* (C1, A130/B169ff; A304/B360). Though Kant follows the formal logical procedure of presentation, the question of transcendental subsumption, as opposed to logical structure, is a unique one that is only possible in his ‘transcendental logic.’<sup>14</sup> Formal logic can be a “cannon of reason” insofar as it operates analytically simply by “analyzing the action of reason into its components without our requiring to take account of the special nature of the knowledge involved” (C1, A 131/B170). But it cannot simply be a rule for judging whether or not something is governed by a given rule, since formal logic abstracts from all the content of knowledge (C1, A 132/B171). Thus Kant speaks of the particularity of transcendental philosophy as follows:

Transcendental philosophy has the particularity that besides the rule (or rather the universal condition of the rules), which is given in the pure concepts of the understanding, it can also specify *a priori* the instance to which the rule is to be applied (C1, A135/B174-175).

Secondly, there is an analogy between logical subsumption and transcendental subsumption with respect to the requirement of homogeneity. According to Kant, the logical subsumption of a concept under a higher concept takes place in accordance with the rule of identity in which the lower concept

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<sup>14</sup> Kant makes this distinction between logical subsumption and transcendental subsumption in his letter to H. Tieftrunk on December 11, 1797.

must be thought homogeneously with the higher concept. Yet Kant knows that it is not possible to obtain homogeneity between appearances and the pure concepts of the understanding. Materially, if you will, concepts and sensations are heterogeneous. To this end, a direct subsumption of experience under concepts is impossible. Therefore there must be a 'middle term' by which a synthesis of the two heterogeneous elements can be made possible.

It seems appropriate to ask whether there are any hints in Kant's discussion of subsumption as to why the question of homogeneity arises in the first place? Well, there seems to be a short answer: it is due to the duality of sensibility and understanding. For Kant, reality is given to man, not produced by him. If human reason and conceptual thinking are merely a reflection or copy of reality, then the question of homogeneity is superfluous. Presupposing the duality of sensibility and understanding, Kant tries to disclose the common ground of interplay between the two heterogeneous elements of knowledge.

As previously mentioned, this duality can best be seen against the background of Kant's reaction to Leibniz and Locke. According to Kant, Leibniz 'intellectualized' phenomena such that things-in-themselves can be known merely by means of a conceptual scheme (C1, A271/B327). The "intellectualization of phenomena" is due to the lack of qualitative distinction between sense and understanding, because Leibniz regards the objects of our senses as merely 'confused representations' (C1, A270/B326). Meanwhile, Locke 'sensualized' all of the concepts of the understanding by regarding the concepts of the understanding as being simply abstracted from experience, i.e., as sensuous in origin (ibid.). Kant tries to maintain both the qualitative difference and the

structural unity of the senses and understanding in order to rescue the phenomena against rationalism and to secure the understanding against empiricism.

Thus, Kant's transcendental philosophy insists neither on a one-sided intellectualization nor on a one-sided sensualization of the world. Instead, it shows that there is a cooperative role of the understanding and sensibility. This idea comes through in a well-known passage of the first *Critique*.

Thoughts without concepts are empty, intuitions without concepts are blind. It is therefore just as necessary to make our concepts sensible, that is, to add the object to them in intuition, as it is to make our intuitions intelligible. These two powers or faculties cannot exchange their functions. The understanding can intuit nothing, the senses can think nothing. Only through their union can knowledge arise (C1, A51/B75-6).

Thus the notion of subsumption that is assumed to be self-evident in the *Prolegomena* is indeed the problem that Kant is confronted with in the Schematism chapter of the first *Critique*. In the chapter, he is concerned to prove the objective validity or the objective reality of the categories themselves and, at the same time, their *application* to phenomena (C1, A137/B176). So subsumption and application are not two different things but one and the same procedure that connects thinking and being, i.e., concepts and the representation of objects.

In the Schematism chapter, Kant identifies the question of subsumption with the question of application of the categories to phenomena—the rule of subsumption is the rule of application. This identification is intrinsically related to Kant's transcendental philosophy that not only formulates the universal rules of thinking concerning nature but also specifies particular instances in which those rules can be applied.

The subsumption and application of which Kant speaks in the Schematism chapter are nothing more than the process by which the intellectualization of intuitions (phenomena) *and* the (simultaneous) sensualization of concepts takes place. That is, it is the process bringing objects under concepts and the adding of objects to concepts of intuition. Thus, we could say that subsumption is a procedure from ‘below to above,’ and application is a procedure from ‘above to below.’ Here, we have not two but one and the same procedure by means of the function of the transcendental schemata. As Kant puts it:

Obviously, there must be some *third thing*, which is homogeneous on the one hand with category, and on the other hand with appearance, and which thus makes the application of the former to the latter possible. This mediating representation must be pure, that is, void of all empirical content, and yet at the same time, while it must be in one respect intellectual, it must in another be sensible. Such a representation is the transcendental schema (C1, A138/B177, emphasis mine).

In order to subsume appearances under concepts, i.e., to apply the latter to the former, Kant requires something that can act as a middle term between two heterogeneous extremes, i.e., the understanding and sensibility.

Kant’s requirement of homogeneity for the middle term that makes the cooperative employment of the two faculties possible appears to be deeply rooted in the tradition of Western philosophy and logic as well as in the intuitive perception of the communicative act in daily life. For instance, in a situation where two different languages are being spoken, there must be a mediator (interpreter) who knows both languages or there must at least be some common ground to understand either explicitly or implicitly. A communicative relationship with things is also thought of in the same

way—in order to know the elements of a thing, one must share some elements with it, because like is known by like. Kant attempts, then, to explain how the heterogeneity between our cognitive powers and reality is overcome by positing a third thing, a third type of representation that is neither a concept nor a representation of an object.

Yet, as I have shown, Kant's account of how this third thing, the transcendental schema, allows for a mediation between the categories and appearances, is far from clear. Further, Kant's commentators have failed to make sense of this solution, his doctrine of schemata. I have tried to show that this stems mostly from the unsatisfying accounts of the *nature* of the schemata that they have provided.

One way that we may shed light on Kant's doctrine of schemata is to reconsider the manner in which Kant employs schemata in his mathematics. His use of the schemata there may provide some inkling into the nature of transcendental schemata and, in doing so, provide some hints at how the transcendental schemata allow our representations of objects to be subsumed under the pure concepts of the understanding. In order to use this heuristic, I want to begin, however, by considering the manners in which Kant speaks of the transcendental schemata.

## **B. THE WAYS IN WHICH KANT DESCRIBES THE TRANSCENDENTAL SCHEMATA**

In the first *Critique*, we find at least the following characterizations of the transcendental schemata.<sup>15</sup>

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<sup>15</sup> Henry Allison lists the characterizations in his text, Pages 179-80.

1. Kant describes them as “third things” or “mediating representations” which are homogenous with both categories and appearances and which make the application of the former to the latter possible. He says that this representation must be both intellectual and sensible (C1, A138/B177).
2. He calls them “transcendental determinations of time” which, as suggested by the first characterization, “mediates the subsumption of the appearances under the category” (C1, A139/B178).
3. They are, according to Kant, “formal and pure condition[s] of sensibility to which the concept of understanding is restricted (C1, A140/B179).
4. He also describes them as “representations of a universal procedure of imagination in providing an image for a concept” (C1, A140/B179-80).
5. We should also think of them as “only the phenomena, or sensible concepts, of an object in agreement with the category” (C1, A146/B186).
6. Schemata are “nothing but *a priori* determinations of time in accordance with rules” (C1, A145/B184).
7. Kant also considers them to be “the true and sole conditions under which these concepts obtain relation to objects and so possess significance” (C1, A146/B185).
8. Finally, Kant contends that they are “simply the pure synthesis, determined by a rule of that unity, in accordance with the concepts, to which the category gives expression” (A142/B181). In this context, they are further described as “transcendental product[s] of the imagination, product[s] which concern the [determination] of inner sense in general according to conditions of its form (time) in respect of all representations, so far as these representations are to be connected *a priori* in one concept in conformity with the unity of apperception” (ibid.).

From these passages, a few key features of the schemata can be inferred. *First*, they are always the products of the imagination. *Second*, they are systematic rules by which the categories are applied and restricted to phenomena. *Third*, they are related to time. Kant refers to them as “time determinations.” *Finally*, the schemata are conditions through which the heterogeneity of the categories and appearances are overcome. They

are said to overcome this heterogeneity by mediating between the two types of representations.

I want to explore each of these ideas in greater depth. These are the characterizations that Kant uses most frequently and most consistently. Each seems to be important for a satisfying account of Kant's doctrine of schemata. I will begin, then, by considering the question of why transcendental schemata are products of the faculty of imagination.

## **1. SCHEMATA AS PRODUCTS OF THE FACULTY OF IMAGINATION**

Among the sources of objective knowledge, imagination is the power of the synthesis in the most original sense of the word:

Synthesis in general...is the mere result of the power of imagination, a blind but indispensable function of the soul, without which we should have no knowledge at all, but of which we are scarcely ever conscious (C1, A78/B103).

The synthesis carried out by the imagination is the synthesis of the manifold in appearances, in contrast to the conceptual synthesis of apperception. Further, imagination is a mediating power between sensibility and understanding. In Kant's words,

The two extremes, namely sensibility and understanding, must stand in necessary connection with each other through the mediation of the transcendental function of imagination, because otherwise the former, though indeed yielding appearances, would supply no experience (C1, A124).

The synthesis of the imagination is not confined to the synthesis of the manifold in space and time, but also concerns the *a priori determination of space and time*. Whereas Kant conceives of time and space not as objects of sensible perception but rather *a priori* forms of all things that are intuited, as the objects of science (of arithmetic and geometry) they must be represented and determined by the synthesis of the imagination.

Also, the synthesis of imagination goes one step further in that it is a necessary ingredient in the determination of the empirical ego. In other words, imagination is constitutive of empirical subjectivity through the determination of inner sense by means of a transcendental time-determination (transcendental schemata).

According to Kant, all representations of the manifold of appearances are given through the senses whether they are due to the influence of outer things or are produced through inner causes (C1, A99-A120). The manifold representations of things must be put together and grasped in order to be objects of possible experience (C1, A77/B103). Also, all these representations are subject to time, the formal condition of inner sense (C1, A99). In time they are ordered, connected and brought into relation with one another (ibid.). So time is a transcendental horizon in which the manifold of representations of things are ordered and connected. In this horizon, the cooperation of sense, imagination, and understanding is possible.

In the second section of the Transcendental Deduction, Kant analyzes this act of ordering and connecting the manifold given through the senses in

terms of a threefold synthesis: 1) the synthesis of apprehension in intuition, 2) the synthesis of reproduction in imagination; and, 3) the synthesis of recognition in a concept (C1, A98-A110). In this threefold synthesis, it is imagination that plays the key role in bringing together sense perception and the concept.

Apprehension and reproduction are two fundamental notions in the synthesis of the manifold given through the senses. For Kant *the synthesis of apprehension in intuition*: is a momentary taking-up of a given all at once and, at the same time, a successive representation of what is taken up in that one moment (C1, A99; A162/B203-A163/B204). Time underlies this, because the manifold given through the senses can be represented only insofar as “the mind distinguishes the times sequence of one impression upon another (C1, A99). The identification of the manifold as a manifold is carried out by imagination through the taking-up and holding-together of what is given in the senses, i.e., through apprehension of the basis of time.

According to Kant, the momentary taking up and successive representation of the manifold is in need of *reproductive synthesis* that connects the present and past apprehensions. The reproduction of the manifold must presuppose the “reproducibility of appearance” (C1, A102) which, for Kant, lies in the nature of reality itself. But the reality that appears to us is *not* a thing-in-itself; it is the mere play of our representations (C1, A101) and is ultimately based on the determination of inner sense. The ‘transcendental synthesis of imagination’ conditions the reproducibility of appearance and the very possibility of experience, for even our purest *a priori* intuitions yield no knowledge except insofar as they contain a combination of the manifold such as renders a

thoroughgoing synthesis of reproduction possible. The reproductive synthesis of the imagination leads the mind to “reinstatate a preceding perception alongside of the subsequent perception to which it has passed, and so to form a whole series of perceptions (C1, A121). If, however, representations reproduced one another in any order, just as they happened to come together, these would be merely accidental collocations. Thus there must be a rule of association of representations which is still subjective and empirical. Yet, the representations associated according to certain rules remain ‘completely undetermined and accidental’ (C1, A122), and the representation of appearance does not form a ‘system’ (C1, A103).

For the complete systematization of experience as a totality one needs the rules of affinity of appearances, the objective ground of all association, which has its roots in the unity of apperception (C1, A22). The unity of apperception in which Kant assumes all universal rules of appearances to be contained provides the apprehensive and reproductive synthesis with necessity. In other words, the representation of the manifold of appearances is ‘recognized’ by concepts that unify all representations (*the synthesis of recognition in a concept*). The seat in which the categories exist is the transcendental apperception (PR, Section 20). The apperception, which Kant describes as the “pure, immutable consciousness,” is the source of all thinking, concepts, rules, and laws that determine the objects of possible experience as nature. Human understanding is here not merely a faculty to make rules for itself through the comparison of appearances but is itself the ‘law-giver of nature’ (C1, A127). The system of nature based on the legislature of the

understanding becomes completely congruent here with the ‘system’ of pure concepts of the understanding (C1, A80/B106).

It is worth noting here that there is a *double movement* in the systematization of experience as a totality. The representations of the manifold must be ‘recognized’ in a conceptual synthesis of transcendental apperception that is the ultimate lawgiver of nature. Indeed there is no concept of totality in the sensuous perception and the synthesis of the manifold, because the concept or the idea of totality itself is due to the conceptual and theoretical postulates that function as teleological rules in the organization of experience.

Seen from the reverse side (of this ‘double movement’), this idea of totality cannot be realized without the manifold being given in sensation and its apprehensive and reproductive synthesis by imagination. Imagination essentially contributes to the realization of the system of experience by virtue of its double quality, viz., sensible on the one hand and intellectual on the other. Yet, imagination in this very quality is dependent upon the sensation and understanding. The material which imagination synthesizes is provided by sensation and the idea of totality by which the materials synthesized by imagination are brought into unity is due to understanding.

A metaphor might be helpful here. Think of architecture. The imagination here would be a constructor who erects a building from given materials according to the plan made by an architect. In this metaphor, the indispensable function of imagination is visible—architecture is impossible without the actual construction, no matter how great the materials and plans.

The constructive operation of the imagination could be surveyed from three different, but interrelated, perspectives: the production of an image for a concept, the determination of time and space for the mathematical concepts, and the determination of inner sense through a transcendental determination of time.

Yet the primary and most important operation of the imagination lies in *producing* a sensible image. According to Kant, the apprehensive and reproductive synthesis of the imagination brings the manifold of appearances into a uniform image recognizable by a concept (C1, A 120). For example, I have seen a ‘dog’ from several different sides and perspectives and so the object obtains a certain Gestalt through my apprehension of its manifold aspects in time and space (C1, B162). Kant says, “this representation of a universal procedure of imagination in providing an image for a concept, I entitle the *schema* of this concept” (C1, A 140/B 141).<sup>16</sup>

For this reason, Kant thinks that an object of experience or its image is still not adequate for the empirical concept—this latter always stands in immediate relations to the *schema of imagination*, as a rule for the determination of intuition (C1, A141/B180). According to Kant, the synthesis of imagination represents or delineates, for instance, the figure of a four-footed animal (in accordance with the concept of ‘dog’) in a general manner without any limitation to any single determinate figure that can be represented *in concreto* (C1, A 141/B 180). This schema of imagination is, however, not

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<sup>16</sup> This idea of “producing an image for a concept” is a bit misleading. This will be discussed in greater length in Chapter Six.

identical with the concept itself which is being represented, but is always an image-schema which still represents the rule of determination of intuitions.

In this respect, Kant's descriptions of the operation of imagination as 'drawing' (C1, B162), 'delineating' (C1, A142/B181), 'describing' (C1, B154) or as a 'monogram of imagination' (C1, A142/ B181) are interesting. If all of these descriptions are brought into relation to the category as the rule of the 'indexing' of appearance to be read as experience, then the operation of imagination in the systematic representation of the manifold can be regarded as actual indexing or 'textualization' of reality. For Kant, reality is not a well-written text and even our sensuous perception does not make reality into a readable text. Only through the 'taking-up' and 'connecting of the manifold by the imagination' can reality be delineated, or formed, into a systematic image. Imagination is as were a 'transcendental hand' *to write reality in human language in accordance with the universal rule of the categories.*

Thus, Kant defines imagination as 'a power of producing intuitions even when the object is not present,' i.e., *exhibiting* it. As such, he classifies it in two different ways: it is either productive or reproductive. That is, it is either a power of exhibiting an object originally and so prior to experience, or it *exhibits* an object in a derivative way by bringing back to the mind an empirical intuition that it had previously.

Yet, the products of the imagination cannot be understood in any way as if they come from 'outside.' Rather, they have their seat in *the natural character of human*

*reason*. Kant describes this natural character of reason as ‘a system of the epigenesis of pure reason.’ For instance, in a passage of the Transcendental Deduction, Kant describes the necessary relationship between objects and concepts in terms of the contemporary biological theory about the origin of life (C1, Section 27). Here again Kant affirms the necessary unity of objects and concepts: “[W]e *cannot* think an object save through the categories; we cannot know an object so thought save through intuitions corresponding to these concepts” (C1, B 165, emphasis mine).

In this passage, Kant describes the unity of objects and concepts as follows.

There are only two ways in which we can account for a necessary agreement of experience with the concepts of its object: either experience makes these concepts possible or these concepts make experience possible. The former supposition does not hold in respect of the categories...for since they are a *priori* concepts, and therefore independent of experience, the ascription to them of an empirical origin would be a sort of *generatio aequivoca*. There remains, therefore, only the second supposition—a system, as it were, of the epigenesis of pure reason—namely, that the categories contain, on the side of the understanding, the ground of the possibility of all experience in general. *How* they make experience possible, and what are the principles of the possibilities of experience that they supply in their application to appearances, will be shown more fully in the following chapter on the transcendental employment of the faculty of judgment (C1, B166-B167).

Kant’s remark here immediately brings the idea of an epigenetic system of reason in relation to the doctrine of schematism and *a priori* synthetic principles—the function of schematism is herein implicitly suggested as a procedure to prescribe how categories make experience possible and how categories are made applicable to appearances.

In Kant’s system, the categories neither come into being through sense experience nor are they pre-set by the Creator. The human cognitive

faculty has in itself an inherent possibility of category formation. But this possibility must be actualized in accordance with contact with experience. Sense perception is equally not automatically impressed upon the human mind such as the empiricist supposes. It is intentionally transformed or organized by the categories. Kant recognizes that human reason has a 'natural disposition' of concept-formation and the ability to organize experience. He equally recognizes that an experience of external materials heterogeneous to our cognitive faculties must be given in order to produce an organized experience. He emphasizes the assimilatory and transformative activity of the cognitive subject.

Primarily, however, imagination exhibits time and space. He says that pure intuitions of space and time are *original exhibitions*. What does this mean? How does imagination present (exhibit) the pure intuition of space and time? In Kant's system, sensation, which is always empirical, cannot represent a determinate space and time, because the sense must presuppose the 'given' of the object, and the object must affect it. Time and space are not objects that we can truly call empirical objects, like chairs and dogs, but rather the transcendental horizon in which empirical objects can be sensed. Meanwhile, the representation of space or time through understanding is not possible, because the understanding, as the faculty of rules and concepts alone, solely contains the form of thinking. Therefore, Kant attributes the task of the representation of space and time to imagination, which has the power of 'original representation.'

However, the originality of imagination does not imply the creation of space and time out of nothing. Space and time are not empirical concepts that have been derived from outer experience. They are necessary *a priori* representations that underlie all intuitions as the form of intuitions. In this sense, space and time are not real existences, nor are they determinations of the relations of things (C1, A26/B42). Rather, they are part of the subjective constitution of the mind (C1, A23/B38). To put the point another way, space and time cannot be perceived from the side of receptivity. It is from the point of transcendental synthesis that they can be determinate objects. In Kant's words,

Space and time are represented *a priori* not merely as forms of sensible intuition which contain a manifold, and therefore are represented with the determination of the unity of this manifold (C1, B 160).

It is important to note that the manifold of space and time are not given in the same way as the manifold of an appearance is given. They "can be produced only through the synthesis of the manifold which sensibility presents in its original receptivity" (C1, A 100). As the synthesis of the manifold of appearances, the sense, imagination, and apperception work together to determine space and time. The process of the synthesis of the pure manifold of space and time seems to be the construction of them by schematization.

Thus, imagination is responsible for not only the empirical synthesis of the manifold of appearances but also the pure synthesis of the manifold of time and space. In other words, imagination is not only constitutive of the system of

experience by bringing the synthesis of the manifold under the synthetic unity of apperception, but is also constitutive of the representation of space and time themselves. Further, this is synthesis *in* space and time.

This determination of space and time is also related to our discussion of mathematics. The determination of space is fundamentally related to the foundation of geometry by which natural reality is eventually constructed in geometric terms. The determination of time is related in a certain way to the basis of the consciousness of number (arithmetic), but more fundamentally to the constitution of empirical subjectivity, i.e., the determination of inner sense.

Kant says that this construction of space and time in Kant's system is carried out by the "successive synthesis of productive imagination" (C1, A 163/B 204). With regard to space, Kant uses the example of a line: "I cannot represent to myself a line, however, small, without drawling it in thought, that is, generating from a part all its parts one after another" (C1, A 162-3/B 203). In regard to time, Kant says further:

[S]imilarly with all times, however small; in these I think to myself only that successive advance from one moment to another whereby through the parts of time and their addition a determinate time magnitude is generated (C1, A 163/B 203).

The successive synthesis of apprehension by adding part to part, moment to moment, produces the determinate space or time by which appearances can be

represented as spatio-temporal magnitudes: “[E]very appearance is as intuition an extensive magnitude, only through successive synthesis of part to part in its apprehension can it come to be known” (C1, A 163/B 204). This synthesis, however, presupposes the concept of the whole of space and time. In this sense, the construction of space and time is more than a limitation of those concepts (C1, A169-170/B211-212).

The construction of space in particular is not described in terms of a mechanical construction in real space but, rather, in terms of ‘drawing in thinking.’ After all, “we cannot think a line without drawing it in thought...we cannot represent the three dimensions of space without setting three lines at right angles to one another from the same point” (C1, B154). All of these types of figurative representations, of lines, three-dimensional space, etc., are the intuitive construction by means of schematization. The schematization of space means the sensible representation of geometric concepts on the one hand and the structuring of the systematization of space by means of geometric concepts on the other. In the same manner, time is also figuratively (schematically) represented as a straight line. Time is here not only the means of the schematization of pure concepts of the understanding, but itself must be schematized in order to be sensibly represented. For this sensibilization of time, space provides an ‘analogy’ (C1, A 33/B 50) to represent the one-dimensionality of time.

2.  
**SCHEMATA AS SYSTEMATIC RULES BY WHICH THE  
CATEGORIES ARE APPLIED AND RESTRICTED TO PHENOMENA**

It has already been mentioned that the transcendental schemata have four main features. First, they are always products of the imagination. Second, they are systematic rules by which the categories are applied and restricted to phenomena. Third, they are related to time, i.e., they are transcendental determinations of time. Fourth, they are conditions through which objects corresponding to the pure concepts of the understanding can be ‘given.’<sup>17</sup>

This last feature of the schema seems intrinsically related to the second. Even though Kant has no explicit theory of meaning, the notion of ‘meaning’ that is constructed by the schematization has a direct relevance to his distinction between phenomena and noumena, and between understanding and judgment, and also to the proper understanding of the character of *a priori* synthetic judgments.

The question of the application of the pure concepts of the understanding is first raised in the Introduction to the *Analytic of Principles* and in the chapter on Schematism in the first edition of the first *Critique*. This is done after an extensive presentation and justification of the ‘objective validity’ or ‘objective reality’ of the pure concepts of the understanding in the *Transcendental Deduction*. Later, this question is incorporated in the *Transcendental Deduction* itself in the second edition.

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<sup>17</sup> This givenness must be distinguished from the indeterminate givenness of objects in sensibility.

This change is very helpful in making sense of the relation between the transcendental deduction and the theory of schematism—it shows that the chapter on schematism is neither an appendix to nor a mere repetition of the Transcendental Deduction. Rather it forms a unity in Kant’s proof of the validity of the pure concepts of the understanding. In the 1781 edition, Kant separates the claim *that* the categories have objective validity from the explanation of *how* they have objective reality, and he deals with them respectively in the Transcendental Deduction and the Schematism chapters. But in the edition of 1787, these two matters are integrated into the Transcendental Deduction chapter itself.

All of these considerations of Kant’s architectonic show that the process of schematization is not superfluous but rather an integral moment of Kant’s deduction. In other words, the matter of application is not merely supplementary but is essential to ‘concept-possession.’ The objective reality and validity of the categories can be guaranteed if and only if the possibility of their application to appearances is demonstrated. The application of a concept is constitutive of real cognition.

The first question that immediately arises with regard to the meaningfulness of the categories is: Why is this a problem which needs to be solved? As G. J. Warnock maintains, Kant’s problem is nothing more than a pseudo-problem.<sup>18</sup> According to Warnock, Kant illegitimately separates the application of concepts from the possession of them. So, “I have the concept of

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<sup>18</sup> Warnock, G. J. “Concepts and Schematism.” *Analysis* 9, (1948/9): Pages 77-82.

whiteness' means the same thing as "I know how to use 'white.'"<sup>19</sup> Further, he says,

If I have a gauge, I can sensibly ask how to use it, how to apply it; but to ask how I can apply a concept that I have, is to ask how I can use a word that I know how to use.<sup>20</sup>

Yet I would suggest that the meaning of 'having a tool' and 'having a concept' can be different. Having a theory or having a law and, at the same time, not knowing how to use them, is not impossible to imagine. If I know how to use a certain theory or apply a certain law, then this already implies that I can judge whether particular instances or situations can be subsumed under a theory or law. Yet the question that Kant is concerned with is how a general rule can be formulated to judge whether or not a particular instance can be subsumed under the general term. According to Kant,

[I]f understanding in general is to be viewed as the faculty of rules, judgment will be the faculty of subsuming under rules; that is, of distinguishing whether something does or does not stand under a given rule.

He says further,

A physician, a judge, or a ruler may have at command many excellent pathological, legal, or political rules, even to the degree that he may become a profound teacher of them, and yet, none the less, may easily stumble in their application. For, although admirable in understanding, he may be wanting in natural power of judgment (C1, A 134/B 173).

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<sup>19</sup> Ibid., 78.

<sup>20</sup> Ibid., 80.

I would contend that just as knowledge of legal principles is in need of interpretation and application in particular instances and situations, so it might be said that the knowledge of general concepts as rules is in need of interpretation and application. In other words, the syntactic rules are just not enough for the real understanding—they are in need of the semantic rules in practice. On the same lines, Kant seems to suggest that examples motivate judgment. I understand ‘judgment’ here to mean either the act of application of the universal to the particular instance or the act of discovery of the universal in possession of the particular.

For Kant, application is neither a subsequent nor merely occasional part of understanding, but it co-determines it from the very beginning. Application is, thus, an integral part of understanding—it is the concretization of the universal. For this reason, Kant sharply distinguishes knowing from thinking especially in the second edition of the first *Critique* (C1, B 146; B 150; B 165). On this basis, Kant also distinguishes between the ‘logical meaning’ and the ‘objective meaning’ of the categories.

### **3. SCHEMATA AS DETERMINATIONS OF TIME**

Kant also describes the schemata as *determinations of time*. He suggests that the problem of the application of categories to appearances can be overcome through transcendental determinations of time:

It is evident, therefore, that what the schematism of understanding effects by means of the transcendental synthesis of the imagination is simply the unity of all the manifold of intuition in inner sense, and so indirectly the unity of apperception which as a function corresponds to the receptivity of inner sense. The schemata of the pure concepts of the understanding are thus the true and sole conditions under which these concepts obtain relation to objects and so possess meaning (C1, A145-6/B185).

I want to take time now to explore what this may mean.

Kant asserts that transcendental schemata are the “true and sole conditions under which these concepts [the categories] obtain relation to objects and so possess meaning.” This is based upon his understanding of schematism as aiming at “the unity of all the manifold of intuitions in inner sense” (as seen from our inquiry into the faculty of imagination). According to Kant, by means of the transcendental synthesis of imagination, i.e., schematization, categories are brought into relation with the empirical inner sense whose form is time in which all the manifold of appearances are assumed to be contained. The space in which transcendental imagination works is the inner space of the mind, i.e., time.

Kant describes the meaning, which categories obtain, as “relation to objects.”<sup>21</sup> The relation to objects is further identified as the possibility of giving object to concepts (C1, A 139/B 178). Kant says:

We demand in every concept, first, the logical form of a concept in general, and secondly, the possibility of giving it an object to which it may be applied. In the absence of such an object, it has no meaning and is completely lacking in content, though it may still contain the logical function which is required for making a concept out of data that may be presented (C1, A 239/B 298).

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<sup>21</sup> Körner, Stephan. *Kant*. New Haven, Connecticut: Yale University Press, 1981.

It now becomes evident that the crucial question concerning the meaning of the categories is related to the question of how objects can be given to concepts. In Kant's theory of experience, there are two modes of the givenness of objects: an object is either given by the modification of sensibility or by the schematization of experience. The first mode of givenness is based upon the sensibilization of something that is given. The second is based upon the structuring of sensuous experience through the *image-formative and time-determinative operation of imagination*. Objects given through the modification of sensibility are still indeterminate, while the objects which imagination gives to concepts are based upon the spontaneity of the mind.

The distinction between two different modes of the given has certain consequences for understanding Kant's notion of 'relation to objects.' Objects that are brought under concepts are not simply indeterminate objects. They are objects that have already gone through temporal organization. Accordingly, the 'relation to objects' or the 'reference to objects' which is identified as 'meaning' by Kant, does not mean an immediate presence of objects but rather a mediate presentation of objects. This mediation has a temporal rather than a spatial character. In other words, the procedure through which imagination provides meaning to concepts is related to inner sense rather than to outer sense. Kant's primary concern with meaning is in essence of a transcendental character—Kant is concerned with the conditions of the possibility of the inner constitution of objects that have a temporal order.

4.  
**SCHEMATA AS MEDIATORS BETWEEN THE CATEGORIES  
AND APPEARANCES**

A final way that Kant speaks of the schemata is in terms of their ability to mediate between the categories and appearances. Imagination is at work here, acting as a faculty that is independent of both the faculty of the understanding and the faculty of sensibility. At the same time, the imagination is closely tied to each, and, thus, it acts much like an active translator in its products between the two.

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In the first part of the first *Critique*, it seems as though (at least) two different kinds of mediation are discussed. There is mediation between sensibility and object and mediation between understanding and concept. By mediation of the pure intuition, an object is directly related to sensibility, and by mediation of understanding (or self-consciousness) the concepts arise by which a given object can be thought (C1, A 19/B 33). A concept, in contrast to an intuition, is always a representation mediated through signs and not intuitive but discursive for man (C1, A 68/ B93). At the same time, an immediate comprehension of reality by means of either intellectual intuition or intuitive understanding is impossible, because human intuition is always sensible. That is, an object must first be given and affect us, and the conceptual thinking is in

operation only in its generality and discursivity, i.e., not in a direct but in an indirect (mediated) relation to an object by means of ‘common characteristics.’

It is significant to note the specific character of this kind of mediation—it is self-referential. The self-referential mediation of intuition and understanding respectively stresses the basis of the independence of sensibility and understanding from each other. First, the givenness of an object is not primarily determined by the function of the understanding, but by the pure forms of sensibility, i.e., time and space. In contrast to time and space, the “categories of understanding...do not represent the conditions under which objects are given in intuition” (C1, A 89/B 122). These statements make clear that there is a self-referential mediation between sensibility and object by means of the pure forms of sensibility. Secondly, a self-referential mediation takes place also within understanding itself.

The pure concepts of the understanding have their origin in this self-referential mediation of understanding. The characteristic of understanding is its logical function. Kant defines this function as “unity of bringing various representations under one common representation (C1, A 68/B 93). For Kant, the function of understanding is thinking or judgment. Judgment is in turn the mediate cognition of an object, that is, the “representation of a representation of it” (ibid.). In this sense, understanding in its *function* is a *reflective* power that transcends an immediate presence of the object and thinks in its own terms, in reference to itself. The reflective and self-referential power does not have a purely logical character. It also has a practical character. In Kant’s words,

[F]or thought the categories are not limited by the conditions of our sensible intuition, but have an unlimited field. It is only the knowledge

of that which we think, the determining of the object, that requires intuition. In the absence of intuition, the thought of the object may still have its true and usual consequence as regards to subject's *employment of reason*. The use of reason is not always directed to the determination of the object, that is, to knowledge, but also to the determination of the subjects and its volition (C1, B 166, footnote).

The intellectual self-referential function of reason is the ground of both theoretical cognition and illusion on the one hand and a practical self-determination (freedom) on the other. As previously discussed, understanding can be empirically employed by means of schematized categories and transcendently misused due to the very possibility of the 'logical meaning' of categories. Kant, however, still asserts that the categories—as conceptual expressions of reflective thinking—can be used for a practical viewpoint, for a determination of the practical ego and its volition.

The self-referential mediations of sensibility and understanding are not enough for cognition. Sensibility refers undetermined objects solely to itself by means of its pure forms—the 'given' remains here as a 'particular' in its multiplicity. Meanwhile understanding refers its own object without any specification to itself by means of categories—the rule of thinking remains here a 'universal' in the absolute unity of understanding. Both sensibility and understanding are in isolation without any real contact with one another. This isolation is really a result of the theoretical separation of them (cf. C1, A 22/B 36; A 65/B90). In actuality, human knowledge already presupposes the cooperation of the two intentional ingredients of cognition—intuition (sensing) and the concept (understanding it as *something*). Kant is concerned with how this cooperation can possibly take place in an *a priori* form—how are the pure

forms of thinking and pure forms of intuition united? Kant's answer, provided in the Transcendental Deduction and the Schematism chapter, is that the *real unification of two heterogeneous forms is carried out through the mediation of transcendental imagination*. The means of this transcendental imagination (in contrast to self-referential mediation) is a transcendental determination of time by which the pure forms of thinking are sensibilized and the pure forms of sensibility are brought into a relationship with the pure forms of thinking. It is a mediation between the universal and particular, i.e., between unity and multiplicity which have been isolated.

The specific character of transcendental mediation lies, oddly, in the 'independence' of imagination which in two senses is still dependent upon sensibility and understanding: "[I]magination is dependent for the unity of its intellectual synthesis upon the understanding, and for the manifoldness of its apprehension upon sensibility (C1, B 164)." Due to this double dependence imagination can function as a mediator between intellectual concepts and sensible intuition and between the pure concepts and pure intuitions. Without this dependence, imagination is no more than a mere 'play of representation' (C1, A156/B 195; A194/B 239; A 239/B298). In spite of this dependence, imagination has its own independence as a fundamental faculty (C1, A 124). Yet it is odd that imagination has no fixed 'home' in Kant's system of faculties. It is, rather, an intermediary power between two fundamental cognitive powers, i.e., sensibility and understanding.

From what has been said, it should be clear, in the first place, that ‘mediation’ for Kant implies an interconnecting activity between two heterogeneous terms. Just as an environmental configuration is heterogeneous with the subjective constitution of the organism, so an experiential object is assumed to be heterogeneous with the faculties of the knowing subject. The object of cognition on its primordial state is neither a product of human reason nor a copy of an ideal world. So there can be talk of neither an ontological participation nor a logical subsumption. The heterogeneity between concept and object is heterogeneity between thinking and being. Kant’s schematism, seen from this angle, is an effort to provide an operational means to overcome the gap between those two terms.

In the second place, ‘mediation’ in Kant’s view, is a kind of assimilatory and transformative activity. Presupposing the heterogeneity, Kant is looking for the condition under which the necessary agreement between the two constituents of human cognition is possible. The condition of the necessary agreement is not dominated by a one-sided priority of either of those two terms. Rather, two heterogeneous terms are assimilated by the action of imagination. The process of assimilation can be seen from two different angles—human reason assimilates the given materials to the ‘self-thought’ conceptual framework on the one hand, and it accommodates itself to the particular instance (or, strictly speaking, to the a priori condition of time) to be concretized on the other.

Third, Kant's idea of 'mediation' is closely related to human action. Mediation does not take place in a pure intuition or a pure thinking. It is realized by means of the constructive action of the transcendental imagination. In other words, mediation is a constructive action that relies upon imagination. This consideration has important consequences for a proper understanding of the character of homogeneity and the assumed common root of sensibility and understanding. It is that, for Kant, homogeneity between object and concept is not ontically given; it is constructed by human action. In the same vein, the common, but unknown to us, root of the two stems of human cognition must not be sought in a certain region of being or in a certain cognitive faculty (C1, A 15/B 29). It is found in a concrete interaction between those two things. Viewed as a concrete cognitive act, this interaction has priority over the supposed duality between sensibility and understanding. That is to say, the transcendental schema as a medium of mediation has priority over the intuition and the concepts in the process of the structuring of appearances through the application of the categories.

In the fourth place, Kant's notion of mediation is essentially teleological. The aim of mediation is to build a system of nature in accordance with the system of human understanding (PR, Section 39). There is much textual evidence to support the idea that, by system, Kant has in mind something like a building. Human reason makes use of the transcendental schemata as a transcendental 'hand' to construct a 'building' called 'nature' (The 'house of

experience,' Cf. PR, Section 33) according to its own plan (read categories) by using the available materials (empirical intuitions).

## **CHAPTER SIX: THE HEURISITC OF MATHEMATICAL SCHEMATA**

### **A: OPENING REMARKS**

The challenge for a satisfying account of Kant's doctrine of schemata is to take into account (at least) each of these four manners in which Kant speaks of the transcendental schemata (since they represent his most consistently and most frequently used characterizations of the schemata) and, at the same time, to avoid obscurity. Such an interpretation has been left unwritten. Kant's commentators have not been able to explain how exactly the categories are able to apply to our appearances on Kant's theory of schemata or, for that matter, what type of representation the schemata are exactly.

In this final chapter, I would like to suggest what might prove to be a helpful tool in beginning to make sense of Kant's doctrine of schemata: the heuristic of his use of schemata in his mathematics. I will conclude, then, by exploring the relationship between Kant's employment of schemata in his mathematics and in his epistemology.

The first *Critique* and the *Prolegomena* demonstrate that Kant cashes out his epistemology in terms of demonstrating that synthetic *a priori* propositions are possible. In mathematics, according to Kant, a mathematical judgment, one that is synthetic *a priori*, is one in which we can present its

corresponding figure in intuition, i.e., in space, where this presentation or ‘*construction*’ is an act of synthesis. His theoretical philosophy is no different. In both synthesis is based on the construction of images in space (in objective reality). This act of construction is the act of providing a concept (mathematical, empirical, or pure) with objective reality/validity.

Along the same lines, the act of schematization underlies synthetic *a priori* knowledge (of any sort), i.e., determining the concept in cognition. As I showed in Chapter Four, in Kant’s mathematics, the schemata are the representations of universal methods/procedures for image construction. This is not to say that they are opposed to images in general. For they still have an image-character. However, this image is not empirical but pure. A pure image can be represented as ‘imaginability’ or ‘constructability’ rather than as a concrete, particular instance. In what follows, I will try to demonstrate that this may provide some hints at how we might begin to make sense of the transcendental schemata.

## **B. RECONSIDERING KANT’S CHARACTERIZATIONS OF TRANSCENDENTAL SCHEMATA**

I want to begin by recapping some of the key ideas that were raised in the previous chapter. To begin with, I said that, above all, Kant’s solution to the problem of concept-application, i.e., his doctrine of schemata, is driven by the fact that he is not a simple idealist who thinks that we can create objects corresponding to concepts without the possible presence of objects in space.

Objects are not merely temporal but also spatial. Ultimately the sense and meaning of the categories rest upon empirical intuitions (C1, B 149). For example, the schema for substance, i.e., ‘the permanence of the real in time,’ must presuppose the *real* things existing in space. Something permanent is not a real thing existing in me (C1, B 275).

However, in the first *Critique*, Kant is engaged in the discovery of the transcendental and subjective foundation of the external schematization that can be realized *in concreto* in nature. For instance, the notion of the ‘permanent of the real in time’ can be thought without direct reference to the empirical intuitions. The notion of permanence itself does not have its seat in the external objects, but in the subjective representation of something that exists permanently in time and space.

This is why the ideas of schemata as products of the imagination become so important. For, in Kant’s theory of application, the possibility of ‘presentation’ or ‘exhibition’ of objects provides the possibility of application of concepts to appearances and, in consequence, the possibility of the meaning of concepts. The ‘relation to objects’ does not mean primarily the actual and immediate presence of empirical objects, but rather the spontaneous ‘presentation’ of them.

Yet this presentation, to be sure, is guided by systematic rules by which the categories are applied and restricted to phenomena (the second characteristic mention above). These schemata qua semantic conditions are not extensional but intentional. Though Kant maintains that sense and meaning are derived

from empirical intuitions, the actual existence of objects themselves does not provide sense and meaning to concepts. In this regard, Kant is still formalistic—he is concerned with the “formal conditions of sensibility” (C1, A 139/B 179), not with the material data, even though he never neglects the latter.

The meaning which the categories obtain is not of an indeterminate but of a determinate sense by temporal organization. The schemata are determinations of time. If the temporal condition (the schemata) were removed, all meaning (understood now as the ‘relation to objects’) would be removed; and “we cannot through any example make comprehensible to ourselves what sort of thing is to be meant by such a concept (C1, A 241/B 300). Kant means here by ‘example’ not a sensible thing that could be pointed to, since the categories can never be found in any intuition and are heterogeneous from empirical intuitions (C1, A 131/B 176). Instead, he means the temporal organization of things to which categories *can* be applied.

Finally, the ideas about schemata as mediators express Kant’s concern to show that the cooperation of the two intentional ingredients of cognition—appearances and the pure concepts of the understanding—is possible. He wants to show that the two types of representations can be united in *a priori* form. Kant’s answer is that the real unification of two heterogeneous forms is carried out through the mediation of transcendental imagination. The transcendental imagination makes this unification possible due to its being a faculty that works both independently and cooperatively with the faculties of understanding and

sensibility. It is an intermediary *power* between two fundamental cognitive powers.

Though many of these ideas remain obscure, the model of mathematics seems helpful at providing some clarity here. We might be able to address the questions that have yet to be answered. How, exactly, do the schemata provide a common ground between the pure concepts and intuitions allowing the former to be applied to the latter? How does application take place *through* the schemata? Even what Kant has in mind as this ‘third type’ of representation is unclear.

## **1. CONSTRUCTION**

I will begin by exploring the idea of ‘construction’ that underlies Kant’s use of the schemata in his mathematics. In both his mathematics and his transcendental philosophy, Kant sees the schemata as that which allow the intellect (the imagination) to construct images that correspond to our concepts (the pure concepts and mathematical concepts alike), providing them with the objective reality/validity that, according to Kant, render them meaningful. The ‘relation to objects,’ i.e., the meaning, then, of mathematical concepts is a relationship that is not purely given, as is the case with the meaning of the categories. Rather, these are *constructed relationships*, ones that are constructed through the determination of time and by the active imagination..

We should ask what exactly this construction is. In essence, this just is the question of how application takes place through the schemata. In

mathematics, the imagination works to construct an image that is not concrete or particular but one that will unify and determine sensibility (C1, A 140/B179). Application, then, is an activity of this independent, mediating faculty. The constructed image, e.g., the line or the dots, should fully represent the mathematical concept. Our sensibility, what we come to intuit, should unify under this pictorial representation so that all triangles or dots that we come across should converge in this one triangle.

Kant could conceive of our cognition, more generally considered, to work in a very similar way. Of each image or object that the imagination ‘constructs’ (with the cooperation of sensibility and understanding) it should, in a sense, also be intended to unify sensibility. The substance that underlies this chair, for example, ought to be like cognized like any other (future) substance in that it represents the pure concept fully, as being that which persists through time.

The schema is at work here, instructing the imagination (in doing math and in experience in general), as a universal procedure/method for the construction of images. It guides the imagination as to how to construct the image so as to reflect certain temporal characteristics. To experience is just to be able to construct these images according to the plan of the schemata.

## 2. INDEXING

Another theme, one that was just touched on in the previous section, that Kant raises in his mathematics and that seems helpful is the idea of ‘indexing’ or ‘alphabetization’ (concepts mentioned in Chapter Four). In mathematics, Kant discusses the notion that the schemata allow reality to be identified (tagged) and organized in uniform space. The object then becomes able to be set within our conceptual framework. I think this notion is helpful in making sense of Kant’s doctrine of schemata in general, since we can extend this notion to how the imagination (using the schemata) does this work in cognition as well.

Kant suggests that the categories are a sort of rules for indexing appearances in order to ‘read’ them as experience (PR, Section 30). Appearances are not in themselves readable or *a priori* determinable without necessary and universal rules to order and organize them into a *system*. In other words, appearances do not in themselves meaningfully cohere without the meaning-giving activity of the transcendental subject, even though Kant recognizes that they are the ultimate basis of the sense and meaning of categories. Herein lies the very specific function of mediation by means of the schemata. Functioning as a monogram of the imagination, the transcendental schemata are the transcendental hand which writes the text of appearances. They do so in accordance with the rules of alphabetization. The mediating and assimilating action by means of the schemata provides meaning (reference to an object) to the categories (the rules of alphabetization) through writing and

readable text of appearances in a language of 'time' (time-determination). The 'meanings' of both categories and appearances is created by the mediating action itself. Through this action, the system of categories is made congruent with the system of nature.

### 3. PICTORIAL METHODS

As I have said, neither Guyer's nor Allison's account of the nature of transcendental schemata seems satisfying. To reiterate, on each of their readings, Kant intends the schemata to be a variety of either an intuition or concept. Guyer describes them as categories that have been made (that involve some property) to pick out some aspect of our intuitions, time. Allison says that the schema are determinate, or conceptualized, pure intuitions. Yet Kant recognizes a gap between the intellectual and sensible conditions for cognition. It would then seem strange for him to think of the representations that allow for the homogeneity between the intellectual and sensible conditions as simply being one or other of these very same representations.

One account of the nature of schemata might echo the manner in which Kant describes the mathematical schemata. As mentioned, the mathematical schemata are, according to Kant, universal procedures/methods of how to construct a sensible image (C1, A140/B179). Nowhere is the rule character of the schema more visible than here. Our representation of a number, for example, *in concreto* is a rule-governed activity (universal, abstract) made

possible by the imagination. Here, the process of learning numbers by means of digits or beans is not excluded, but rather is founded on the rule-governed activity of the learning subject that Kant assumes to be ultimately based on the a priori rule of continuity.

Transcendental schemata could also be seen as procedures or methods that guide the construction of objects. As I mentioned above, one characterization that Kant often and consistently uses of the transcendental schemata is that they are universal, systematic rules by which the categories are applied and restricted to phenomena. For these reasons, Guyer's interpretation has a certain appeal; the idea of the schemata as semantic rules with conditions of temporality added seems close to what Kant has in mind. The problem, of course, is that they cannot just be concepts/rules for, if they were, then they could not overcome the heterogeneity between the categories and appearances.

Allison's interpretation, which allows that schemata are pure intuitions, is also unsatisfying for the same reason. And, yet it also has a certain attraction. The main operation of the imagination, after all, is to produce a sensible image. The apprehensive and reproductive imagination brings the manifold in appearance into a uniform, recognizable concept (C1, A 120). At least for empirical and mathematical concepts, Kant specifies that the imagination delineates or represents a sort of Gestalt image that is general enough to depict all such instances that fall under that concept. Further, as Allison points out, it certainly seems plausible to think of the transcendental schemata in this way, since Kant often characterizes them as 'forms' or 'conditions' of sensible

intuitions. They are the “formal conditions of sensibility” (C1, A140/B 179). That is, they are specific temporal conditions of actual empirical intuitions (Allison, 185).

We are stuck in a dilemma or sorts. Schemata, it seems, cannot be a sort of variety of either image or a concept/rule, and yet it is inviting to read Kant in either of these ways. Yet, as should be clear the mathematical schemata do not seem to be either type of representation. They seem to be both. They seem to have a certain general pictorial character and, at the same time, to be rule-governed procedures for image construction. Perhaps this is what Kant intends for the transcendental schemata as well. This could be what Kant means by calling the schemata a ‘third thing.’ They could be seen as a third class of mental representations that cannot be classified as either a type of image or concept, since they resist being classified as either. They form their own class of representations, housed in a third, independent faculty (the imagination) that has certain characteristics of both of these other types. This certainly seems to allow for the mediation while at the same time preserving their independent character.

To illustrate the point, let us consider what seems to be a possible similarity between how we might understand the nature of a schematized mathematical concept, e.g., a right triangle, and one of the categories, e.g., causality. The schema of the triangle would have to be strict and rule-based, specifying the particular manner in which the imagination can construct the image, e.g., the lines at the right angle must be perpendicular and the interior

angles of the complete triangle must measure 180 degrees. Yet it also seems to be image-based as well. One would have to be able to conceive (visualize), spatially, what a line looks like or at least what it means to move a pencil from the left to the right of the paper.

Similarly, to be able to cognize that one object stands in a causal relationship with another, the imagination would have to be guided by the formal conception of structuring the image of the pool balls, for example, as following according to a necessary temporal ordering. The perception of the successive states of the objects must be seen as irreversible. At the same time, we can conceive of a pure image that could also guide this construction, one that is general enough to cover all instances and to be most expedient in the construction of all corresponding images.

#### **4. THE HIDDEN ART**

Finally, I want to address the question of how, exactly, the schemata mediate between the categories and appearances. A series of questions arise here. How does the imagination bridge this gap, allowing for a common ground between the two types of representations? What does this construction look like? How do they determine time?

I think all of these questions might be answered by considering a very substantial passage of the first *Critique* that occurs in Kant's discussion of mathematics. He speaks there of the judgment and schematization. He says that

the understanding is capable of being instructed and being equipped with rules, but judgment is a particular talent/capacity that can only be practiced and not taught (C1, A 143/ B 172). The power of rightly employing rules must belong to the learner herself (ibid.). The rules, then, for the application of the universal to the particular instance, the transcendental schema, are the result of a ‘hidden art.’ Kant says:

This schematization of the understanding, in its application to appearances and their mere form, is an art concealed in the depths of the human soul, whose real modes of activity nature is hardly likely ever to allow us to discover, and to have open to our gaze (C1, A 141/B 180-1).

Even though he recognizes the act of concept application as a ‘hidden art,’ he nonetheless relies on this art to explain how experience is possible.

The answer to these questions, then, seems to be that there are no answers or at least none that Kant provides. His doctrine of schemata is intended to explain how the process of schematization solves the problem of concept-application. While he describes what he sees as taking place to overcome the heterogeneity, i.e., the act of time determination, the process of the imagination’s constructing objects, etc., he also thinks that some questions will never be able to be answered. It seems that questions that focus on the actual process of concept-application resist any explanation. Kant is purposely vague, leaving his commentators not only to overcome his obscurities but to fill in the gaps that he intended to leave us.

### **C. CONCLUDING REMARKS**

I have mentioned just a few themes here that seem fruitful for hints as to how we might begin to make sense of Kant's doctrine of schemata. A host of questions have been left unanswered by Kant's commentators, and these are just some places where we might begin to look for answers.

However, there is much more work to be done. Kant's doctrine of schemata, what many have called the most puzzling and yet, at the same time, most significant aspect of Kant's system, is far from being made clear. The accounts of the doctrine that have been provided by Kant's commentators have oversimplified it. This thesis has been an attempt to draw attention to its complexity and to begin to look for clues to make sense of it.

To be sure, I have not filled in all of the pieces of the puzzle. This thesis was not an attempt to provide a satisfying account of the doctrine. But we should not let this shortcoming deter us from working closer and closer towards a more placating account, true to his original inspiration if not to his lingering desire for certainty.

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