KANT'S NOTION OF A TRANSCENDENTAL SCHEMA: THE CONSTITUTION OF OBJECTIVE KNOWLEDGE BETWEEN EPISTEMOLOGY AND PSYCHOLOGY

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To my lands and ices.

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Preface

"Hang up philosophy!
Unless philosophy can make a Juliet,
Displant a town, reverse a prince's doom,
It helps not, it prevails not: talk no more."
Shakespeare, Romeo and Juliet, III, 3

"Without Contraries is no progression.
Attraction and Repulsion,
Reason and Energy, Love and Hate,
are necessary to Human existence."
Blake, The Marriage of Heaven and Hell

Thinking about how to start this preface, it suddenly came to my mind how it all started. It was a rainy Milanese September morning when I sat in my first lesson of philosophy at school. The teacher asked us what our opinion about philosophy was, and if we thought it was a science. With the self-confidence typical of imagination, I raised my hand and answered that philosophy is not a science because its claims cannot be demonstrated. Science is stable, clear, and certain, whereas philosophy, as Romeo harshly says, is just talk: it is useless and does effect nothing. But then, my teacher showed me that my ideas had some cracks: scientific claims are often based on hidden assumptions and theories change through time. Nothing is stable and fixed. That disturbed me a lot. I had my preferred views, my plans for the future (to become an ethologist or an archaeologist studying the world and its sands) but then my teacher challenged me. I had only one choice: follow her arguments or just ignore them. I could not leave her words a side. The same happened when at university I took a course in contemporary philosophy, in which the professor could not avoid giving hints to Kant. We had not read a single word of Kant; that was not in the programme. But the entire course was actually about him. I worked under the supervision of this professor (Renato Pettoello) for both my Bachelor and Master theses and I owe him a lot: he is one of the most patient, reasonable and courageous people I know. When one day, talking in class about the impossibility of psychology to becoming a science, he mentioned an interesting article of a Kant scholar, Thomas Sturm, whose name to me mostly evoked the *Storm and stress* movement. I wrote down the reference and some months later I decided to immatriculate at UAB in Bellaterra. I then spent, funded by STORE[1] almost my first year of research in Düsseldorf, however, where I built the basis of this work, and not only that.

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1. The Collaborative Research Centre SFB 991 'The Structure of Representations in Language, Cognition, and Science'.

For all this, I want to thank these philosophical guides, and among them, first and foremost, my advisor, who always encourages me and has the uncommon gift to see better than I the directions of my steps. He sees the path when I am groping around.

Secondly, I want to thank the STORE and AGAUR[2], for supporting my research in Düsseldorf and in Barcelona. I moved to both cities in search for interesting interdisciplinary discussions, and I found more than that, namely professionals, such as Christoph Kann, from whom I could learn a lot, and that are examples of life devoted to a work that has value. Philosophy might be just talk, but by just talking we can disclose new horizons, cope with our defeats, and then move on. For this I am grateful to Maria Grazia, Michalea and Satik. They were (and are) there with me. Now I want to thank my friends from Milano and of ice skating: Nico, Grace, Fedra, Marco, Lilla, Vera, Guido, Paolo, Ingrid, Albert, Sonia, Marc and Teresa. Sometimes I just wanted to give up, but and they supported (and support) me, telling me the right things at the right time. I thank my family. Each member included. None of them has the slightest idea of what a transcendental schema might be, but it is better that way. There are lots of more important things we shared and hope we will share. Last, I want to thank the small wonderful Kant reading group and my friends (and their families!) of the UAB: Annette, Jaime, Gen, Fabian, Hector, Josep and Claudia. I owe them a lot and in some occasions, I had actually to be hosted at their places. They were my refuge during these years.

Without these people and all the others I am sure I am forgetting, I could not have completed this work. I hope that in the future they will still be there, and I hope to have the humility and strength to listen to their words (even if they cannot make a Juliet). Like on that rainy Milanese morning.

2. FI-DGR: 2015FI-B00136.

Introduction

Main objectives of the study

The main aim of the following investigation is to provide a critical and historical inquiry on Kant's schematism chapter contained in the *Critique of Pure Reason*. More specifically, I am going to argue that Kant's schematism chapter is a necessary step within the project of the *Critique*. It deals with a problem of its own, one which is not the object of the previous chapters: How can categories be applied to intuitions? I will show that the term 'schema' has an interesting and long tradition of different philosophical uses that finds in Kant a point of no-return. In the philosophical works written before Kant, the notion of schema did not have a specific and distinctive meaning and function of its own, but was rather used in different contexts (from rethoric to logic to psychology). After Kant, all philosophers who speak of schemata refer in one way or another back to Kant's distinctive notion, which possesses a specific epistemic meaning. Moreover, I aim to provide a contribution in the understanding of the relation between philosophy and the sciences. I will do that by means of demonstrating the importance of the schematism chapter not only within the *Critique*, but also from a broader perspective, deriving from the fact that Kant's doctrine of schemata had an impressive influence not only on philosophers, but also on psychologists.

The project originates from the results obtained through my Master's thesis about Kant's notion of experience and the task Kant abscribes to philosophy, namely to deal with the conditions of possibility of experience and of sciences, limiting their domains. Particular disciplines sometimes use and find their claims on the basis of hidden assumptions (for instance through a definition of justice or of goodness) that, although at their basis, are not openly scrutinized. For example: physicists do not ask themselves what the meaning of expressions such as, "to make a discovery" or "atoms exist" is, or what the relation of the existence attributed to atoms and the existence of complex objects of everyday life is. Such problems are exactly regarded as a main aim of philosophy in a critical perspective: to clarify concepts for the purpose of checking or defending our epistemic judgements. A critical philosophical attitude characterises those researchers who, when confronted with something puzzling (for example: the oar, which appears to be bent when held under water, but straight when held outside of it), rather than rejecting the problem, try to analyse and clarify its underlying assumptions. In the example just hinted at, the conflict between different kinds of perceptions remains (the oar held under water and the

oar outside of it; the sun that rises, although we know it does not actually do so), but the unity of experience is saved: there are not two worlds in opposition to each other (the "world where the sun rises" and the "world of physical theories"), because our apparently opposing claims are not absolute but have to seen as standing within a field of reference, a framework of conditions of possibilities, which philosophy aims to bring to light.

From this standpoint, I have decided to devote my attention to Kant's notion of schema, which has often been regarded as the most obscure topic of the *Critique*, "famous for its profound darkness, because nobody has yet to make sense of it"(-Schopenhauer 1819, p. 552, transl. LS).[3] In a similar way, Hegel refers to Kant's artificial "[…] construction through lifeless schema"[4] and Herder regards 'schema' as "[…] a fictitious middle term between two vanishing fictitious functions." (Herder 1799, p. 418, transl. L.S.).[5] While many critics reject its importance and suggest that Kant's schematism chapter is a redundant part of the *Critique of Pure Reason*, I believe that it is productive to apply the principle of charity in order to figure out the function Kant attributes to it. Most importantly, of the problem the schematism chapter aims at solving is this: what is the method of application of pure concepts to intuitions? It is one thing to posses a concept, or to know a rule; it is quite another thing to apply the concept, that is, to recognise correctly the instances we can refer it to.

Moreover, I find interesting and important the focus on the history of philosophical terms and problems that are related to non-philosophical disciplines. Philosophers often use terms that come from several fields of human experience and knowledge, and provide them with new significance in accordance to the question they aim at solving, thus creating their own technical language. Kant gives to 'schema' (a term used before him in rhetoric, logic, and psychology) a particular meaning and uses it to solve an epistemological question whose origins are related to the philosophy of mathematics. But, the problem of schematism is also a great example of the difficulties and importance of discriminating between fields of knowledge. Several authors before and especially after Kant have regarded schematism as a psychological more than a philosophical topic; even Kant himself sometimes uses a psychological terminology in his discussions. Given this, what is the relation between philosophy and psychology? If they share topics (for instance, the problem of cognition), are both necessary and separated disciplines? Why? Or should we revise our customary disciplinary distinction?

To investigate these questions, I intend to evaluate the function of the schematism chapter in the *Critique of Pure Reason* by means of: 1) an historical study of the uses of the term 'schema' before and after Kant, in order to bring out how it becomes a philosophically defined term, and how Kant arrives at his own problem of schematism;

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3. "[…]welches als höchst dunkel berühmt ist, weil kein Mensch je hat daraus klug werden können."
4. "Construction zum leblosen Schema […]"
5. "[…] dritte Fiktion zwischen zwei verschwundenen Fiktionen."

2) achieving a critical definition of the notion of schema (as it is presented in the chapter of the *Critique*) in order to decide whether the introduction of schemata is a necessary step in Kant's transcendental project, or a redundant addition to the pure forms of the sensibility and of the understanding; 3) the understanding of the legacy of Kant's schemata focusing on the relation (if there is any) between transcendental schemata and related psychological and philosophical notions developed by his successors.

Method

During the development of this research, it became clear to me that the customary distinction between historical and critical method is an oversimplification. Both are needed and mutually linked to one another. On the one hand, I carried out an historical inquiry on the philosophical uses of the concept of schema before and after Kant. Then, before considering the uses of the term within the *Critique of Pure Reason*, I researched whether Kant himself used the term in his precritical works.It is present only in two texts: the *Nova Dilucidatio* (1755) and the dissertation *De mundi intelligibilis atque sensibilis forma et principiis* (1770). Moreover, although Kant does not yet use the terminology of schematism, in *Untersuchung über die Deutlichkeit der Grundsätze der natürlichen Theologie und der Moral* (1764), relevant aspects of the problem of applying pure concepts to experience are already present. Finally, I focused on the legacy of Kant's notion, not only by considering the main receptions among philosophers, but also stressing how three influential twentieth-century psychologists (Jean Piaget, Frederic Bartlett and Lawrence Barsalou) took up Kant's terminology while refashioning the function of schemata to their own agendas. I have decided to enter this territory, since the concept of a schema has become a most lively discussed topic within cognitive psychology, often with reference to Kant and equally often with misunderstandings of his own notion. It is important to rectify this reception of Kant, and it should help to clarify the relations between philosophy and psychology in this area.

In my historical analysis of the idea of schema, I have considered the aims of the texts inquired in order to understand meaning and function of 'schema'in each of them. For instance, in the passages of Kant's works here investigated, the purposes of the author differ and because of this, 'schema' assumes different functions: from its metaphysical significance in the *Nova Dilucidatio* over its description as "shadowing outlining of things"(AA II, p. 393) and "outline for the mutual co-ordination of all external sensations" (AA II, p. 403) in the Dissertation of 1770 up to the manifold definitions present in the schematism chapter of the *Critique of Pure Reason*. In this perspective, these diversifications, although present in the texts of the same author, do not generate incoherences and contradictions, because Kant's aims in each of the passages here considered are different. Besides, I showed how he develops

schematism from problems in the definition of mathematics (namely the problem of the application of pure concepts to experience) and how he comes to identify the problem of the application of pure concepts to experience with the notion of schema, that was used in texts of his predecessors and contemporaries (such as Joachim Georg Darjes, Johann Nicolas Tetens and Christian Thomasius). In this inquiry concerning the origins of Kant's schematism, I do not see a conflict or an alternative between historical and critical method in philosophy, but a necessary and advantageous mutual engagement. Moreover, the notion of schema is a perfect example of how a notion of the past can be used to confront current problems concerning the notions of imaging and frames, the relation between cognitive functions and perception, or the tasks and limits of philosophy and psychology. The legitimacy of this historical and critical research is provided by the fact that there are theoretical similarities between the questions Kant investigates by referring to the notion of schema, and by the references that later modern authors often make to Kant as their main interlocutor.

State of the art

Although Kant scholarship is notoriously immense, the monographs exclusively dedicated to the problem of schematism are very few (Califano 1968, Camartin 1971, Kang 1985, Gasperoni 2016). This topic still requires further analysis, and I will therefore hope to give a distinct contribution by contextualizing Kant's views, thus helping to better explain their meaning and their impact.

To inquire the different uses of 'schema' in the history of philosophy I have built on to the entries on 'schema', written by Werner Stegmaier and Theo Hermann in the *Historische Wörterbuch der Philosophie* (1992) and to the original texts of the authors here considered. Moreover, I have largely profited of the *Kant-Lexicon*, edited in 2015 by Marcus Willaschek, Jürgen Stolzenberg, Georg Mohr and Stefano Bacin, that provides the largest and most penetrating lexical reference on Kant. Classical commentaries on the schematism chapter are those of Kemp Smith 1918, Beck 1965, Klemme 2004, and Paton 1936. Moreover, one of the most important contributions to the debate concerning the importance of the schematism chapter in the *Critique of Pure Reason* is given by the views presented in Cassirer 1922-57 and Cohen 1871: the first believes that it is useless, while the latter stresses the fundamental role of schemata. Another important contribution is given by de Vleeschauwer 1937, who declares that the doctrine of schematism can be explained only by referring to Kant's distinction between two kinds of reason and experience, i.e. the difference between *synthesis speciosa* and *intellectual synthesis* presented in the second edition of the *Critique of Pure Reason*. Other fundamental studies are those of: Holzhey 1970, who distinguishes several notions of objects in the *Critique*, and Scaravelli 1968 and Barone 1958 with their contributions to understanding the relation between general and transcendental logic. Apart from these, in this work seven critical and interpretative studies of the

twentieth century will be considered in closer detail, namely: Zschocke 1907, Curtius 1914, Walsh 1957-58, Dahlstrom 1984, Guyer 2006 and Allison 2004.These interpreters have been chosen because they differ in tasks and approaches and are therefore perfect examples forshowing how the schematism chapter, given its obscurities and difficulties, has generateda long-standing and lively debate, one that has not found a conclusive point yet. Moreover, I have decided to investigate and evaluate the direct and indirect references to Kant's doctrine of schematism in Kant's successors: from the earliest receptions of Maimon, Herder, Humboldt, through idealists and post-Kantians (Fichte, Schelling, Hegel, Herbart, Beneke, Schleiermacher, and Fries) to authors of the late nineteenth and early twentieth centuries (Dilthey, Nietzsche, Bergson, Husserl, Heidegger, Cassirer, Whitehead, Horkheimer, and Wittgenstein). Finally, I shall focus on the psychological receptions of the notion of schema. One of the distinctive aims of this dissertation is to provide an interpretation of schematism in consideration of the relation between transcendental philosophy and psychology. The background of this interest is the following. Famously, Peter Strawson (1966) combines his analytical standpoint and his interest in the transcendental philosophy. According to Patricia Kitcher (1990), Strawson's analytical account disregards the core of Kant's inquiry, namely its "dark side", which concerns his ubiquitous talk of cognitive faculties – such as sensibility, the understanding, imagination, reason, memory, and so on - and which can offer important contributions for the development of psychological and interdisciplinary theories of cognition. Besides, while interest in Kant's views on psychology has grown (e.g. Satura 1971; Hatfield 1992, 1995; Sturm 2001, 2009), in-depth studies on the legacy of Kant's schematism in psychology are scarce (Marshall 1995; Brook 2007; Wagoner 2013). I shall therefore look closely at the psychological studies that established the interest in schema theories and that were, directly or indirectly, influenced by Kant- namely those of Piaget, Bartlett and Barsalou. I will evaluate them against the background of my interpretation of the schematism chapter.

Structure

This dissertation is divided into two main parts. In the first part, the first chapter focuses on the meanings of the notion of schema before Kant, while the second is devoted to the precritical meaning of the notion of schema in the *Nova Dilucidatio* and in the Dissertation from 1770. The third chapter aims at providing a broad overview of the preliminaries chapters to the schematism chapter in the *Critique of Pure Reason*, namely the "Transcendental Aesthetic" and the "Transcendental Deduction"; the fourth consists in an analysis of the chapter about schematism, while the fifth aims at considering the interpretations of Zschocke, Curtius, Bussmann, Walsh, Dahlstrom, Guyer and Allison, in order to determine the function of this controversial chapter.

The first chapter of the second part provides a short overview of the philosophical legacy of Kant's schematism, by considering the receptions of Kant's doctrine among idealists, post-Kantianists and philosophers of the late nineteenth and early twentieth centuries such as Bergson, Husserl, Heidegger, Whithead and Wittgenstein. The second chapter focuses on Kant's distinction between philosophy (in which the notion of schema assumes a fundamental role) and psychology and on Kitcher's interpretation of Kant's doctrine as a transcendental psychology, while the third concerns the psychological legacy of Kant's schematism, focusing on the schema theories and the thoughts of Piaget, Bartlett and Barsalou.

Part I:
Kant's theory of schematism and its context

1. The notion of schema before Kant

Before considering in detail the reasons for why the notion of schema is problematic both in Kant's works and also in more recent thinkers, an overview of the meanings in which this term was used before Kant has to be presented. The literature on the meanings of the notion of schema before Kant and their possible influences on his uses is very scarce. In the *Historische Wörterbuch der Philosophie* a precise and detailed overview of the uses of the term is presented by Werner Steigmeier, although without the aim to stress the relations and influences between the authors, but rather expose and list the variety of significances of the notion of schema throughout the history of philosophy. The overview provides a large contribution, but it is not complete and important authors are omitted (for instance: Joachim Georg Darjes, Christian Thomasius, Johannes Nikolaus Tetens). Some relevant points are made by Thiel (2018), Psilojannopoulos (2013), Semplici (2011), who deal with Thomasius' and Tetens' conceptions of cognition and its relation to sensibility. However, they do not investigate the relation of their doctrines with Kant's schematism.

Given the absence of detailed research on the notion of schema before Kant, I have decided to devote the first chapter to this task. More specifically, the chapter is divided into three sections, following the chronological order (ancient times, middle ages and modernity), in which 'schema' is found in the philosophical literature. The variety of the connotations of this notion underlines that it does not possess a definite and specific meaning, although its use is relatively widespread and particularly in modern thinkers it is often referred to address a mediating function between the activity of the understanding and the passivity of sensibility. I have devoted more attention to present the uses of the term 'schema' in Darjes, Thomasius and Tetens, given their general influence on Kant concerning various philosophical questions - although it is difficult (if not impossible) to prove that they specifically influenced his account of schematism.

The concept of a schema has a long and complex if not confusing history. It is a philosophical concept the meaning of which has been shaped by that history; we do well in making ourselves acquainted with that history in order to prepare ourselves for the discussion.

1.1 Ancient times

In ancient times, 'schema'[6] posessed the meanings of form, appearance, shape and it was used in the philosophical literature with different connotations: rhetorical (Plato,

6. From *skhein*, aorist of *ekhō* (whose general meanings are: to have, to hold, to keep).

Aristotle), moral (Plato), geometrical (Plato), logical (Aristotle), ontological (Leucip, Democritus, Theophrastus, Aristotle), epistemological (Proclus), and physical (Philo of Alexandria).

In the 5th century BC we find first uses of the term in Leucippus and Democritus with an ontological connotation: it indicates the atom's form and surface[7], which are features of the atoms that are grasped together with movement, position in space and time and colour, whose possibility of variety has no limitations.[8]

In a different, namely rhetorical sense, Plato refers to 'schemata' as figures of speech:

> "[…] for not by art or knowledge about Homer do you say what you say, but by divine inspiration and by possession; just as the Corybantian revelers too have a quick perception of that strain only which is appropriated to the God by whom they are possessed, and have plenty of dances (σχημάτων) and words for that, but take no heed of any other." (Plato, *Ion*. 536c, transl. W.R.M. Lamb.)[9]

In the above mentioned passage, Socrates describes Ion's competence concerning Homer's poetry through a metaphor: just like the Corybantian revelers possessed by the gods are able to improvise dances[10] and poetical forms (σχημάτων), so Ion is possessed by Homer's verses. Therefore, schema means artistic composition of worlds, poetical structures.

But Plato uses the term also with a different meaning, dealing with behaviour and action. In *Epinomis*, the dialogue dedicated to the several kinds of knowledge and to the nature of virtue, he writes:

> "For these things (*desire of knowledge and virtue*) are not easily engendered, but when once they are begotten, and receive due nourishment and education, they will be able to restrain the greater number of men, even the worse among us, in the most correct way by our every thought, every action, and every word about the gods, in due manner and due season, as regards both sacrifices and purifications in matters concerning gods and men alike, so that we are contriving no life of pretence (σχήμασι), [989d] but truly honouring virtue, which indeed is the most important of all business for the whole state." (Plato, *Epin*.989 c.-d, transl. W.R.M. Lamb.)[11]

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7. Aristotle, *De Democrito* Frg, 208 (Rose=Vs 68, A37).
8. Aristotle, *De gen. et corr*. I, 1, 315 b6 (Rose=VS 67, A9).
9. "[...] οὐ γὰρ τέχνῃ οὐδ' ἐπιστήμῃ περὶ Ὁμήρου λέγεις ἃ λέγεις, ἀλλὰ θείᾳ μοίρᾳ καὶ κατοκωχῇ, ὥσπερ οἱ κορυβαντιῶντες ἐκείνου μόνου αἰσθάνονται τοῦ μέλους ὀξέως ὃ ἂν ᾖ τοῦ θεοῦ ἐξ ὅτου ἂν κατέχωνται, καὶ εἰς ἐκεῖνο τὸ μέλος καὶ σχημάτων καὶ ῥημάτων εὐποροῦσι, τῶν δὲ ἄλλων οὐ φροντίζουσιν."
10. Cf. Catoni (2013), focused on 'schema' in relation to the ancient view of arts and dances as processes of sensibilisation of what belongs not to sensibility.
11. "[…] ταῦτα γὰρ οὔτε ῥᾴδια φύεσθαι, γμενάότε, καὶ τροφῆς καὶ παιδείας τυχόντα ἧς δεῖ, τοὺς π λείστους αὐτῶνκαὶ χείρους κατέχειν ὀρθότατα δύναιτ' ἂν τῷ φρονεῖν καὶ πράττειν καὶ λέγειν περὶ θεοὺς ἕκαστα ὡς δεῖ τε καὶ ὅτε δεῖ,περὶθυσίας τε καὶ καθαρμοὺς τῶν περὶ θεούς τε καὶ ἀνθρώπους, οὐ σχήμασι τεχνάζοντας, ἀλλὰ ἀληθείᾳ τιμῶντας (d.) ἀρετήν, ὃ δὴ καὶ μέγιστόν ἐστι συμπάντων πάσῃ τῇ πόλει."

Here the first rhetorical use of the notion turns into a moral one, indicating external features and misleading behaviours, opposed to honesty[12]. This reference to 'schema' as to a feature which might not mirror the truth but,instead, falsity and appearance of things, is found also in other lines of Plato's works[13] with a more philosophical connotation. Moreover, in *Timeo* the term 'schema' is used to point to the geometrical figure.[14]In this sense, that the notion is found also in some passages of Aristotle.[15]

Aristotle's (382-322 BC) primary uses of the term are either in metaphysics[16], namely for clarifying his notion of form[17] (*morphē, eidos*), or within his logic, in order to address the syllogism's figures:

> "[…] all the syllogisms are imperfect, and are completed by means of the figures (*σχημάτων*) mentioned." (Arist. *Apr*, I, 19, transl. J.Jenkinson)[18]

The above mentioned passage is only one of many in the *Prior Analytics*, in which the term 'schema' can be found. In this work, Aristotle focuses on his theory of the syllogism, whose propositions (premises and conclusion) consist of a major, a minor and a middle term, which joins the premises and whose position determines the schema, namely "figure" of the whole syllogism. Interesting enough, this Aristotelian logical use of the noun 'schema' as middle logical term will be kept not only during the Middle Ages, but also in modern logic[19].

Theophrastus gives Aristotle's view a more scientific rather than metaphysical bent. In his work on sensibility (*On Sense Perception*)[20] he compares Democritus and Plato's theories. He states that while both Plato and Democritus separate sensibility and understanding, Democritus does not ascribe an objective status to perception, since it merely depends on the subject's sensible modifications. In contrast, objectivity is provided by a principle (*archē),* which consists in indivisible elements that cannot be grasped through the senses, namely the atoms, which are objects of the understanding and have quantitative and measurable features such as their schema[21] (i.e. surface, shape, which includes size and dimension).

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12. However, since this dialogue was not written by Plato, the rhetorical use of the term has to be considered the more central Platonic one.
13. Plato, *Resp*. 365 d; *Resp*, 529 d.
14. Plato, *Tim*, 53 b.
15. Aristotle, *De ani* II. 3, 414, b 20-32.
16. Cf. Rohr 2017, pp. 7-17.
17. Aristotle, *Phys* VII, 3, 246 A I; *De part. anim*. I. I. 640, b 33.
18. "[…] δῆλον δὲ καὶ ὅτι πάντες ἀτελεῖς οἱ συλλογισμοί, καὶ ὅτι τελειοῦνται διὰ τῶν προειρημένων σχημάτων."
19. Russell uses it to indicate propositional functions: "A propositional function … may be taken to be a mere schema, a mere shell, an empty receptacle for meaning, not something already significant" (Russell 1919, p. 157) and later Tarski refers to syntactic schemata in his paper on truth definition (Tarski 1983,p. 157; p.160; p.172).
20. *Περὶ αἰσθήσεων*.
21. "[…] τὸν μὲν οὖν ὀξὺν εἶναι τῷ *σχήματι* γωνοειδῆ τε καὶ πολυκαμπῆ καὶ μικρὸν καὶ λεπτόν."

Later on, Philo of Alexandria uses the notion to describe the physical external shape of things[22], while Proclus attributes to 'schema' a new original epistemological sense, which is close to Kant's one: it does not refer to external features of things or linguistic or logical structures, but rather to representations, which mediate between things and concepts[23], sensibility and intellectual activity. To my knowledge, there is no direct historical lineage to Kant, although the similarity of the two perspectives is impressive.

1.2 Middle Ages

According to several studies[24] during early medieval times, the Greek term 'schema' was translated by logicians into the Latin noun *figura* which derives from the verb *fingĕre* (modelling, shaping, giving form) and comes to be used to speak about symbols, allegories, rhetorical figures[25] and qualities as well as to indicate the visible appearance of a person or the visible and tangible form of anything. But it was in its logical use, which refers to the Aristotelian 'syllogistic figures', that the noun was mostly widespread in the philosophical works of these ages. In Aristotle's Lyceum, 'schema' was used to talk about the syllogistic figures. However, there are some controversies on the translation of the term 'schema' into 'figure' or 'form': one thing is the Aristotelian figure of the syllogism, while another is the logical form[26].

Take Boethius (475/477 – 524/526), for example, who translates Aristotle's *Prior Analytics* as well as the *Topics*. He develops in his main works (*De syllogismo categorico*, *Introductio ad syllogismos categoricos*, *De hypotheticis syllogismis*)[27] a theory on the hypothetical syllogism and modifies the figures (*schemata)* of syllogism by

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(Thphr. *Sens*. 65-66).

22. Philo. Alex, *De op. m.§120*.

23. Proclus, *In Euc*., 51, 21; 94, 25.

24. Van Deusen 2011, p. 189; http//www.etymonline.com/word/figure; http://www.perseus.tufts.edu/hopper/text?doc=figura&fromdoc=Perseus

25. Actually the oldest translation of the Greek 'schema' into the Latin 'figura' can be found in a passages of Cicero: "The Greeks themselves acknowledge that the chief beauty of composition results from the frequent use of those mutated forms of expression which they call tropes, and of those various attitudes of language and sentiment which they call schemata [figures]:" - "*ornari orationem Graeci putant, si verborum immutationibus utantur, quos appellant τρπους, et sententiarum orationisque formis, quae vocant σχήματα:*"- (*Brut*., 69, transl. E. Jones)

26. Another related expression is species intelligibilis, that is the first Latin translation (made by Cicero) of the Platonic 'idea'. This notion is related to schema, insofar as it was used to address to a mediating function of cognition by Thomas from Aquin: "on the one hand, it is a reality in itself, which is particular and individual, while on the other hand, it is a similitude, which is universal. Therefore, Thomas claims, the species as individual entity is capable of providing universal knowledge: it is singular and accidental in itself, but it also enables the human intellect to attain knowledge of universal essences." (Spruit 1994, p. 169)

27. Boethius 1882-1891.

changing the translation of the copula used by Aristotle (Boethius uses the verb: "to be", instead of the more literal "to belong").

This concept of schema as *figura syllogismi* is present also in the *Dialectica*[28] written by Peter Abelard (1079-1142) which is completely based on Boethius' theory of logic except for the introduction of an innovative method to reduce the four standard figures, (called 'schemata'), to the first one. Moreover, in a work wrongly attributed to Thomas Aquinas, a definition of the term *figura* as to refer to the middle term, whose position determines the structure of the judgement can be found[29].

Later on, William of Ockham (1287-1347) and John Buridan (1328-1340) also used the noun 'schema' to indicate the figure of the syllogism. More in particular, the former, in his *Summa logicae*[30]proposes to substitute Aristotle's method to prove syllogisms' figures (*ekthesis)* through the use of a particular syllogism (called expository), in which the middle term (which determines the form or schema of the syllogism) is the subject of both premises. While the latter develops in his *Summulae de Dialectica*[31] and in *Consequentiae*[32] a theory of syllogism, considered as a kind of formal consequence, distinguished in figures (or 'schemata'), the conclusion of which might be direct or indirect (i.e. the minor term is predicated of the major).

This logical connotation of the noun persists in the Modern ages also. However, it comes to possess also a new, epistemological sense, which will be later develop and flourish especially in Kant's works.

1.3 Modern ages

In difference to the Middle ages, during the Modern ages the notion of schema returns to be used in a variety of connotations apart from logic: figurative (Wolff), rhetorical (Sturmius, Diderot, D'Alembert), biological (Ploucquet), physical (Bacon) and epistemic (Thomasius, Darjes, Tetens).

References to the use of the term are present in Rudolph Goclenius's work (1547-1628) who relates it to 'figure' in two senses: first, in a geometrical sense and secondly, in a rhetorical one, which finds support in the work of Ioannes Sturmius (1507-1589), who defines 'schema' as argument, structure of discourse:

> "[…] schemata are arguments directed to proof and wide, as similarities and examples." (Goclenius 1613, p. 579, transl. L.S.)[33]

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28. Abelard 1970.
29. "Figura enim est dispositio medii secundum subjectionem et praedicationem, quae scilicet dispositio tripliciter variatur." (Anonymous 1864)
30. Ockham 1974.
31. Buridan 1487.
32. Buridan 1493.
33. Schemata argumentosa, directa ad probandu et amplificandu, ut sunt similitude et exemplu.

A more philosophical connotation is attributed to the term by Francis Bacon, who uses the notions 'schematismus' and 'meta-schematismus'[34],to indicate the structure of matter and its changes:

> "The human understanding is carried away to abstraction by its own nature, and pretends that things which are in flux are unchanging. But it is better to dissect nature than to abstract; as the school of Democritus did, which penetrated more deeply into nature than the others. We should study matter, and its structure (schematismus), and structural change (meta-schematismus)" (Bacon 1620, I, p. 51, transl. M. Silverthorne)[35]

In contrast with metaphysics, which looks for forms and essences beyond experience, he aims at elaborating a new method in philosophy, intended as an actual science, which works through the help of observations and experimentations and has the aim to discover objective properties of nature. This latter is seen in its material process of formation (*natura naturans*), which has to be distinguished from all those characteristics (*idola*) added by the activity of understanding and fantasy, which have the tendency to go beyond experience, thus generating illusions and mistakes.

Another and for our purposes highly interesting epistemic use of the noun 'schema' in the Modern age is found in Christian Thomasius. According to him, cognition begins with the influence of the objects on our senses, which leads to the constitution of schemata, regarded as a sort of Cartesian material ideas at the basis of cognition:

> "Thinking is an act of the mind, through which man or the mind in the brain affirms, negates or asks for something, through schemata impressed in the brain by the movement of external bodies through the sensible organs, through discourse and constant words of orations." (Thomasius 1688, pp. 83-84, transl. L.S.)[36].

This process through which ideas are constituted is not only passive, but also active, as can be seen from that Thomasius attributes it to the faculty of the understanding:

> "[…] but we have not to forget also their *Entium rationis*, that have the only and unique essence in the human understanding. These are nothing else that the expressed schemata or ideas of actual things and their unification or separation, which takes place through the understanding. When the understanding puts together the same ideas and separates the different ones and give to each one its own place, this is called *ens logicum* or *metaphysicum."* (Thomasius 1691, pp.131-132, transl. L.S.)[37]

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34. Bacon 1620, I, pp. 45-51.
35. "Intellectus humanus fertur ad abstracta propter naturam propriam; atque ea, quae fluxa sunt, fingit esse constantia. Melius autem est naturam secare, quan abstrahere, id quod Democriti schola fecit, quae magis penetravit in naturam, quan reliquae. Materia potius considerare debet, et eius Schematismi, et Metaschematismi."
36. "Cogitatio est actus mentis, quo homo vel mens in cerebro de schematibus a` motu corporum externorum per organa sensuum cerebro impressis aliquid per modum discursus et orationis verbis constantis vel affirmat vel negat vel querit."
37. "[…] aber wir mussen auch derer Entium rationis nicht vergessen, die in des Menschen Verstand einig und alleine ihr Wesen haben. Diese sind nichts alnders als die eingesruckten schemata

Since without the activity of the understanding no schema is possible, material ideas can be described as the first elements implied in the process of cognition, constituted both by passivity (the matter provided by the external world) as well as activity (the unification and diversification of the understanding):

> "*§13*. Because the truth is nothing more than a coincidence of the human mind and the nature of things outside those thoughts. *§14*. Here you have not to ask whether the mind must or must not correspond to things […]*§15*. For the things are such that they can be understood by humankind and the mind is made in a way that it can grasp the external things. *§16*. The external things causes impressions on human understanding. This, then, considers these touches, divides them and put them together it separates from each other." (Thomasius 1691, pp.139-140, transl. L.S.)[38]

This theory shares similarities with Kant's (as well as the Lockean[39]) perspective: first of all, they assert that the process of cognition begins from the senses; secondly, they underline the necessity both of passive and active faculties; thirdly they describe the understanding's activity in terms of unification and separation; finally they define the role of the schemata as functions in the middle between passivity and activity. As Psilojannopoulos (2013) states[40], these theoretical similarities with Kant's doctrine

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oder Idee von denen wuercklichen Dingen und derer Zusammensetzung oder Absonderung die vermittelst des Verstandes geschehen. Wenn der Verstand die gleichen ideas zusammen fuegt und die ungleichen von einander sondert und ein jedes gleichsam an seinen gehorigen Ort bringet so nennet man es *Ens rationis Logicum* vel *Metaphysicum.*"

38. "*§13*. Denn die Wahrheit ist nichts anders als eine Übereinstimmung der menschlichen Gedanken und die Beschaffenheit der Dinge ausser denen Gedanken. *§14*. Hier musst du aber nicht fragen ob der Verstand mit den Dingen oder die Dinge mit dem Verstande überein kommen müsten […]. *§15*. Denn die Dinge sind so beschaffen, daß sie von dem Menschen begriffen werden können und der Verstand ist so beschaffen daß er die äuserlichen Dinge begreifen kann. *§16*. Die äuserlichen Dinge rühren die Empfindligkeit des menschlichen Verstandes. Dieser aber betrachtet diese Berührungen theilet sie ab und setzt sie zusammen."

39. As Locke famously states in his *An Essay Concerning Human Understanding:* "All ideas come from sensation or reflection. Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas:— How comes it to be furnished? Whence comes it by that vast store which the busy and boundless fancy of man has painted on it with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from EXPERIENCE. In that all our knowledge is founded; and from that it ultimately derives itself. Our observation employed either, about external sensible objects, or about the internal operations of our minds perceived and reflected on by ourselves, is that which supplies our understandings with all the materials of thinking. These two are the fountains of knowledge, from whence all the ideas we have, or can naturally have, do spring." (Locke 1690, Book 2, Ch. 1, Par. 4). However, as Psilojannopoulos (Psilojannopoulos 2013, p. 40) stresses, more than Locke, it was Thomas Aquinas who influenced Thomasius through his claim that nothing comes in cognition that was not before in the senses: "Nihil est in intellectu,quod non prius fuerit in sensu. (Aquinas 1258, Art. II, 3).

40. Possibly, Kant was influenced by Thomasius. Thus, Psilojannopoulos underlines the linguistic similarities of the following passages: "*§13*. Denn die Wahrheit ist nichts anders als eine Übereinstimmung der menschlichen Gedancken / und die Beschaffenheit der Dinge ausser denen Gedancken. *§14*. Hier must du aber nicht fragen / ob der Verstand mit den Dingen / oder die Dinge mit dem Verstande überein kommen müsten / sondern diese harmonie ist so beschaffen / daß keines des andern sonderliche Richtschnur ist / sondern die harmonie

are also reflected in terminological ones, thus providing circumstantial evidence to the claim that Kant knew Thomasius' *Einleitung zu der Vernunftlehre*.[41]

Later on the term can be found in Wolff (1679-1754), who uses it not in an epistemic, but rather in the more common figurative sense, namely as a framework to represent a relation. More specifically, he refers to relations among relatives through a "schema of parenthood" - "*schema cognationis*"- (Wolff 1747, pp. 416-17).

In contrast to Wolff, his disciple Joachim Georg Darjes[42] (1714-1792) uses the noun with a meaning connected to material ideas. Like Thomasius, he explains the process of cognition, stressing that the spontaneous being (the soul) is affected by external things, which leave material ideas in the brain. To have ideas, a medium between the soul and the external substances has to be presupposed, that is the schema[43]:

> "[…] this schema of perceptions, mentioned above, is the only link of passive and active entities." (Darjes 1743, par. 326, transl. L.S.)[44]

The soul, which is a simple and purely active essence, is affected by the senses thereby producing perceptions *materialiter spectatae*[45] but for cognition to arise, these perceptions need to be moulded by schemata, which are mediating functions between the active soul and the passive sensibility. Then, through a process of confrontation and abstraction, general concepts can be produced by the soul's operation. Knowledge, therefore, begins with the senses, with the experience of single objects and then develops through processes of abstraction led by the understanding's activity through attention and reflection.[46] In this interpretation of the concept of

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von beyden zugleich praesupponiret wird / ausser daß die euserlichen Dinge gleichsam den **Anfang** zu derselben machen. *§15*. Denn die Dinge sind so beschaffen / daß sie von dem Menschen begriffen werden können / und der Verstand ist so beschaffen / daß er die euserlichen Dinge begreifen kann *§16*. Die euserlichen Dinge **rühren** die Empfindligkeit des menschlichen Verstandes. Dieser aber betrachtet diese Berührungen / theilet sie ab / und **setzt** sie **zusammen** / **sondert** sie **voneinander** und hält sie gegeneinander. " (Thomasius 1691, pp. 139-140) Psilojannopoulos connects these passages to the famous Kantian doctrine: „Dass alle unsere Erkenntnis mit der Erfahrung **anfange**, daran ist gar kein Zweifel; denn wodurch sollte das Erkenntnisvermögen sonst zur Ausübung erweckt werden, geschähe es nicht durch Gegenstände, die unsere Sinne **rühren** und teils von selbst Vorstellungen bewirken, teils unsere Verstandestätigkeit in Bewegung bringen, diese zu vergleichen, sie zu **verknüpfen** oder zu **trennen**, und so den rohen Stoff sinnlicher Eindrücke zu einer Erkenntnis der Gegenstände zu verarbeiten, die Erfahrung heißt?" (KrV A1/B1; cf. Psilojannopoulos 2013, p.38). Neither to say, this is only circumstantial evidence for Darjes' influence on Kant.

41. Moreover, the similarities between Kant and Thomasius are not restricted to their theoretical philosophy but to practical philosophy as well, since Thomasius, who partakes for the Pietists, describes peace as the supreme moral achievement of man, that is proper of the *honestum*, the man who follows the principle according to which everyone must behave and be as he wished that the others should be.
42. Darjes's logical doctrine influenced directly Kant (Lorini 2011).
43. Cf. Tonelli 1994.
44. "[...] Schema illud perceptionum, de quo ante dixi, est solummodo nexus entium passiuorum atque actiouorum."
45. Cf. Darjes 1743, par. 124.
46. Psilojannopoulos 2013, pp. 252-253; Lorini 2011, p. 282.

a schema as a medium between the receptivity of the senses and the activity of the understanding, we can see Darjes anticipating an important aspect of Kant's account. More specifically, Darjes describes here what Kant discusses when he considers concrete, empirical examples of schematizing concepts.

Besides this epistemic connotation, the use of 'schema' in the philosophical literature of the modern time is still linked to arts of rhetoric and speech, as it is stated in the *Encyclopedie*, where 'schemata' are seen as instruments of the *mnemotechnique*, methods used to increase memory's capacity:

> "[...] because for sure our imagination is of great help to our memory, it is not possible to reject the method of *schematisms*, given that images have nothing extravagant or puerile and that they are not applied to things which aren't susceptible of them." (Diderot & d'Alembert 1751-1780, transl. L.S.)[47]

Again differently, namely in reference to biology and physiology, 'schema' is used by Ploucquet (1781-1844) to indicate the body's organisation, thus underling once again the function of schemata as medium between activity and passivity: a body is a material entity provided with an activity giving it organisation:

> "[…] experience teaches and reason deduces that bodies are organised in themselves and provided with a natural capacity to modify itself in others schemata, forms." (Ploucquet 1764, par. 399, cap. XVI, transl. L.S.)[48]

But aside from these rhetorical and biological connotations, the term returns to be used epistemologically by Johann Nicolas Tetens.[49] In his *Philosophische Versuche*, a work which was open on Kant's desk when he was writing the *Critique*, (as Johann Georg Hamann states in a letter to Johann Gottfried Herder on 12th May 1779).[50] Tetens, often called the "German Locke"[51], deals among other things with the relation

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47. "[...] puisqu'il est certain que notre imagination est d'un grand secours pour la mémoire, on ne peut pas absolument rejetter la méthode des schématismes, pourvû que les images n'ayent rien d'extravagant ni de puérile, & qu'on ne les applique pas à des choses qui n'en sont point du tout susceptibles."

48. "Docet experientia, et evincit ratio, corpora organisata esse ex se et sua natura transmutabilia in alios schematismos."

49. Tetens's *Philosophische Versuche*, was in Kant's library Warda 1922. Although Kant does not mention Tetens in his main works (only once in the whole *Critique*), he does in his letters to Marcus Herz from April 1778 and May 1782 and to Garve from August 1783 (AA X, p.232 and p.270) and notes R 4847 and R 4848 (AA XVIII, p. 5). Cf. Kuhen 1989, pp. 365-366. The evaluation of Tetens's inquiry as subjective is well-known: R 4901 (AA XVIII, p.23). Tetens's inquiry is subjective insofar as it concerns human faculties and their relation in general and not as faculties involved in cognition intended as objective. Kant's interest is directed not to the description of human cognition, but to the understanding and justification of the objectivity of epistemic judgements. (Cf. Carl 1989, pp. 119-126).

50. Hamann 1959, p. 81.

51. However, this reference might be misleading. Although Tetens gives great importance to observation and physiological inquiries, it is important to remember his criticism to Hume's discussion of causal relation and his account concerning the possibility of metaphysics. Cf. Kuhen 1989, pp. 368-72.

between soul and body and the sources and development of human cognition. He follows Darjes' terminology of a '*schema perceptionis*' [52], but regards it as a physical centre of unification of all the data of experience, referred to as "material ideas":

> "[…] for each manifestation of the soul acts a certain inner part of our body; we can call this part brain, *sensorium commune*, organ of the soul, *schema perceptionis* or what else." (Tetens 1777, II 158, transl. L.S.)[53]

Schemata are regarded as synonyms for *sensorium commune or* "organ of the soul", expressions possibly influenced by Charles Bonnet[54] and meant to identify the part of the brain in which ideas are traced and combined. In his *L'Essay de Psychologie* (1755), Bonnet describes the natural production of ideas from infancy and states: "ideas are nothing but natural signs, and these signs are images traced by objects on the brain." (Bonnet 1755,VII, p.13, transl. L.S.)[55] Ideas are sensible traces of the objects and it is only through the use of language that abstract thought and universalisation are possible. In this view, the soul can be compared to a musician that acts on the brain (*siege de l'ame*) but lies in itself beyond any empirical evidence:

> "[…] the seat of the soul is a little machine, prodigiously composed and for this simple power in its composition. […] It is possible to represent this admirable instrument of our soul's operations with the image of a harpsichord, an organ, a clock or that of another, more composed machine. […] the soul is the musician, which executes on this machine different airs or judges those that are executed and that he repeats." (Bonnet 1755, Ch IV, 9, transl. L.S.)[56]

However, in order to better understand Tetens's conception of schemata, whose importance for our purposes lies on his influence on Kant, a deeper inquiry of his doctrine of knowledge is needed.

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52. The expression 'schema perceptionis' is used also by Justus Christian Hennings to refer to the capacity to ha e representations and perceptions: "Tale vero non spontaneum, quod nexu plurium entium simplicium constituitur, cuius ioe motus modificaru possunt, vt enti spontaneo occasionem cogitandi prahere queant, vocatur SCHEMA REPRAESENTATIONIS s. Perceptionis. Ergo schema perceptionis quando necessarium sit, hinc colligere datur" (Hennings 1768, p. 154.)
53. "Zu jedweder Seelenäußerung wirket ein gewisser innerer Theil unsers Körpers bey; wir mögen diesen Theil das Gehirn, das sensorium commune, Seelenorgan, schema perceptionis, oder wie wir wollen, benennen."
54. Quoted several times by Tetens.
55. "Les idees ne sont revetues que de signes naturels, et ces signes sont les images que les Objets tracent dans le Cerveau."
56. "[...] le Siege de l'Ame est une petite Machine prodigieusement composee et pourtant fort simple dans sa composition. […] On peut se representer cet admirable Instrument des operations de nostre Ame sous l'image d'un Clavessin, d'une Orgue, d'une Horologe ou sous celle de quelque autre Machine beaucoup plus compose encore. […] L'Ame est le Musicien qui execute sur cette Machine differens airs ou qui juge de ceux qui y sont executes e qui les repete."

1.3.1 Tetens's conception of schema

In order to clarify the meaning of the notion of schema in Tetens's *Philosophische Versuche*, it is important to focus on his account of the cognitive process. In my analysis I will concentrate on three main aspects of Tetens's view: 1) the distinctions among three main faculties; 2) the activity and passivity as characteristics of the cognitive process; 3) the dualism between body and soul, which is expressed by two main claims, namely that there is a correlation between psychological and physical changes and that the soul has a independent and own activity.

Tetens underlines in the opening of the first *Essay* the first main point that I will consider, namely the distinctions of three main faculties:

> "The soul feels, has representations of things, properties and relations and thinks." (Tetens 1777, I, 1, transl. L.S.)[57].

Feeling, representation and thinking are the fundamental activities of the soul, to which three faculties correspond: *Gefühl*, *Vorstellungskraft* and *Denkkraft*.Feeling is something hard to grasp in itself: it is a complex manifestation of the soul's activity, which cannot be fully explained.

> "What is then to perceive or to feel? Here I have to confess my incapacity to explain it. It is an easy manifestation of the soul, which I am not able to divide into more subtle manifestations." (Tetens 1777, I 170, transl. L.S.)[58]

Since it is impossible to provide a direct and conclusive characterization of feeling, Tetens proposes to clarify the characteristics of this basic faculty through an analysis of its object: impressions, that are, first of all, actual modifications of the subject. We can feel only something that is present and characterized by intensity, duration and extension. Therefore, Tetens agrees, although only partially, with the traditional view of sensibility as a passive faculty:

> "What is immediately felt is always, if this modification of the soul could let itself be observed, something passive […]. It is never the activity in itself, never the hurry of which we have an immediate feeling; it is a durable consequence of something that is not produced from our spontaneous strength (capacity), but that has been already be produced when object of a feeling; [...]" (Tetens 1777, I, pp. 173-174, transl. L.S.)[59]

This capacity of being affected does not consist only in a mere passivity, but it is at the same time, a kind of activity similar to reaction. As the body reacts to external

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57. "Die Seele empfindet, sie har Vorstellungen von Sachen, von Beschaffenheiten und Verhältnissen, und sie denket."

58. "Was denn Fühlen oder Empfinden sey? da gestehe ich sogleich mein Unvermögen, es erklären zu können. Es ist eine einfache Seelenäußerung, die ich nicht in noch feinere zu zerfasern weiß."

59. "Was unmittelbar gefühlet wird, ist allezeit, wo sich diese Aeußerung unserer Seele beobachten lässet, etwas leidentliches, eine passive Modifikation der Seele […] Es ist niemals die Thätigkeit selbst, nie das Bestreben selbst, welches wir unmittelbar fühlen; es ist eine bleibende Folge von etwas, das von unserer selbstthätigen Kraft nun nicht hervorgebracht wird, sondern schon hervorgebracht worden ist, wenn es ein Objekt des Gefühls ist; [...]"

stimuli, so does the soul as it receives impressions. Each impression is a soul's modification, which leaves a sort of trace, a representation, regarded as sensible sign of the impressions of the objects affecting our senses:

> "[…] these traces are a kind of picture conserved by the soul of its modifications inside itself, which throws outside when it wants to use them. In them it sees the past state as in a copy of it […] they are representations of other objects; modifications that picture something different and, if present, let us see and know not themselves rather their objects." (Tetens 1777, I, p. 15, transl. L.S.)[60]

Since representations are based on impressions, Tetens representational theory does not part from the traditional associative empiricism. However, the associative view of mental activity is only Tetens' starting point of research. Primary sensations represent the objects in the way in which they are perceived (*facultas percipiendi*). Yet, the soul can exercise an activity on these first representations, since it can reproduce (*fantasia*) and combine them in new ways (*facultas inventiva*). Moreover, imagination owns a particular productive power: while its reproductive side can only awake past impressions; its productive one can provide data of experience with a new order. It acts on impressions comparing them to each other and analysing, decomposing them in their elements in order to produce simpler representations, that are not evident at a first sight in the complex given perceptions. In this process past representation (*phantasmata*) can be awaken but they are not sufficient to determine objects of the thought (ideas), regarded as unities related to each other through thinking and reasoning. However, the representations provided by imagination are in themselves only a sort of matter provided by sensations and still lack in form:

> "Representations turn into ideas and thoughts, but considered in themselves, they are not. The image of the moon is only the material for the idea of moon; it still lacks in form: the idea contains, beyond the representation, a consciousness, perception and distinction and presupposes confronts and judgements, when regarded as idea of a certain object." (Tetens 1777, I, p. 26, transl. L.S.)[61]

This immediately leads to the second main aspect of Tetens's account: a superior faculty, the understanding, is needed to unite the representations in a whole, providing them an intelligible and objective character.

Tetens's view of the faculty of imagination, which situates itself between sensibility and understanding, passivity and activity, shares similarities with that of Kant.

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60. "[…] es sind Vorstellungen von andern Gegenständen; Modifikationen, die etwas anders abbilden, und, wenn sie gegenwärtig sind, nicht sowohl sich selbst, als ihre Gegenstände uns sehen und erkennen lassen."

61. "Aus den Vorstellungen werden Jdeen und Gedanken. Für sich sind sie dieß nicht. Das Bild von dem Mond ist nur die Materie zu der Jdee von dem Mond. Es fehlet ihm noch die Form: die Jdee enthält außer der Vorstellung ein Bewußtseyn, ein Gewahrnehmen und Unterscheiden, und setzet Vergleichungen voraus, und Urtheile, sobald wir sie als eine Jdee von einem gewissen Gegenstande ansehen."

Yet they cannot be fully identical since Kant asserts that the productive imagination is a synthetic *a priori* function. As de Vleeschauwer underlines:

> "[…] the reproductive function is of course examined in its constitution and psychological activity and it is distinct from the way in which Kant treated it, mostly for the absence of the allusion to a synthetic capacity." (de Vleeschauwer 1934-1937, II, p. 97, transl. L.S.)[62]

Moreover, through his doctrine of the constitution of knowledge, Tetens puts himself in opposition to empiricism, since he relates on non-sensory functions (understanding, soul, and apperception) as a necessary condition to develop an objective knowledge and unify ideas: sensible data provided by experience need a common referent, an understanding, in order to be united and compared to. Since each experience is related to this obscure but always present unity, Tetens rejected the Humean doctrine of the 'I' as a stream of sensations. The 'I' cannot be considered as a mere sum of representations, because the condition to have representations lies exactly in their reference to a common unity different from them.

Tetens now connects this epistemological dualism with a traditional Cartesian, ontological dualism. In his view, human nature consists of both a material and an immaterial aspects which form a union or interact with one another:

> "[…] in the human essence, beyond the bodily organ, a simple, non-corporeal essence, an actual substantial unity can be found, which is properly the thing that perceives, thinks and wants." (Tetens 1777, II, p. 210 transl. L.S.)[63]

More specifically, he explains this dualistic interactionism by means of two basic propositions:

> "[…] for each manifestation of the soul acts a certain inner part of our body; we can call this part brain, *sensorium commune*, organ of the soul, *schema perceptionis* or what else. The other basic truth is: there is beyond our bodily organs of the soul an essence, that acts in conjunctions with each thing, but that is in itseld an autonomous permanent Substance, that we call soul in a psychological meaning or our 'I'." (Tetens 1777, II p. 158, transl. L.S.)[64]

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62. "[...] la fonction reproductive est naturellement […] examinée dans sa constitution et dans son exercice psychologique, et se distingue de la manière dont Kant l'avait traitée sourtout par l'absence de toute allusion à un pouvoir synthétique quelconque."

63. "[…] in dem menschlichen Seelenwesen außerdem körperlichen Organ, ein einfaches unkörperliches Weſen, eine wahre substantielle Einheit vorhanden sey, welche eigentlich das fühlende, denkende und wollende Ding ist…"

64. "[...] zu jedweder Seelenäußerung wirket ein gewisser innerer Theil unsers Körpers bey; wir mögen diesen Theil das Gehirn, das sensorium commune, Seelenorgan, schema perceptionis, oder wie wir wollen, benennen. Die andere Grundwahrheit ist folgende: "Es giebt außer den gedachten körperlichen Seelenorganen in uns ein Wesen, das zwar in Vereinigung mit jenen wirkt, aber für sich ein eigenes bestehendes Ding oder eine Substanz ist, die wir die Seele in psychologischer Bedeutung oder unser Jch nennen."

While each mental process is causally connected to a bodily process (as the first proposition states), the unity of representations also requires the action of immaterial self or 'I' (as the second proposition states)[65]. That is not a claim provided with necessity, but, at least, a reasonable hypothesis that cannot be falsified nor demonstrated through observation. Tetens describes the first sentence as clearly empirical and claims that the second one requires "more reasoning" (Tetens 1777, II, p. 158, transl. L.S.[66]) for becoming certain but emphasizes at the same time that both propositions use concepts derived from sensations (ibid.).

The evidence for the first sentence is, according to Tetens, clear and almost unnecessary to state:

> "Physiology and psychology have collected so many facts, which gives evidence of the modifications of the brain in contemporaneity with all modifications of the soul, that this proof can be considered without any doubt." (Tetens 1777, II, pp. 159, transl. L.S.)[67]

Against this background Tetens regards the *schema perceptionis* not only as something that mediates between sensibility and understanding, but also as the physical centre of unification of all the data of experience. Unfortunately, observation cannot inquire fully and completely the nature of these ideas. It is only possible to affirm that experience teaches that our organs are constituted by nerves, in which it is probable (but not observable), that a fluid matter or vital spirits flows. In Tetens's view, this process provides the physiological correlate or basis for ideas, which are therefore called "material ideas" (Tetens 1777, I, p. vii, transl. L.S.)[68]. The existence of such ideas is postulated as reasonable hypothesis. What is important, however, is that material ideas, just like representations as they are observed through inner sense, need to be unified. That is precisely what the *sensorium commune* or the *schema perceptionis* does.

The interpretation of schema as mediating function linking passivity and activity, senses and cognition opens one path towards Kant's epistemic use of the notion. But Tetens was not the first to introduce this use of the notion of schema: Darjes, as it has already been stressed, uses this noun in an epistemic sense too,although not only. Bonnet although he himself does not use the word 'schema', plays also relevant role in the development of the research on a middle function between understanding and sensibility and an equivalent or at least similar concept can be found in its work, namely *sensorium commune*.

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65. On the notion of self in Tetens see Thiel 2018, pp. 59 - 75.
66. "mehr Raisonnement."
67. "Die Physiologie und Psychologie hat nunmehr so viele Fakta gesammelt, welche diese durchgängige Mitveränderung des Gehirns zu allen Seelenveränderungen offenbar machen, daß solche als außer Zweifel gesetzt angesehen werden kann."
68. "materielle Ideen."

1.4 Conclusion

What are the main results of this historical survey? First, the analysis of uses of the notion of schema in the philosophical literature before Kant shows how it does not possess a unique meaning but is employed in different, albeit related, ways. Second, although this notion has manifold connotations (shape, figure, example, form) and applications (logical, rhetorical, ontological, biological), it can be generally regarded as a function of mediation and order. Third, what is remarkable is that the expression 'schema' and its cognates in other languages is often part of more complex linguistic constructions (such as *schema perceptionis*) or it is used, it more as a way to define terms rather than something that requires explicit definition itself**.** It is regarded as synonym for figure of speech, "life of pretence", "arguments", or it is used to describe the process of the constitution of ideas and then referred to as *schema perceptionis* (i.e. in reference to perceptions, and not as an autonomous term). 'Schema' is not treated as a separate topic of its own, but rather it is used in the definition and explanations of other concepts and ideas. This lack of interest in defining the notion has probably led to the multiplicity of its meanings in different contexts. As we will see in the subsequent chapters there are similarities between Kant's conception and certain aspects of the views of predecessors such as Thomasius, Darjes and Tetens. [69] Kant might be accused of having disregarded his predecessors' s accounts of the notion of schemata. In the *Critique of Pure Reason* he makes several references to Plato, Aristotle, Bacon and Tetens**,** but none of these are devoted to the topic of schemata. However, Kant will build a doctrine of schemata whose meaning finds in the *Critique of Pure Reason* its greater epistemic and philosophical expression and complexity. It can be used as a main element for explaining the possibility of knowledge and the relation between sensibility and understanding. I shall show that Kant has the merit to have provided schemata with a definition (or definitions) and a precise role in his thought.

69. Among the above mentioned philosophers, Kant has for sure direct knowledge of the works of Wolff, D'Alembert, Darjes and Tetens (Warda 1922).

2. Kant's precritical notion of schema

Before dealing with the use of the notion of schema in the *Critique of Pure Reason*, it is important to realize that its use is not limited to Kants *opus magnum*, but it is present in pre-critical (as well as in later) Kantian works as well, as I will show in this second chapter.

The literature about the meaning and uses of the term 'schema' before the *Critique of Pure Reason* is very scarce. The *Kant-Lexicon* ignores the problem, while in the *Historische Wörterbuch der Philosophie*from 1992 Stegmeier stresses the presence of the notion in two precritical works: the *Nova Dilucidatio* and the Dissertation from 1770, *De mundi sensibilis atque intelligibilis forma et principiis*. However, they do not go into the details of Kant's uses and changes of the meaning of the term. Besides, an interesting paper of Alba Jiménz Rodriguez from 2016 (*Die Projektion des Schematismus in den vorkritischen Schriften Kants: Das Problem der mathematischen Konstruktion)*, focuses on the anticipation in the precritical works of a kind of schematism intended as a constructive process of the imagination similar to that of mathematical[70] construction. More specifically, Rodriguez points out that Kant precritical use of 'schema' might be related to the Baconian concepts of schematism. As shown in the previous chapter, Bacon's notion of schema refers to the structure of nature or the ways in which properties are related to each other and ordered in the different substances. According to Rodriguez, the Baconian meaning of 'schema' as transformation, building process, has influenced Kant's notion of schematism, rooted in Kant's account of the mathematical process of construction in his precritical works. While Kant does not yet use the terminology of schematism, relevant aspects of the problem of applying pure concepts to experience are already present. In the *Inquiry concerning the Distinctness of the Principles of Natural Theology and Morality (Untersuchung über die Deutlichkeit der Grundsätze der natürlichen Theologie und der Moral)* from 1764, where the mathematical method is regarded as a way of developing and using rules of construction, in a way similar to the drawing of geometrical figures:

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70. I do not intend to delve into the question concerning the validity of Kant's account of mathematics, but just hint to Koriako's criticism. According to Koriako, Kant presents mathematics and its constructive method "with philosophical eyes" (Koriako 1999, p. 3), thus presenting a misleading view of mathematics. Consequently, if Koriako is right,. the particularity of the mathematical construction should no longer be a valid solution to the problem concerning the method to apply pure concepts to experience. Even if it is the case, as it seems, that Kant's account of mathematics has philosophical grounds, my historical claim, that links mathematical construction and schematism, should not suffer. Within Kant's perspective, if mathematics deals with the application of pure concepts, then, it should be regarded as comparable to schematism. The question concerning the actual validity of such a constructive method is here not in question.

> "There are two ways in which one can arrive at a general concept: either by the *arbitrary combination* of concepts, or by *separating out* that cognition which has been rendered distinct by means of analysis. Mathematics only ever draws up its definitions in the first way. For example, think arbitrarily of four straight lines bounding a plane surface so that the opposite sides are not parallel to each other. Let this figure be called a *trapezium*. The concept which I am defining is not given priori to the definition itself; on the contrary, it only comes into existence as a result of that definition. Whatever the concept of a cone may ordinarily signify, in mathematics the concept is the product of the arbitrary representation of a right-angled triangle which is roated on one of its sides. In this and in all other cases the definition obviously comes into being as a result of *synthesis*.
>
> The situation is entirely different in the case of philosophical definitions. In philosophy, the concept of a thing is always given, albeit confusedly or in an insufficiently determinate fashion. The concept has to be analysed; the characteristic marks which have been separated out and the concept which has been given have to be compared with each other in all kinds of contexts; and this abstract though must be rendered compete and determinate." (AA II, p. 276)[71]

According to these remarks, the method used in mathematics is synthetic insofar as its concepts (for instance 'triangle') are results of their definitions. In contrast, in philosophy concepts are already given but they are unclear and undetermined and therefore need to be analysed[72]. However, in philosophy there is a question which has to be answered using a method similar to the mathematical one: for instance, taking mathematical claims (such as: "7+5=12"), it has to be shown how they are related to experience. In order to achieve this task, Kant relies on a method through

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71. "Man kann zu einem jeden allgemeinen Begriffe auf zweierlei Wege kommen, entweder durch die willkürliche Verbindung der Begriffe, oder durch Absonderung von demjenigen Erkenntnisse, welches durch Zergliederung ist deutlich gemacht worden. Die Mathematik faßt niemals anders Definitionen ab als auf die erstere Art. Man gedenkt sich z. E. willkürlich vier gerade Linien, die eine Ebene einschließen, so daß die entgegenstehende Seiten nicht parallel sind, und nennt diese Figur ein Trapezium. Der Begriff, den ich erkläre, ist nicht vor der Definition gegeben, sondern er entspringt allererst durch dieselbe. Ein Kegel mag sonst bedeuten, was er wolle; in der Mathematik entsteht er aus der willkürlichen Vorstellung eines rechtwinklichten Triangels, der sich um eine Seite dreht. Die Erklärung entspringt hier und in allen andern Fällen offenbar durch die Synthesin. Mit den Definitionen der Weltweisheit ist es ganz anders bewandt. Es ist hier der Begriff von einem Dinge schon gegeben, aber verworren oder nicht genugsam bestimmt. Ich muß ihn zergliedern, die abgesonderte Merkmale zusammen mit dem gegebenen Begriffe in allerlei Fällenvergleichen und diesen abstracten Gedanken ausführlich und bestimmt machen."

72. On the relation and differences of schematism in philosophy and mathematics in Kant, see Ferrarin 1995. On the one hand, it is true that both philosophy and mathematics deal with the problem of construction or exhibition of pure concepts in intuition, but on the other hand philosophy, differently from mathematics, do not produce its objects: "Mathematical objects have a sort of definite presence or ideal existence that no philosophical or empirical concepts can attain. But this existence differs from the ordinary notion of existence that can be given only in experience. Neither a dog not a transcendental concept can be arbitrarily constructed and thus exhibited completely in intuition." (Ferrarin 1995, p. 151). And later in the text: "[…] in mathematics what we produce is the form and content of the object. Experience in this case shows that they belong to an appearance, that they are the form of an appearance, In philosophy we do not produce any intuition, but merely show the possibility of our pure concepts referring to objects under the condition of sensibility." (Ferrarin 1995, p. 158)

which objects are constructed following rules of the understanding, which is similar to the mathematical method.[73] This is a point which Kant consistently sticks to, as shown in the *Critique of Pure Reason* and in a footnote contained in the the late *On a Discovery whereby any New Critique of Pure Reason is to be made Superfluous by an Older One (Über eine Entdeckung, nach der alle neue Kritik der reinen Vernunft durch eine ältere entbehrlich gemacht werden soll)*:

> "Hence it is also requisite for one to **make** an abstract concept **sensible**, i.e., display the object that corresponds to it in intuition, since without this the concept would remain (as one says) without **sense**, i.e., without significance. Mathematics fulfils this requirement by means of the construction of the figure, which is an appearance present to the senses (even though brought about *a priori*). In the same science, the concept of magnitude seeks its standing and sense in number, but seeks this in turn in the fingers, in the beads of an abacus, or in strokes and points that are placed before the eyes. The concept is always generated a priori, together with the synthetic principles or formulas from such concepts; but their use and relation to supposed objects can in the end be sought nowhere but in experience, the possibility of which (as far as its form concerned) is contained in them *a priori*."(KrV A240-B299)[74]

> "In a general sense one may call construction all exhibition of a concept through the (spontaneous) production of a corresponding intuition. If it occurs through mere imagination in accordance with an a priori concept, it is called pure construction (such as must underlie all the demonstrations of the mathematician; hence he can demonstrate by means of a circle which he draws with his stick in the sand, no matter how irregular it may turn out to be, the properties of a circle in general, as perfectly as if it had been etched in copperplate by the greatest artist). If it is carried out on some kind of material, however, it could be called empirical construction. The first can also be called schematic, the second technical construction." (AA VIII, p. 192)[75]

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73. Jiménez Rodríguez 2016, p. 440.

74. "Daher erfordert man auch, einen abgesonderten Begriff sinnlich zu machen, d. i. das ihm correspondirende Object in der Anschauung darzulegen, weil ohne dieses der Begriff (wie man sagt) ohne Sinn, d. i. ohne Bedeutung, bleiben würde. Die Mathematik erfüllt diese Forderung durch die Construction der Gestalt, welche eine den Sinnen gegenwärtige (obzwar a priori zu Stande gebrachte) Erscheinung ist. Der Begriff der Größe sucht in eben der Wissenschaft seine Haltung und Sinn in der Zahl, diese aber an den Fingern, den Corallen des Rechenbretts, oder den Strichen und Punkten, die vor Augen gestellt werden. Der Begriff bleibt immer a priori erzeugt sammt den synthetischen Grundsätzen oder Formeln aus solchen Begriffen; aber der Gebrauch derselben und Beziehung auf angebliche Gegenstände kann am Ende doch nirgend, als in der Erfahrung gesucht werden, deren Möglichkeit (der Form nach) jene a priori enthalten."

75. "In allgemeiner Bedeutung kann alle Darstellung eines Begriffs durch die (selbstthätige) Hervorbringung einer ihm correspondirenden Anschauung Construction heißen. Geschieht sie durch die bloße Einbildungskraft einem Begriffe a priori gemäß, so heißt sie die reine (dergleichen der Mathematiker allen seinen Demonstrationen zum Grunde legen muß; daher er an einem Cirkel, den er mit seinem Stabe im Sande beschreibt, so unregelmäßig er auch ausfalle, die Eigenschaften eines Cirkels überhaupt so vollkommen beweisen kann, als ob ihn der beste Künstler im Kupferstiche gezeichnet hätte). Wird sie aber an irgend einer Materie ausgeübt, so würde sie die empirische Construction heißen können. Die erstere kann auch die schematische, die zweite die technische genannt werden."

Besides Jiménez Rodriguez, Young Ahn Kang also remarks the connection between mathematical construction and schematism:

> "[…] the construction of a concept is an act of providing a concept with objective reality (cf. *Entdeckung* BA 10-11; *Fortschritte* A183). In other words, constructibility 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 (*Prolegomena§13* note). The presentation of a concept in intuition (mathematical schematism) provides the concept with 'sense and meaning' (*Sinn und Bedeutung*) (*Prolegomena§8*). Thus, construction has the same function as the transcendental schema both in in its realizing and restricting of the pure concepts at the same time (A147/B187)." (Kang 1985, p. 51)

After these considerations, that stress that there are hints to the problem of schematism in works before the *Critique*, I can move to the analysis of the passages in which Kant makes use of the term 'schema' in his precritical writings**.** In the first part of the chapter I will focus on the metaphysical meaning of 'schema' as presented in the *New Elucidation*, while in the second part we will consider the several meanings of the term in the Dissertation from 1770, namely: "shadowing outlining of things", "outline for the coordination of sensations". I want to stress how the use of 'schema' changes from indicating a mere unclear outline to addressing the form through which the coordination of impressions is possible. Finally, since the notion of schema occurs in reference to space and time, I shall analyse how Kant himself situates in contemporary debates over realism and idealism about space and time.

2.1 The metaphysical notion of schema in the *Nova Dilucidatio*

The first appearance of Kant's use of the term schema is found in the *Principiorum Primorum Cognitionis Metaphysicae Nova Dilucidato* of the year 1755. The aim of this work, presented by Kant to obtain the permission to teach philosophy at the Faculty of Königsberg, is to clarify the first principles of knowledge. The *New Elucidation (Nova Dilucidatio)* deals with the value of the principles of non-contradiction and sufficient reason, from which Kant derives two principles of metaphysical knowledge: succession and coexistence. The former establishes that the possibility of change in a substance depends on its connection to other substances; the latter affirms that without a common principle of existence (the divine understanding), no relation among substances would be possible. It is first in the demonstration and second in the clarification of the latter that the noun 'schema' can be found.

According to the demonstration of the principle of succession each substance is separated and intelligible in itself and has no relation to the others, since they are not cause of each other's existence. Therefore, to explain the relation among substances, it is necessary to address their common cause, God, intended as a general principle of existence of all entities. However, this reference is not sufficient, because it might

be the case that God caused the existence of separated entities, without them having no relation to another. For this reason a further clarification is needed, namely that God determines not only the existence but also the mutual relations of things and it is in this context where Kant speaks for the first time of a certain 'schema':

> "But it does not follow from the fact that God simply established the existence of things that there is also a reciprocal relation between those things, unless the self-same schema of the divine understanding (*intellectus divini schema*), which gives existence, also established the relations of things to each other, by conceiving their existences as correlated with each other."(AA I, p. 413)[76]

Later on, in the context of the clarification of the principle of coexistence,we find a second occurrence of the notion of a schema is found:

> "The schema of the divine understanding, the origin of existences, is an enduring act (it is called preservation); and in that act, if any substances are conceived by God as existing in isolation and without any relational determinations, no connection between them and no reciprocal relation would come into being." (AA I, p. 414)[77]

In this passage, Kant explains that God's activity, which brings things in existence and mutual commerce, is not an instantaneous and punctual act, but rather an enduring one, called conservation, thus providing the reason why things endure and have relations persisting in time.

As demonstrated in lines mentioned above, the notion of schema in this work possesses a mere metaphysical sense: it refers to a divine project or organisation, and it can be regarded as a synonym for "divine understanding". It is close to a general and common way of using the term as synonym for order, structure, and it is thus far from some epistemological and logical views of some of Kant's predecessors.

2.2 The new significance of schema in the Dissertation of the year 1770. A first reference to the problem of objectivity

As already anticipated the literature on the use of 'schema' in the precritical writings is scarce. In the Lexicon Martin Schönefeld refers only indirectly to 'schemata', in order to explain the forms of the sensible world, without further inquiring if there is a distinction between the meaning of 'schema' in the Dissertation from 1770 and

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76. "Quoniam vero inde sempliciter ipsarum staibiliverit existentiam, mutuus inter easdem respectus etiam non consequiturm nisi idem, quod existentiam dat, intellectus divini schema, quatenus existentias ipsarum correlatas concepit, eorum respectus firmaverit universal rerum omnium commercium huius divinae ideae conceptui soli acceptum ferri, liquidissime apparet".

77. "Schema intellectus divini, existentiarum origo, est actus perdurabilis (conservationem appellitant), in quo si substantiae quaevis solitario et abaque determinationum relatione a Deo conceptae sunt, nullus inter eas nexus nullusque respectus mutuus orietur."

the *Critique of Pure Reason*. Moreover, in the *Historische Wörterbuch der Philosophie* Stegmeier only reports[78] where the term 'schema' appears in the text, while Jiménez Rodríguez claims that the Dissertation from 1770 contains the first clearest anticipation of the chapter of schematism of the *Critique*. She stresses that the work contains the first Kantian definition of space and time as formal principles, the distinctions between empirical and pure intuitions, between receptivity and spontaneity as well as between form and content, that will be re-echoed in the *Critique.*[79]

In the following sections, I shall stress that after the *Dilucidatio* of 1755, the notion of schema is taken up only fifteen years later, namely in the dissertation *De mundi intelligibilis atque sensibilis forma et principiis* from 1770. Since here the term refers to the notions of the forms of the world I will give a short overview of this topic.

2.2.1 Schema and the forms of the worlds

Thanks to his Dissertation Kant obtained the position of Professor of Logics and Metaphysics at Königsberg. One of the main themes of the *De mundi intelligibilis atque sensibilis forma et principiis* lies in the antinomical[80] contrast between the laws of the understanding and of the pure reason and those of the intuitive faculty, which implies a distinction between two kinds of knowledge (intellectual and empirical) and two kinds of entities: phenomena, objects "as they appear" in sensibility and things in themselves.

With this sharp distinction between intelligible and sensible levels, Kant situates himself in accordance with traditional views such as those of Alexander Gottlieb Baumgarten and Christian Wolff, while through his reference to the notion of form he distances himself from them, introducing a novelty regarding the theory of sensibility. According to Kant, the unity and organisation of empirical elements is provided not by the matter in itself, but by formal principles, which, although not sensible, are implied in the constitution of the objects of experience. Although defined as forms, these principles are not conceived as the ancient *ousia*, as a static and immutable essence of a thing, rather they are dynamic relations, coordinative functions:

> "*Form*, which consists in the *co-ordination* of the substances, not in their subordination. For *co-ordinates* are to be regarded as mutual complements to a whole, *subordinates* as effect and cause, or generally, as principle and consequence. The former relation is reciprocal and *homonymous*, any correlate in respect to any other being considered as at once determining and determined." (AA II, p. 390)[81]

78. Stegmeier 1992, 1249-1252.

79. Jiménez Rodríguez 2016, p. 431

80. Cf. Hinske 1980.

81. "FORMA, quae consistit in substantiarum coordinatione, non subordinatione. Coordinata enim se invicem respiciunt ut complementa ad totum, subordinata ut causatum et causa, s. generatim ut principium et principiatum. Prior relatio est reciproca et homonyma, ita, ut quodlibet correlatum alterum respiciat ut determinans, simulque ut determinatum, posterior est heteronyma, nempe ab una parte nonnisi dependentiae,ab altera causalitatis."

It is first precisely in reference to the explanation of the constitution of sensible objects, i.e. representations, that the first use of the term schema in the work is found. As the author states, each sensible representation is given both by matter, which reveals the presence of something sensble, although it depends in its quality also on the nature of the subject, and on form:

> "Furthermore, as the sensation constituting the *matter* of sensuous representations argues, to be sure, the presence of something sensible, but depends as to quality on the nature of the subject, as the latter is modifiable by the object; exactly so does the *form* of that representation witness certainly some reference or relation among the sensuous percepts, but itself is not, as it were, the shadowing forth or outlining of the object, but only a certain law inherent in the mind for co-ordinating among themselves sensuous percepts arising from the presence of the object." (AA II. p. 393)" [82]

Here "schema" or "the shadowing forth or outlining" refers no longer to the divine understanding as it did in the *Dilucidatio*, but to an unclear image, a "shadow", which is opposed to form, because the form is defined as an internal law of the mind, according to which the objects of experience can be structured and organised. But what is meant precisely by formal principles and what are their features? According to Kant, a principle is that which contains the reason of a relation. While the principle of the form of the intelligible world is an objective cause, the world of phaenomena, i.e. of our experience, has a subjective principle only. The latter is regarded as a law of the mind (*animo*), according to which things appear as if they necessarily belong to a whole. This principle has no validity for objects which cannot be objects of our possible experience. In more detail, Kant states that there are two formal principles of the form of the sensible world: space and time.

> "These formal principles of the *phenomenal universe* which are absolutely primary, universal, and, so to speak, the outlines (schemata) and conditions of anything else whatsoever in human sensuous cognition, I shall now show to be two: time and space." (AA II, p. 398)[83]

In the above mentioned passages, the term 'schemata' assumes a new significance: it does not refer to something unclear, nor does it mention the divine understanding of the *Dilucidatio.* Instead, it refers to the conditions of sensibility and human knowledge, namely the formal principles space and time, which are provided with characteristics, which will be re-echoed in the *Critique of Pure Reason*. Since the

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82. "Porro, quemadmodum sensatio, quae sensualis repraesentationis materiam constituit, praesentiam quidem sensibilis alicuius arguit, sed quoad qualitatem pendet a natura subiecti, quatenus ab isto obiecto est modificabilis; ita eiusdem repraesentationis forma testator utique quondam sensorium respectum aut relationem, verum proprie non est adumbration aut schemaquoddam obecti, sed non nisi lex quaedam memnti insita, sense ab obiecti praesentia orta sibimet coordinandi)."

83. "Haec principia formalia Universi phaenomeni ansolute prima, catholica et cuiuslibet praeterea in cognition humana sensitive quasi schemata et condiciones, bina esse, Tempus et Spatium, iam demonstrabo."

last occurrence of the term 'schema' is found in reference to the elucidation of the forms of space and time, I will briefly introduce the characteristics of these forms. Kant first clarifies the notion of time, because it is more general than space: each experience, is at least temporal ("internal" such as emotions), while some are also spatial ("external" for instance: representations of objects and events). Because time is the most general condition of experience, it does not derive from the senses, but it is a presupposition of them and for this reason it is non-discursive, in opposition to thoughts, which are abstract and derivate. Moreover, time must be one, singular, identical, and homogeneous (*quantum continuum*) in order to explain the experiences of succession and simultaneity of the material elements that are related so. Time is the possibility of this relation in itself and for this reason time cannot be regarded as belonging to the same level of sensible features. In conclusion, time is defined as a pure subjective intuition (and not a discursive concept), which does not belong to nor derives from matter. The reference to time as "subjective" might be misleading: it seems, that time identifies a sort of natural human capacity, as if Kant is providing a naturalistic or anthropological explanation of the process of experience. However the reference to time as to pure intuition suggests that such an interpretation has to be put aside. Time, then, is the condition of all sensible experience, or the universal form of all phenomena, through which they are perceived as existent and can be coordinated. It is this feature, which clearly and deeply differentiates Kant's approach from, say, Lossius' empirical explanation of the process of knowledge. In his *Physischen Ursachen des Wahren* of 1775 Johann Christian Lossius states that the principles of logic can be understood only through the reference to the organs that are implied in the production of ideas. This point of view is similar to that of Tetens, from which Kant explicitly distances himself:

> "Tetens investigates the concepts of pure reason merely subjectively (human nature), I objectively. The former analysis is empirical, the latter transcendental" (AA XVIII, p. 23)[84]

Similarly to time, space also cannot be regarded as a concept, as something induced from experience but rather as a law, a function, presupposed in each perception as a condition of its organisation. As anticipated, here Kant refers to space as "schema":

> "Space is not something objective and real, neither substance, nor accident, nor relation; but *subjective* and ideal, arising by fixed law from the nature of the mind like an outline for the mutual co-ordination of all external sensations whatsoever."(AA II, p. 403)[85]

Kant here expresses himself no further on "outline" (the English translation of the Latin "schema"), which will be later investigated in more detail in the *Critique*

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84. "Tetens untersucht die Begriffe der reinen Vernunft bloss subjektiv (menschliche Natur), ich objektiv. Jene Analysis ist empirisch, diese transzendental."

85. "Spatium non est aliquid obiectivi et realis nec substantia. Nec accidens, nec relatio; sed subiectivum et ideale er e natura mentis stabili lege proficiscens veluti schema, omnia omnino externe sense sibi coordinandi)."

of Pure Reason. However, from the content of the Dissertation, it is possible to argue that it might be regarded as a condition of the order of perception, a "schema" in the sense of a pattern that provides unity and coordination and that space and time are linked to sensibility but do not derive from it.

After considering these three occurrences of the notion of schema, it is possible to synthesize its significance as the following: schema is no more a metaphysical concept (as it was presented in the *Dilucidatio*), but rather it obtained a more epistemic significance. It refers to the forms of sensibility, which are necessary conditions for providing the material elements of experience with organisation, thus explaining the possibility of experience and knowledge. This characterisation of space and time as schemata (or "quasi" schemata, as if Kant is using the noun schema without a proper definition) as conditions shares similarities, but also differences, with the doctrines of the *Critique of Pure Reason*: on the one hand, space and time are defined in the Transcendental Aesthetic as conditions of the possibility of the intuition, on the other, they become defined as pure intuitions and not as schemata (that will have a different function as illustrated in the Transcendental Logic). Nevertheless, there are passages in the *Critique of Pure Reason* which they are still regarded as conditions[86], although in a difference sense as the forms of intuitions space and time.

The value of the Dissertation might lie precisely in the doctrine of space and time and in their definitions as forms, schemata, which provide a solution to an important debate of the time, namely conflict between empiricism and rationalism. However, Kant's theory has its limits, which the author himself soon becomes aware of, and which lead him to write the *Critique of Pure Reason*.

To underline both the novelties and the limits of Kant's doctrine of space and time in the Dissertation and to understand why he will develop his theory of form and schema in the *Critique of Pure Reason*, it is helpful to refer to the main theories that he encountered concerning space and time, namely those of Newton and Leibniz.

2.2.2 The novelty of the account of space and time as schemata in the Dissertation: Comparison with Newton and Leibniz

In his famous treatise on light, *Opticks*[87], Isaac Newton states that physics must abandon the study of qualities, which characterized the old Aristotelian view, and instead focus only on principles which can be empirically demonstrated. Principles, must be distinct from obscure metaphysical causes[88]: while the former are either immediately evident or proved instead from induction, the latter are often obscure or impenetrable, their relation to the events they are supposed to produce is unknown and lies beyond our possibility of knowledge. However, Newton seems to abandon the rigid separation between science and metaphysics when he refers to the existence of space and time as absolute in his *Philosophiae naturalis principia matematica* from

86. KrV A140/B179.

87. Newton 1730 (in part. Book III, question 31, pp. 350-382).

88. Newton 1730, p. 377.

1687. This work led at first to atheistic interpretation of Newton's doctrine. Due to this accusation of atheism Newton was obliged to add a *Scholium Generale* to later publications of the work in order to defend himself.

The *Scholium* to the *Definition of the Principles* opens with the distinction between absolute and relative quantities, namely, of time and space. Time can be regarded as absolute, independent from the existence of things of experience but also as relative, as a measurement or limitation (hours, days, years) of the infinite duration of absolute time. In his attempt to provide an explanation of the existence of absolute space, Newton relies on the first law of motion: since the possibility of a rectilinear uniform motion lies in the absence of acceleration, a reference to absolute time, which has no limitations and so can explain the possibility of such infinite movement, is needed. Together with absolute time, absolute space is presupposed, intended as the field in which bodies are situated: it is not a relation between objects, but rather a primary location, unique and with no relation to anything, but containing in itself all relations.

As seen Newton alternates between the need to free science from metaphysical assumptions and the reference to principles whose nature cannot be scientifically justified. How can this ambiguity be explained? As Cassirer remarks, Kant will avoid the risk of mixing the sensible and intelligible realms (for instance, by referring predicates such as 'where' and 'when' to objects of the pure world, like God, and by grounding relative space and times on metaphysical principles): "The 'infection' the *contagium*, of the intelligible by the sensible, which emerges so clearly in Newton's theory concerning God, is avoided; [...]" (Cassirer 1921, p. 121, transl. L.S.) [89] Maybe the clearest passage in which this problem can be seen is the following:

> "He is not eternity or infinity, but eternal and infinite; he is not duration or space, but he endures and is present. He endures for ever, and is every where present; and by existing always and everywhere, he constitutes duration and space. Since every particle of space is always, and every indivisible moment of duration is everywhere, certainly the Maker and Lord of all things cannot be never and no where." (Newton 1687, transl. A. Motte, p. 441)[90]

In Newton, on the one hand it seems that one of his main attempts consists in providing objective grounds to science through the reference to demonstrated claims, on the other hand these claims seem not to be sufficient, and need the reference to principles which belong to other fields of knowledge. Another and maybe easier solution is to stress the influence exerted on Newton by metaphysicians and theologians of the time, such as Henry More, and in general by his attempt to find a conciliation between science and religion so as to defend himself against the accusation of atheism.

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89. "Die -Ansteckung- das *contagium* des Inteligiblen durch das Sinnliche, wie sie so deutlich in Newtons Gotteslehre hervortrat, ist beseitigt; [...]"

90. "Non est aeternitas & infinitas, sed aeternus & infinitus; non est duratio & spatium, sed durat & adest. Durat semper, & adest ubique, & existendo semper & ubique durationem & spatium constituit. Cum unaquaeque spatii particula sit *semper*, & unumquodque durationis indivisibile momentum *ubique*, certe rerum omnium fabricator ac dominus non erit *nunquam*, nusquam."

Confronting the same question concerning the nature of space and time, Leibniz situated himself in direct opposition to Newton. His *Epistolary* with Samuel Clarke (between 1715 and 1716) can be regarded as emblematic of the contemporary focus on the relation between metaphysics and sciences and the nature of the principles of knowledge. The epistolary originates from a letter sent by Leibniz to Caroline of Wales, in which he distanced himself from the Newtonian theory of absolute space and time. Then she put the philosopher in contact with Clarke, a theologian of Westminster and defender of Newton's perspective. Influenced by the recent publication of the paradoxes of Zenon in Pierre Bayle's *Dictionnaire hisorique et critique*,[91] Leibniz affirms that space cannot be absolute, otherwise there would be something that cannot be explained by a cause, as required by the principle of sufficient reason: if space were uniform, absolute, there would be no difference between one point and another, and consequently insufficient reason to explain why God situated bodies in these points and not in others. Similarly, if time were independent from things, there would be no reason why things happen in one moment rather than in another. But, then, what are time and space? Leibniz proposes not considering them as absolute positions, but as relations: space is an order of coexistences, while time is one of successions. As Leibniz affirms they are no-things nor attributes, but rather *idealitas*, in the sense that they consist of relations, orders, abstracted from material objects and then provided with universality and necessity in opposition to the overflowing matter of senses. In this sense they are defined as *idealitas* and not objects, *res*. The problem is: if space and time derive from sensibility, then the sciences based on them (physics, mathematics…) depend on sensible objects, which are contingent, and cannot be universal or necessary. Is the claim of mathematics and physics to be considered as universal and necessary only an illusion, or can it be justified in a different way?

Kant's 1770 conception of space and time as forms might be interpreted as a first successful attempt to provide an original solution to this question. If some sciences (such as geometry and arithmetic) are based on space and time and if Kant's forms of sensibility do not derive from senses, then it is possible to justify their universal and objective value. However, Kant's doctrine still has some limits.

2.2.3 The limits of Kant's Dissertation and the need of a further solution to the question of objectivity

Although Kant's conception of space and time distinguishes him from previous traditions, he is still very influenced by the Wolffian division between inferior and superior faculties, receptivity and spontaneity, thus generating incoherences, or at least ambiguities, such as: his account of sensibility and the distinction between *phaenomena* and *noumena*. more specifically, Kant defines sensibility as *receptivitas*, the faculty through which the subject can be affected by the object, while the understanding is conceived as the faculty of representing what is not present in the senses. While the first deals with things as they appear (*uti apparent*), the latter focuses on things

91. Bayle 1702.

as they are (*sicuti sunt*). This division re-echoes the traditional separation between primary qualities, which belong to the things in themselves and are grasped through the understanding[92], and secondary qualities that depend on the subject and its sensibility. But, as I have already stressed, sensibility cannot be defined as passive, since it is characterized by the pure forms of intuitions, through which impressions do not affect the subject, as it were, automatically, but according to an order.

Then, if on the one hand the doctrine of space and time exposed in the Dissertation opens the way to a new approach to the problem of knowledge, on the other hand it contains limits and incoherences, as underlined by Kant himself. As he states in the famous letter to Herz from 21st February 1772, the most important philosophical question focuses on the link between representations and objects. What is this link caused by? While it might be easy to explain it in reference to sensibility (as it could be possible to affirm that representations reflect objects as they are produced by their affection) on the other hand the relation between the intellectual action and objects is harder to justify. In the letter to Herz, Kant provides only a negative definition of the understanding's activity: it is the faculty of representing things we are not affected by, it is not an abstraction from the senses, and neither is it a production such as the efficient causality of an intuitive understanding. Unfortunately, here Kant does not delve into detail with this kind of action, nor does he explain whether, and if so how, such activity possesses an objective significance: how can it not simply be a product of the imagination? How is its reference to actual things (*sicuti sunt*) justified? Are there forms and schemata similar to the forms of sensibility also for the understanding? If the reference to space and time as schemata allows Kant to explain the possibility of the objective value of sciences and of our sensible experience as well, why should not a similar solution be valid also for the activity of the understanding? As Kant himself puts it in the letter to Marcus Herz (21 February 1772):

> "In my Dissertation I was content to explain the nature of intellectual representations in a merely negative way, namely, to state that they were not modifications of the soul brought about by the object. However, I silently passed over the further question of how a representation that refers to an object without being in any way affected by it can be possible. I had said: The sensuous representations present them as they are. But by what means are these things given to us, if not by the way in which they affect us? And if such intellectual representations depend on our inner activity, whence comes the agreement that they are supposed to have with objects[…]?" (AA X, p.130-31)[93]

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92. More specifically, Kant defines the understanding as the superior faculty of the soul characterized by two uses: *usus realis*, through which concepts of things and their relation are given, and *usus logicus*, proper to sciences, through which it's possible to subordinate inferior concepts to superior ones, related according to the logical principle of non-contradictoriness. Through the *usus logicus* appearance turns to experience: the understanding, confronts and coordinates empirical contents towards universality. But this doesn't imply that the sensible content can develop into an intellectual one; the intelligible, the pure ideas, are grasped (and not abstracted) from the understanding as symbols in its *usus realis*.

93. "Ich hatte mich in der dissertation damit begnügt die Natur der intellectual Vorstellungen blos negativ auszudrüken: daß sie nemlich nicht modificationen der Seele durch den Gegenstand wären. Wie aber denn sonst eine Vorstellung die sich auf einen Gegenstand bezieht ohne von ihm auf einige Weise afficirt zu seyn möglich überging ich mit Stillschweigen. Ich hatte gesagt:

Moreover, another limitation of the Dissertation can be seen in the fact that, although it states that the difference between understanding and sensibility is not a qualitative one, it is difficult to avoid the thought that the knowledge concerning things *uti apparent* is somehow inferior to that of the things *sicuti sunt*[94]. It seems that there are two worlds and that the intelligible one is absolutely separated and opposed to the sensible one, kind of Platonic ideal world, which can be grasped only when the understanding is freed from the bounds of senses, thus revealing itself as a traditional metaphysical perfect realm. As Cassirer states[95], in the Dissertation Kant assumes a distinction between a purely creative understanding and a purely receptive one. But since our understanding falls not under these two kinds, a new concept of understanding needs to be elaborated by Kant. The overcoming of the separation between these two worlds and accounts of the understanding will be one of the results of the *Critique of Pure Reason*.

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die sinnliche Vorstellungen stellen die Dinge vor, wie sie erscheinen, die intellectuale wie sie sind. Wodurch aber werden uns denn diese Dinge gegeben, wenn sie es nicht durch die Art werden, womit sie uns afficiren und wenn solche intellectuale Vorstellungen auf unsrer innern Thätigkeit beruhen, woher komt die Übereinstimmung die sie mit Gegenständen haben sollen[…]"

94. On this topic, see Cassirer 1918.

95. Cassirer 1918, p. 137.

3. The introduction of the transcendental forms in the *Critique of Pure Reason*

In this third chapter, the necessary premises for understanding the problem of schematism in the *Critique of Pure Reason* will be presented. The literature on Kant's main work is almost uncountable. The neokantian school saw Hermann Cohen and Paul Natorp as main exponents and commentators of the *Critique*, who put the accent on the subjective process of cognition rather than on the existence of things in themselves. In his Kants *Theorie der Erfahrung* (1871) Cohen puts aside the interpretation of the things in themselves as causes of the impressions and interprets Kant's account as a theory on experience. Later on Heinrich Rickert in his *Kant als Philosoph der modernen Kultur. Ein geschichtsphilosophischer Versuch* (1924), *Grunprobleme der Philosophie Methodologie, Ontologie, Anthropologie(1934)* and Ernst Cassirer in his Kants *Leben und Lehre (1918)*stress the importance in Kant's philosophy of the problem of objectivity and the conditions of experience. In 1896 Hans Vaihnger founded the *Kant-Studien*, which will be later followed by reviews such as: *Studi Kantiani* (1990), *Kantian Review* (1997) and *Con-Textos Kantianos* (2014). Among the commentators of the 20 century, Willard Van Orman Quine opens the way to the discussion about the distinction between analytical and synthetic judgements, while Strawson combines his analytical standpoint and his interest in the transcendental philosophy in *The Bounds of Senses* (1966). Classical commentaries are those of Norman Kemp Smith *A Commentary to Kant's 'Critique of Pure Reason'* (1918) and Lewis White Beck's *Studies in the Philosophy of Kant* (1965), Norbert Hinske *Kant als Herausforerung an die Gegenwart* (1980). Heinz Heimsoeth's *Transzendentale Dialektik. Ein Kommentar zu Kants Kritik der reinen Vernunft*, 4 Teile (1966-71) and Herman Jan de Vleeschauwer's *La deduction transcendentale dans l'oeuvre de Kant* (1934-37) are particularly concentrated on the "Transcendental Deduction". Heiner F. Klemme *Immanuel Kant* (2004), Otfried Höffe *Immanuel Kant* (1983), Karl Vorländer *Immanuel Kant*, *Der Mann und das Werk* (1924).

For my purposes a text of great importance is Henry Allison's *Kant's Transcendental Idealism. An Interpretation and Defense* (2004), which gives a brilliant overview of the reasons of the importance of schematism. Recently, the *Kant-Lexicon* edited in 2015 by Marcus Willaschek, Jürgen Stolzenberg, Georg Mohr and Stefano Bacin provides the largest lexical reference on the author taking into account the most contemporary researches.

I have profited of this literature to elaborate the following chapter. In the first section of this chapter, I will focus on the doctrine of sensibility and its forms, while in the second one on the "Transcendental Analytic", in order to understand the need to add the schematism chapter in the project of the *Critique*, intended as an inquiry

on the conditions of experience. This overview will provide an interpretation of Kant's perspective as not idealistic (in a subjective sense) and not psychologistic.

3.1 The doctrine of sensibility

Kant's *Critique of Pure Reason* is divided into "Doctrine of Elements" and "Doctrine of Method": while the first concerns the two branches in which human knowledge can be divided (sensibility and understanding); the second focuses properly on the problem of method and aims at organising the knowledge's conditions in a system.

The first chapter of the "Doctrine of Elements" constitutes the "Transcendental Aesthetic", concerning sensibility: that is the faculty through which we are affected by things immediately, thus giving sensibility a sort of priority to the understanding (at least in the order of explanation of the process of cognition). A thing, in order to be thought, must be first of all be given: "[…]the conditions under which alone objects of human knowledge can be given must precede those under which they are thought." (KrV A15/B29)[96]

The indeterminate object of an empirical intuition, called by Kant '*phenomenon*' or '*Erscheinung*', is given not only by matter but also by form:

> "I call that in the appearance which corresponds to sensation its **matter**; but that which allows the manifold of appearance to be intuited as ordered in certain relations, I call the **form** of appearance." (KrV A20/B34)[97]

In order to find the forms of sensibility, Kant analyses the phenomenon, isolating everything that belongs to the function of the understanding and to matter so that only pure elements of sensibility remain, namely, space and time, that are respectively forms of the outer and the inner sense[98].

In these explications, Kant seems to be repeating the views provided in his Dissertation. However, his perspective is now significantly different: he is not trying to provide an explanation of the constitution of the world (sensible and intelligible, as in the Dissertation) but rather of the possibility of claims of knowledge. Given the presupposition that universal and necessary propositions (the well-known synthetic a priori judgements) do exist, he aims to explain their ground, relying on the combination of different elements and functions. On the one hand there is the continuous presence of an element of novelty (the content "given" in sensibility),

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96. "[…] die Bedingungen, worunter allein die Gegenstände der menschlichen Erkenntniß gegeben werden, denjenigen vorgehen, unter welchen selbige gedacht werden."

97. "In der Erscheinung nenne ich das, was der Empfindung correspondirt, die Materie derselben, dasjenige aber, welches macht, daß das Mannigfaltige der Erscheinung in gewissen Verhältnissen geordnet werden kann, nenne ich die Form der Erscheinung."

98. The separation between two senses re-echos the terminology of the *Schulphilosophie*, according to which all human senses can be reduced to these two ones. (Cfr. Klemme 2004, p. 29)

thus providing synthetic a priori judgements with fruitfulness (they are not mere analysis, definitions, but are actually able to increase the knowledge's content); on the other hand, there is the form, the way in which this novelty occurs. In this view, the distinction between sensibility and understanding does not designate two forms of experience completely separated, because experience is in itself united[99]. The division among faculties might be interpreted as a way to underline the peculiarity of human knowledge: there is an irreducible dualism between passivity and activity, particularity and contingency of the content, and general and universal concepts and laws. Referring to the pure elements as forms, Kant aims at underscoring how their value is not substantial but functional, as they do not consist of rules to be applied to a matter itself independent, but rather they are conditions of its very organisation. As Cohen[100] stresses, Kant's pure forms can be conceived as logical conditions of experience, general methods that justify the order of the multiplicity of sensations.

Moreover, two other differences from the Dissertation are identified. Firstly, the priority given to the focus on space: although time is more general (everything is given in time but not in space), it's easier and more intuitive to represent time through space. Secondly, Kant introduces a separation between a metaphysical as well as a transcendental Exposition: while the former is the clear representation of an a priori concept and aims at understanding what space and time consist in by describing their metaphysical (non-empirical) content, the latter consists of the clarification of a principle as transcendental, that is to say a principle which is a condition of possibility of other a priori cognitions.

After illustrating the features of space and time in the first exposition, Kant first focuses on the "Transcendental Expositions", aiming at underlying how space and time form the basis of possibility of a priori knowledge. As he states, the basis of geometry can only be provided by a pure intuition, in this case, by space: if the principle of geometry were empirical, it would not be universal and necessary, and if it were a concept, it would be predicable and so it would hold an extension. But if it were so, then such a discursive and qualitative principle could not succeed in providing a justification of the axioms of geometry:

> "That the straight line between two points is the shortest is a synthetic proposition. For my concept of **the straight** contains nothing of quantity, but only a quality. The concept of the *shortest* is therefore entirely additional to it, and cannot be extracted out of the concept of the straight line by any analysis. Help must here be gotten, by means of which alone the synthesis is possible." (KrV B16)[101]

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99. Kant indicates that there might be an unknown common root of the two sources of knowledge, see KrV A16/B30..

100. Cohen 1918.

101. "Dass die gerade Linie zwischen zweien Punkten die kürzeste sei, is ein synthetischer Satz. Denn mein Begriff von Geraden enthalt nichts von Grösse, sondern nur eine Qualität, der Begriff des Kürzesten kommt also ganzlich hinzu, und kann durch keine Zergliederung aus dem Begriffe der geraden Linie gezogen reden. Anschauung muss also hier zu Hülfe genommen werden, vermittelst deren allein die Synthesis möglich ist."

In a similar way, if we focus on the synthetic a priori concerning movement, **time** as pure intuition can be regarded as its fundamental principle:

> "Only in time can both contradictorily opposed determinations in one thing be encountered, namely **successively**. Our concept of time therefore explains the possibility of as much synthetic *a priori* cognition as is presented by the general theory of motion, which is no less fruitful." (KrV B49)[102]

Without succession no change would be possible: the passage from *A* to *non A* would be only a contradiction and the variety and multiplicity of experience could not be explained. For instance, a chrysalis turns into a butterfly only through time. Butterflies have a life cycle consisting of four stages: from egg to larva, through chrysalis and finally to a butterfly. Without the succession in time these changes from one stage to another could not be possible.

Now, a question comes from these considerations:

> "Now how can an outer intuition inhabit in the mind that precedes the objects themselves, and in which the concept of the latter can be determined *a priori?* Obviously not otherwise than insofar as it has its seat merely in the subject, as its formal constitution for being affected by objects and thereby acquiring **immediate representation**, i.e., **intuition**, of them; thus only as the form of outer ***sense*** in general." (KrV B41)[103]

Understanding what Kant means by 'subject' is undoubtedly problematic. Does he refer to a psychological subject? A theoretical one? In which sense? Kant's inquiry concerns the conditions of possibility of knowledge and not the psychological process. For this reason, the term 'subjective' might here be interpreted as not objective. Forms are not objects of experience but rather belong to the subject who has experiences: they do not belong to a subject absolutely regarded as autonomous and isolated, nor to an absolute object. As Cohen interprets the notion of form[104], on the one hand form is the form of the *phaenomenon*, that is, the object of experience; on the other hand it belongs to the subject transcendentally intended, as the field of the object's possible manifestation. From this perspective form is a condition that can justify the regularity of human experience, in which the contents vary, but this variation is reduced to rules. These considerations explain why space and time are endowed with *empirical reality* as well as *transcendental ideality*: they are not conditions of the possibility of things in themselves, but of things given the experience with respect to

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102. "Nur in der Zeit konnen beide kontradiktorisch-entgegengesetzte Bestimmungen in einem Dinge, nämlich nach einander, anzutreffen sein. Also erklart unser Zeitbegriff die Möglichkeit so vieler synthetischer Erkenntnis a priori, als die allgemeine Bewegungslehre, die nicht wenig fruchtbar ist, dargelegt."

103. "Wie kann nun eine äussere Anschauung dem Gemüte beiwohnen, die vor den Objekten selbst vorhergeh und in welcher der Begriff der letzteren a priori bestimt werden kann? Offenbar nicht anders, als so fern sie bloss im Subjekte, als die formale Beschaffenheit desselben von Objekten affiziert zu werden, und dadurch unmittelbare Vorstellung derselben, d. I. Anschauung zu bekommen, ihren Sitz hat, also nur als Form des äusseren Sinnes überhaupt."

104. Cohen 1918, p. 205.

its limits and conditions. In other words: it makes sense to apply space and time to *phenomena*, to objects of experience (*empirical reality*); but there is no sense in applying them to things in themselves, which are not and cannot be given in experience (*transcendental*[105] *ideality* of pure intuitions). If one were to claim that space and time have transcendental reality, this would imply that intuition has the capacity to bring the contingent content of experience to existence, consequently making the contingent side of the process of knowledge (the empirical content) necessary. On the other hand, it is possible to think of an intuition that is characterized by a transcendental reality: the intuition of an understanding that is a-human, an *intellectus archetypus*, in which thought and being are identified. But we cannot investigate whether this intuition can be real, since it cannot be given in our experience, it is beyond the limits of our possible knowledge. Its possibility is only a logical one: given human intuition, it is possible to think of an intuition that is its opposite; it is possible to think the negation of a human intuition (as *A* leads to the thought of *not-A*). In this sense the transcendental Aesthetic is a negative doctrine of the *noumenon*, that is the thought of an object that is not and cannot be given in our experience:

> "Now the doctrine of sensibility is at the same time the doctrine of the noumenon in the negative sense, i.e., of things that the understanding must think without this relation to our kind of intuition, thus not merely as appearances but as as things in themselves, but about which, however, it also understands that in this abstraction it cannot consider making any sense of its categories, since they have significance only in relation to the unity of intuitions in space and time, and can even determine this unity a priori, through general concepts of combination only on account of the mere ideality of space and time." (KrV B307-308)[106]

So far, sensibility can only provide a necessary, although insufficient, indication of the constitution of the unity of the object: the forms of intuitions are not those in which the synthesis is completely constituted; it requires an additional contribution of the understanding for the possibility of the representation of an objective unities (and not only of relations of successions or coexistence among impressions) to be justified. Without the act of thinking, knowledge cannot be possible because there would be only a flow of separate impressions in which nothing could be distinguished as permanent, objective or unitary. The possibility of distinguishing between *Erscheinung* and *Objekt* derives from these considerations:

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105. Where transcendental can be interpreted as the attempt to use concepts beyond the limits of the possible experience (cf. Kant-Lexicon, p. 2313).

106. "Die Lehre von der Sinnlichkeit ist nun zugleich die Lehre von den Noumenen im negativen Verstande, d. i. von Dingen, die der Verstand sich ohne diese Beziehung auf unsere Anschauungsart, mithin nicht bloß als Erscheinungen, sondern als Dinge an sich selbst denken muß, von denen er aber in dieser Absonderung zugleich begreift, daß er von seinen Kategorien in dieser Art sie zu erwägen keinen Gebrauch machen könne: weil, da diese nur in Beziehung auf die Einheit der Anschauungen in Raum und Zeit Bedeutung haben, sie eben diese Einheit auch nur wegen der bloßen Idealität des Raums und der Zeit durch allgemeine Verbindungsbegriffe a priori bestimmen können."

> "Differently from the undetermined object (*Gegenstand*) of the empirical intuition (*Erscheinung*) is the object (*Objekt*) the determined object (*Gegenstand*) of an empirical knowledge. […] In each experience as objective one empirical knowledge intended, the understanding is responsible for the actual relation of knowledge, the relation to the object or objectivity. Through its pure concepts representations acquire objective reality." (Holzhey 1970, p. 219, transl. L.S.)

3.2 The doctrine of understanding

The purpose of the "Transcendental analytic" is the development of a "logic of truth", focusing on the faculty of the understanding in order to look for the principles of objectivity:

"The part of transcendental logic, therefore, that expounds the elements of the pure cognition of the understanding, and the principles without which no object can be thought at all, is transcendental analytic, and at the same time a logic of truth." (KrV A62/B87)[107]

The general logic deals with the formal *criteria* of truth, which are universal and necessary insofar as it abstracts from its content and deals only with the form of our thought[108]. A criterion which is not only universal and necessary but also sufficient is not possible: a criterion, in order to be universal and necessary has to abstract to the particular content of experience (otherwise, it would not be universal), while to be sufficient, it would have to refer to the particular content of experience (the truth or falsity of any epistemic judgement is determined by its relation to its particular content and object). Therefore, no criteria can be at the same time both universal and sufficient.[109] Still, it is possible to have universal and necessary criteria of truth in a transcendental sense: the "Transcendental Analytic" can be regarded as a "logic of truth" (KrV A62/B87) insofar **as** it provides the conditions of the possibility of judgements to be either objectively true or false. The a priori principles of the understanding are these conditions of the possibility of objects of experience, and thus, any epistemic judgement has to respect the universal and necessary rules of transcendental logic.

In order to identify the principles of knowledge of the understanding it is necessary to refer to a guiding thread (*Leitfaden*) which is found by Kant in the forms of thinking intended as formal modalities at the basis of the judgement, deprived of all content. Kant is proceeding in this way: if thinking means judging, i.e. the process through which a predicate is attributed to a subject, then there are as many modalities of thinking as there are of the judgement. Since Kant asserts that the Aristotelian

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107. "Der Theil der transscendentalen Logik also, der die Elemente der reinen Verstandeserkenntniß vorträgt, und die Principien, ohne welche überall kein Gegenstand gedacht werden kann, ist die transscendentale Analytik und zugleich eine Logik der Wahrheit."

108. KrV A54/B78.

109. KrV A59/B83-84.

general logic is complete and conclusive, it suffices to consider it for individuating the forms of thought. The same function of the understanding is the source of the analytic unity of the judgement as well as of the synthesis of representations, thus providing a sort of universal range of the limits in which an object can be given in the experience. In the "metaphysical deduction" of the categories (KrV B159), Kant derives twelve categories from the Aristotelian table of the twelve forms of judgements, namely: unity, plurality, totality (quantity); reality, negation, limitation (quality); of inherence and subsistence, causality and dependence, community (relation), possibility-impossibility, existence-non existence, necessity-contingency (modality)[110].

After exposing the categories Kant has to focus on their validity. The *quid facti*, that is the fact that categories are these twelve, is not yet the *quid juris*: one thing is how many and which the categories are, another is the legitimacy of their value[111]. A "Transcendental Deduction" is not necessary for pure intuitions, because they refer necessarily to sensible objects, given that such objects cannot be experienced without forms of sensibility. In contrast, the necessity of the reference of the categories to objects must be demonstrated: why can they not be mere forms of thinking, with no relation to objects? Why do they have an objective value?

Showing this necessity is the aim of the famous "Transcendental Deduction":

> "I therefore call the explanation of the way in which concepts can relate to objects *a priori* their **"transcendental deduction"**, and distinguish this from the **empirical** deduction, which shows the how a concept is acquired through experience and reflection on it, and therefore concerns not the lawfulness but the fact from which the possession has arisen." (KrV A85/B117)[112]

I will not delve into a detailed analysis of the "Transcendental Deduction"[113], but only provide a general overview of its main task, in order to stress its difference from the passages on schematism.The problem exposed in the "Transcendental

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110. I will not delve here into the question concerning the validity of the metaphysical deduction. I will only report one of the problems that it arises, namely the distinction between concepts in a logical sense andcategories (see Barone 1958). As Norman Kemp Smith underlines: "A generic or abstract concept espresses common qualities found in each of a number of complex contents. It is itself a content. A category, on the other hand, is always a function of unity whereby contents are interpreted. It is not a content, but a form for the organisation of content." (Kemp Smith 1962, p. 178). A different point of view is the one of Luigi Scaravelli, who does not stress how Kant might have been confused the two logic, but rather stresses how Kant suggests that the understanding is function of unity which produces both the logical unities of logical judgements, and the ways in which the manifold given in sensibility is s synthesised (Scaravelli 1970, p. 241).

111. On the distinction between *quid facti a*nd *quid juris*: see the Refl. 5636 (AA XVIII, P. 267), KrV A1, KrV A84-85/B116-117.

112. "Ich nenne daher die Erklärung der Art, wie sich Begriffe a priori auf Gegenstände beziehen können, die transzendentale Deduktion derselben, und unterscheide sie von der empirischen Deduktion, welche die Art anzeigt, wie ein Begriff durch Erfahrung und Reflexion über dieselbe erworben worden, und daher nicht die Rechtmäßigkeit, sondern das Factum betrifft, wodurch der Besitz entsprungen."

113. Cf. de Vleeschauwer 1934-1937; Carl 1989; Allison 2015.

Deduction" can be explained as following: sensibility and its pure intuitions are not sufficient to justify experience and knowledge, since they cannot provide a justification of the objective unity of epistemic judgements, but only of succession and coexistence, although they are universal rules. Therefore it is necessary to rely on a conceptual level able to provide such a unity that cannot be merely empirical, because otherwise it would not constitute a level of legalities able to justify the unity of the experience and the necessity and universality of thought. Yet, the reference to the pure concepts, to categories regarded as functions of unification and conditions of the possibility of the unity of the objects of experience also is not sufficient. The conjunction of pure concepts of the understanding presupposes another unity:

> "But in addition to the concept of the manifold and of its synthesis, the concept of combination also carries with it the concept of the unity of the manifold. Combination is the representation of the synthetic unity of the manifold.* The representation of this unity cannot, therefore, arise from the combination; rather, by being added to the representation of the manifold, it first makes the concept of combination possible. This unity, which precedes all concepts of combination a priori, is not the former category of unity (*§10*); for all categories are grounded on logical functions in judgements, but in these combination, thus the unity of given concepts, is already thought. The category therefore already presupposes combination. We must therefore seek this unity (as qualitative, *§12*) someplace higher, namely in that which itself contains the ground of the unity of different concepts in judgements, and hence of the possibility of the understanding, even in its logical use." (KrV B130-131)[114]

This unity is the 'I think', that must join up with each representation. If there were no such a synthetic unity, it would not be possible to justify unity in experience, which would only be a flow of impressions, deprived of objectivity. To underline the qualitative and not the quantitative aspect of such synthetic unity means to underline its peculiar function in opposition to that of quantitative unity, the mathematic category of unity. To affirm that the 'I think' is one, does not mean that there is only one unique 'I think', but that it is the unity in itself, a function, an x, that must be presupposed in justifying the unity of experience: if cognition did not have a unity at its basis, the regularity of experience could not be explained at all. Kant's well-known example of the straight line might help in elucidating Kant's account of cognition and demonstrating how it differs from an idealistic perspective: in order to think a line, it is necessary to "draw it in thought" (KrV B154), connecting in a

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114. "Aber der Begriff der Verbindung führt außer dem Begriffe des Mannigfaltigen und der Synthesis desselben noch den der Einheit desselben bei sich. Verbindung ist Vorstellung der synthetischen Einheit des Mannigfaltigen.*) Die Vorstellung dieser Einheit kann also nicht aus der Verbindung entstehen, sie macht vielmehr dadurch, daß sie zur Vorstellung des Mannigfaltigen hinzukommt, den Begriff der Verbindung allererst möglich. Diese Einheit, die a priori vor allen Begriffen der Verbindung vorhergeht, ist nicht etwa jene Kategorie der Einheit (*§10*); denn alle Kategorien gründen sich auf logische Functionen in Urtheilen, in diesen aber ist schon Verbindung, mithin Einheit gegebener Begriffe gedacht. Die Kategorie setzt also schon Verbindung voraus. Also müssen wir diese Einheit (als qualitative, *§12*) noch höher suchen, nämlich in demjenigen, was selbst den Grund der Einheit verschiedener Begriffe in Urtheilen, mithin der Möglichkeit des Verstandes sogar in seinem logischen Gebrauche enthält."

particular way some parts of space. In this way, a particular synthesis produces the object (the line traced) and its concept, but this is not a mere intellectual synthesis that takes place in the inside of the understanding as an intellectual intuition: the multiplicity of intuitions, on the contrary, must always be given. In other terms, the operation's unity of the synthesis of the multiplicity is the unity of the consciousness of the multiplicity of the intuitions: without the synthesis of the understanding, the multiplicity would not be unified in a consciousness and no object would be given. Through this example of the straight line, it is possible to understand how far Kant is from an idealistic position: cognition needs not only the activity of the understanding and its forms, but also the manifold of intuitions and the forms of intuitions. As the example shows, in order to think a line, the subject has to "draw" it in the space. That is to say, categories are not the only sufficient and necessary conditions of cognition., space and time are also needed.

Moreover, it is important also to remark that the 'I think' is not to be viewed from an empirical-psychological level but, instead, as a transcendental principle necessary for the justification of the possibility of experience. Kant's statement of the necessity of each representation to be guided by the 'I think' does not imply that the condition of the objectivity must be a clear empirical consciousness, self-consciousness:

> "Now it does not matter here whether this representation be clear (empirical consciousness) or obscure, even whether it be actual; but the possibility of the logical form of all cognition necessarily rests on the relationship to this apperception **as a faculty**." (KrV A117)[115]

There is a huge difference between consciousness as self-knowledge and as a priori condition of the unity of the experience: the first, given and determined in the internal sense, is a representation; while the second, the 'I think': "it is the consciousness of the spontaneity of the thinking, but it does not reveal in itself an actual determined existence. This latter existence will follow from the diversity given through sensibility." (de Vleeschauwer 1934-37, II, p. 228)[116]Differently from the empirical 'I', the 'I think' does not facilitate the knowledge of the self, but knowledge of the fact that a self is given:

> "In the transcendental synthesis of the manifold of representations in general, on the contrary, hence in the synthetical original unity of apperception, I am conscious of myself not as I appear to myself, nor **as** I am in myself, but only **that** I am." (KrV B157)[117]

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115. "Diese Vorstellung mag nun klar (empirisches Bewusstsein) oder dunkle sein, daran liegt hier nichts, ja nicht einmal an der Wirklichkeit desselben; sondern die Möglichkeit der logischen Form alles Erkenntnisses beruhet notwendig auf dem Verhältnis zu dieser Apperzeption als einem Vermögen."

116. "Est bien la conscience de la spontanéité de la pensée, mais il ne révèle, de lui-même, aucune existence réellement déterminée. Cette dernière existence suivra la nature de la diversitè qui est donnée dans la sensibilité."

117. "Dagegen bin ich mir meiner selbst in der transzendentalen Synthesis des Mannigfaltigen der Vorstellungen überhaupt, mithin in der synthetischen ursprünglichen Einheit der Apperzeption, bewusst, nicht wie ich mir erscheine, noch wie an mir selbst bin, sondern nur daß ich bin."

But this reference to the 'I think' can also lead to ambiguities: to be aware of being, at this level of inquiry, does not mean to be conscious of one's own personal existence, but of the fact that there is an experience. In Kant's view, the 'I' of the 'I think' it does not refer to the personal identity, but it is merely a function, a unity necessary to justify the unity of the experience.

Now, what are, then, the conditions of the unity of experience? Which are the faculties implied in the process of cognition? In Kant's words, the conditions of possibility of experience can be summarized as follows:

> "There are, however, three original sources (capacities or faculties of the soul), which contain the conditions of the possibility of all experience, and cannot themselves be derived from any other faculty of the mind, namely **sense, imagination**, and **apperception**. On these are grounded 1) the **synopsis** of the manifold *a priori* through sense; 2) the **synthesis** of this manifold through the imagination; finally 3) the **unity** of this synthesis through original apperception." (KrV A94)[118]

It is not sufficient to claim that sensible impressions are given in sensibility according to space and time, but it is necessary to state that they are reproduced by the imagination (that allows the representation of an object although without a present intuition) and that they are all united in the understanding in order to make possible the experience of a unitary object and not of separated impressions, in which the consciousness would dissolve itself.

Although Kant distinguishes three different sources of consciousness, the synthesis' process is unique[119]:

> "In such a way it is proved that the synthesis of apprehension, which is empirical, must necessarily be in agreement with the synthesis of apperception, which is intellectual and contained in the category entirely *a priori*. It is one and the same spontaneity, that, there under the name of imagination, and here under the name of understanding, brings combination into the manifold of intuition." (KrV B162)[120]

And in the section "On the ground of the distinction of all objects in general into *phaenomena* and *noumena*":

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118. "Es sind aber drei ursprüngliche Quellen, (Fähigkeiten oder Vermögen der Seele) die die Bedingungen der Möglichkeit aller Erfahrungen enthalten, und selbst aus teile andern Vermögen des Gemüts abgeleitet werden können, nämlich, SINN, EINBILDUNGSKRAFT und APPERZEPTION. Darauf gründet sich 1) die SYNOPSIS des Mannigfaltigen a priori durch den Sinn; 2) die SYNTHESIS dieses Mannigfaltigen durch die Einbildungskraft: endlich 3) die EINHEIT dieser Synthesis durch ursprüngliche Apperzeption."

119. The way in which these different functions work together is highlighted through schematism (Hepfer 2006, pp. 111-112).

120. "Die Synthesis der Apprehension, welche empirisch ist, der Synthesis der Apperzeption, welche intellektuell und gänzlich a priori in der Kategorie enthalten ist, notwendig gemäß sein müsse. Es ist eine und dieselbe Spontaneität, welche dort, unter dem Namen der Einbildungskraft, hier des Verstandes, Verbindung in das Mannigfaltige der Anschauung hineinbringt."

> "With us **understanding** and **sensibility** can determine an object **only in combination**. If we separate them, we have intuitions without concepts, or concepts without intuitions, but in either case representations that we cannot relate to any determinate object." (KrV A258/B314)[121]

In this way, according to Kant's view, the synthetic a priori judgements find a first (although not completed) explanation through the "Transcendental Deduction": the subjective conditions of the understanding have an objective value, because they are the basis of the possibility of the phenomena's constitution; the a priori understanding anticipates the form of the possible experience in general, thus determining the field of possibility of an object of experience in general.

But so far, the transcendental inquiry is not completed. Although Kant has explained that pure concepts are necessary conditions of objective experience, he does so only "from the side of the understanding" (KrV B162), that is to say, categories are not enough to provide a complete explanation of how experience is possible, which is one of the aim of the *Critique* (KrV B20). As Kant states:

> "[…] categories contain the grounds of the possibility of experience in general from the side of the understanding. But more about how they make experience possible, and which principles of its possibility they yield in their application to appearances, will be taught in the following chapter on the transcendental use of the power of judgement."(KrV B167)[122]

Kant has to face a crucial question: can the forms of the understanding be applied to the matter of experience and can understanding and sensibility, despite their fundamental heterogeneity actually work together? Both of these faculties are provided with pure forms. The objective validity of the forms of sensibility do not need a justification, because it is only through them that objects are given in experience. As Kant puts it:

> "In the case of the concepts of space and time, we were able above to make comprehensible with little effort how these, as *a priori* cognitions, must nevertheless necessarily relate to objects, and made possible a synthetic cognition of them independent of all experience. For since an object can appear to us only by means of such pure forms of sensibility, i.e., be an object of empirical intuition, space and time are thus pure intuitions that contain a priori the conditions of the possibility of objects as appearances, and the synthesis in them has objective validity." (KrV A89/B121)[123]

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121. "Verstand und Sinnlichkeit können bei uns nur in Verbindung Gegenstände bestimmen. Wenn wir sie trennen, so haben wir Anschauungen ohne Begriffe, oder Begriffe ohne Anschauungen."

122. "[…] nämlich die Kategorien von Seiten des Verstandes die Gründe der Möglichkeit aller Erfahrung überhaupt enthalten. Wie sie aber die Erfahrung möglich machen, und welche Grundsätze der Möglichkeit derselben sie in ihrer Anwendung auf Erscheinungen an die Hand geben, wird das folgende Hauptstück von dem transsc. Gebrauche der Urtheilskraft das mehrere lehren."

123. "Wir haben oben an den Begriffen des Raumes und der Zeit mit leichter Mühe begreiflich machen können, wie diese als Erkenntnisse a priori sich gleichwohl auf Gegenstände nothwendig beziehen müssen und eine synthetische Erkenntniß derselben unabhängig von aller Erfahrung

Categories, on the contrary, need a justification of their objective validity and Kant provides it in the "Deduction of the Pure Concepts of the Understanding". However, the possibility of cognition is not sufficiently explained. The two faculties and their forms must work together, but they are deeply different: sensibility is merely a receptive faculty, while understanding is active; space and time do not need a transcendental deduction, while categories do because they are conditions of thinking, i. e., they could be regarded as mere subjective rules without a necessary relation to objects.[124] As Kant states:

> "Thus a difficulty is revealed here that we did not encounter in the field of sensibility, namely how **subjective conditions of thinking** should have **objective** validity, i.e., yield conditions of the possibility of all cognition of objects; for appearances can certainly be given in intuition without functions of the understanding. I take, e.g., the concept of cause, which signifies a particular kind of synthesis, in which given something *A* something entirely different *B* is posited according to a rule. It is not clear a priori why appearances should contain anything of this sort (one cannot adduce experiences for the proof, for the objective validity of this a priori concept must be able to be demonstrated), and it is therefore a priori doubtful whether such a concept is not perhaps entirely empty and finds no object anywhere among the appearances. For that objects of sensible intuition must accord with the formal conditions of sensibility that lie in the mind *a priori* is clear from the fact that otherwise they would not be objects for us; but that they must also accord with the conditions that the understanding requires for the synthetic unity of thinking is a conclusion that is not so easily seen." (KrV A90/B122-123)[125]

Kant here alludes to the independence of sensibility and understanding, saying that even if concepts were not valid, things will still continue to be given to us in the experience. Therefore, even after the Deduction, that is to say, even once demonstrated

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möglich machten. Denn da nur vermittelst solcher reinen Formen der Sinnlichkeit uns ein Gegenstand erscheinen, d. i. ein Object der empirischen Anschauung sein kann, so sind Raum und Zeit reine Anschauungen, welche die Bedingung der Möglichkeit der Gegenstände als Erscheinungen a priori enthalten, und die Synthesis in denselben hat objective Gültigkeit."

124. See KrV A 90-91/B123-124.

125. "Daher zeigt sich hier eine Schwierigkeit, die wir im Felde der Sinnlichkeit nicht antrafen, wie nämlich subjective Bedingungen des Denkens sollten objective Gültigkeit haben, d. i. Bedingungen der Möglichkeit aller Erkenntniß der Gegenstände abgeben: denn ohne Functionen des Verstandes können allerdingsErscheinungen in der Anschauung gegeben werden. Ich nehme z. B.den Begriff der Ursache, welcher eine besondere Art der Synthesis bedeutet, da auf etwas A was ganz Verschiedenes B nach einer Regel gesetztwird. Es ist a priori nicht klar, warum Erscheinungen etwas dergleichen enthalten sollten (denn Erfahrungen kann kann man nicht zum Beweise anführen, weil die objective Gültigkeit dieses Begriffs a priori muß dargethanwerden können); und es ist daher a priori zweifelhaft, ob ein solcherBegriff nicht etwa gar leer sei und überall unter den Erscheinungen keinen Gegenstand antreffe. Denn daß Gegenstände der sinnlichen Anschauung den im Gemüth a priori liegenden formalen Bedingungen der Sinnlichkeit gemäß sein müssen, ist daraus klar, weil sie sonst nicht Gegenstände für uns sein würden; daß sie aber auch überdem den Bedingungen, derender Verstand zur synthetischen Einheit des Denkens bedarf, gemäß seinmüssen, davon ist die Schlußfolge nicht so leicht einzusehen."

that categories are related to things of experience, it is left to demonstrate how two distinct and apparently independent functions such as sensibility and understanding can work together. The distinction between the two faculties is called by Kant 'heterogeneity':

> "Now pure concepts of the understanding, however, in comparison with empirical (indeed in general sensible) intuitions, are entirely unhomogeneous, and can never be encounter in any intuition. Now how is the **subsumption** of the latter under the former, thus the **application** of the category to appearances possible, since no one would say that the category, e.g., causality, could also be intuited through the senses and is contained in the appearance? This question, so natural and important, is really the cause which makes a transcendental doctrine of the power of judgement necessary, in order, namely, to show the possibility of applying **pure concepts of the understanding** to appearances in general." (KrV A137-138/B176-177)[126]

Categories and appearances are inhomogeneous. How does Kant define homogeneity? 'Homogeneity' (*Homogeneität*) is used by Kant to refer to thinks sharing qualitative properties.[127] For instance, since 'table' and 'quadrangle' do not share the same properties, i.e., do not belong to the same kind, are inhomogeneous; the former belongs to the kind of the empirical objects, while the latter to that of the geometrical concepts. They do not share the same qualitative features and consequently they cannot be subsumed one under the other.

This is the opening problem of the schematism chapter, which focuses on a controversial problem, and is still open to new interpretations provided by critics belonging both to the philosophical as well as to the psychological field.

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126. "Nun sind aber reine Verstandesbegriffe in Vergleichung mit empirischen(ja überhaupt sinnlichen) Anschauungen ganz ungleichartig undkönnen niemals in irgend einer Anschauung angetroffen werden. Wie ist nun die Subsumtion der letzteren unter die erste, mithin die Anwendungder Kategorie aufErscheinungen möglich, da doch niemand sagen wird: diese, z. B. die Causalität, könne auch durch Sinne angeschauetwerden und sei in der Erscheinung enthalten? Diese so natürliche und erhebliche Frage ist nun eigentlich die Ursache, welche eine transscendentale Doctrin der Urtheilskraft nothwendig macht, um nämlich die Möglichkeit zu zeigen, wie reine Verstandesbegriffe auf Erscheinungen überhauptangewandt werden können."

127. See KrV A657/B685; AA XIV, p.366; AA XIV, p. 410.

4. Analysis of the schematism chapter

The schematism chapter, which consists of no more than ten pages (A137 - 147), has often been considered to be the most obscure and controversial chapter of the *Critique of Pure Reason*. Although Kant's studies on Kant are uncountable, the monographs exclusively dedicated to the problem of schematism are few (Califano 1968, Camartin 1971, Kang 1985, Gasperoni 2016); on the contrary, this chapter has been analysed and criticised by numerous authors in papers and in book chapters. The reasons for the difficulties of its interpretation are given, on the one hand, by Kant's terminology, which seems sometimes contradictory and unclear and, on the other hand, by the topic itself, which has often been considered as a redundant addition insofar as Kant has already argued in the Deduction that the pure forms of understanding are related to experience. One of the most important division in interpretations of the schematism chapter is the one between Cassirer and Cohen: whereas the former believes that the schematism is useless (as he declares in his *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit*, 1922-57), the latter (*Kants Theorie der Erfahrung,*1871) underlines the fundamental role of schemata in the distinctions between, first, the logical and transcendental domains and, second, analytic and synthetic judgements. Another important contribution is given in 1937 by de Vleeschauwer (*La deduction transcendentale dans l'oeuvre de Kant),* who declares that schematism can be explained only by referring to Kant's distinction between two kinds of reason and experience, i. e. the difference between speciosa and intellectual synthesis as presented in the second edition of the *Critique of Pure Reason*. Other fundamental contributions are given by: Helmut Holzhey (*Kants Erfahrungsbegriff*, 1970), who distinguishes several notion of object; Luigi Scaravelli (*Scritti kantiani*, 1968) and Francesco Barone (*Logica formale e logica trascendentale*, 1958) with their contribution to understand the relation between general and transcendental logic; and other standard studies, such as: Herbert James Paton, *Kants Metaphysics of Experience* (1936), Norman Kemp Smith, *A Commentary to Kant's Critique of Pure Reason* (1918), Karl Ameriks, *Kant's Theory of Mind* (1982), Norbert Hinske, *Kant als Herausforderung an die Gegenwart* (1980). More recent works on schemata are *Versinnlichung: Kants transzendentaler Schematismus und seine Revision in der Nachfolge* (2016), by Lidia Gasperoni, who also edited with Christoph Asmuth *Schemata* (2017). For our purposes, the most important texts are those dealing with the worry concerning the role of schematism in the whole project of the *Critique of Pure Reason*. If in the "Transcendental Deduction" Kant has already demonstrated that categories must be related to experience, what is the function of schematism, which deals with the application of pure concepts? Many of the critics share this question, such as Walter Zschocke and Ernst Robert Curtius, or William Henry Walsh. Beyond them, Geoffrey Warnock and Harold Arthur Prichard formulate similar qualms concerning the necessity of the schematism chapter. However, as I shall

show, it is reasonable to agree with other accounts, such as Allison's, who in order to answer the question whether schematism is necessary or not makes reference to the difference between its task (to show that categories have a real use, i.e. they are applied to experience) and that of the "Transcendental Deduction" (to demonstrate that there are some pure concepts of the understanding that are necessary conditions of objective experience).

In this fourth chapter, I will stress (4.1) how and why the schematism chapter is situated in the "transcendental doctrine of judgement" (and not in the "Transcendental Aesthetic" nor as part of the "Transcendental Deduction"). As I shall show, Kant's notion of schemata has to be explained as as time-determinations (4.2) produced by the faculty of imagination (4.3), distinct from images and concepts (4.4), closely related to pure concepts (4.5), although different in their specific function (4.6).

4.1 A transcendental doctrine of judgement

While in the "metaphysical deduction" Kant exposes the criteria to judge the formal validity of a proposition, he attempts to demonstrate their justification in the "Transcendental Deduction". However, since the forms of judgement are valid and necessary but lack in content, in so far as they are completely separated from experience, they are still insufficient actual judgements that are objective, i.e. determinately true or false criteria to evaluate actual cases of truth or falsity. To achieve this purpose, a "Transcendental Doctrine of Judgement" is required:

> "Transcendental Logic must therefore be able to give us what Kant calls a Transcendental Doctrine of Judgement. It must tell us what are the transcendental schemata, the necessary and universal characteristics of sensible objects in virtue of which the pure categories can be applied. It must also tell us what are the synthetic a priori judgements which arise when we apply pure categories to sensible objects in virtue of the transcendental schemata." (Paton 1936, p. 23)

As already stressed, transcendental logic differentiates from general logic insofar as it deals with truth: general logic abstracts from content and can be used to evaluate only the form of judgements, while transcendental logic deals with a content (namely pure a priori cognition *überhaupt*). It is in this sense when Kant claims that the conditions of the possibility of experience possess "transcendental truth". Thus one can distinguish three meanings of the notion of truth: absolute, transcendental and empirical. In Kant's view, the first is a misleading notion: it is not possible to have experience of absolute (*an sich*) objects, since no evaluation of the truth of judgements dealing with them is possible. The second deals with the conditions of possibility of experience, which are constraints for the domain in which empirical truths, that is the empirically correct attribution of a predicate to a subject in accordance with experience, can be inquired. As Kant puts it at the end of the schematism chapter:

> "All of our cognitions, however, lie in the entirety of all possible experience, and transcendental truth, which precedes all empirical truth and makes it possible, consists in the general relation to this."(KrV A146/B185)[128]

Transcendental truth, then, might be regarded as the total of the necessary conditions according to which judgements are related to objects of the possible experience. Finally, the third concerns the specific criteria for evaluating specific empirical judgements[129].

Besides the fact that the transcendental logic deals with truth, another difference between the two logics can be found in the introductory section to the chapter. As Kant says here, the peculiarity of transcendental philosophy lies in the fact that it has to indicate a priori the cases to which the rules (pure concepts) must be applied. But how is it possible to apply a rule avoiding the reference to a further rule, which would imply a *regressus ad infinitum*? Kant answers by introducing the power of judgement as a special talent which allows the application of the rules:

> "[…] the power of judgement is a special talent that cannot be taught but only practiced. Thus is also what is specific to so-called mother-wit, the lack of which cannot be made good by any school."(KrV A133/B172)[130]

The reference to a talent[131] and not to a faculty is quite peculiar. On the one hand it might be interpreted as an illicit reference to a psychological or biological capacity. 'Talent' is an uncommon term in Kant and if judgement is a faculty, intended as one of the fundamental a priori function at the basis of the possibility of knowledge, it sounds odd to add the definition of it as a talent. This latter is defined by Kant as a natural characteristic, which belong to some subjects and cannot be learned. In the *Anthropology*[132] 'talent' is referred to the the faculties of cognition, while in the *Critique of the Power of Judgement* the term defines the genius: "Genius is the inborn predisposition of the mind (ingenium) through which nature gives the rule to art" (AA V, p.307).[133] A possible explanation lies in the distinction between judgement as a faculty and as a talent. As faculty, judgement, is one of the higher faculties which are shared by subjects who have experiences; whereas as talent, the judgement is a particular capacity to apply the rules and since the application might be more or less adequate, it has a different degree. In this second sense, the judgement as particular talent intended, is not a proper topic of philosophy but rather of psychology, biology

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128. "In dem Ganzen aller möglichen Erfahrung liegen aber alle unsere Erkenntnisse, und in der allgemeinen Beziehung auf dieselbe besteht die transscendentale Wahrheit, die vor aller empirischen vorhergeht und sie möglich macht."
129. KrV A318/B375.
130. "[…] Urtheilskraft aber ein besonderes Talent sei, welches gar nicht belehrt, sondern nur geübt sein will. Daher ist diese auch das Specifische des so genannten Mutterwitzes, dessen Mangel keine Schule ersetzen kann."
131. AA IV, p. 393; AA IV, p. 423; AA V, p. 307; AA V, p.317; AA VI, p.444; AA VII, pp. 224-227.
132. AA IV, p. 393.
133. "Genie ist das Talent (Naturgabe), welches der Kunst die Regel giebt."

and anthropology. Therefore it becomes understandable why Kant often refers to it as something mysterious or seems to disregard the problem of its concrete development and use; this lack is not relevant in the coherence and pursuit of the task Kant attributes to his *Critique*, and would give psychologists a topic of investigation.

But why does the chapter concerning transcendental schemata come after the "Analytic of Concepts" and not between the "Transcendental Aesthetic" and "Transcendental Logic", given that they have to mediate between sensible objects and pure functions of the understanding[134]? To answer this question it might be useful to stress once again the result of the "Transcendental Deduction": not only does it justify the validity of the functions of the understanding, but it also shows the necessity of their empirical use. In other words: '*that*' categories must be applied to experience has already been demonstrated by Kant; now the focus is on *'how'* this use is possible and this question can only be asked after the demonstration of the necessity of a collaboration between the faculties implied in the constitution of knowledge, that is to say, only after the "Analytic of Concepts".

It is now possible to focus in more detail on the text. Kant opens the schematism chapter by describing the relation between category and object as a subsumption:

> "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 that is to be subsumed under it." (KrV A137/B176)[135]

A judgement is defined as the subsumption of a term under another and the condition of this activity is the homogeneity between the two terms, i. e., their belonging to a common kind.However, sometimes Kant regards judgement as a faculty for providing unity among different representations, concepts or ideas. Consequently, understanding and reason can also be defined as faculties for judging[136], thus making problematic to clarify the differences among these three faculties. I shall not here delve into this interesting problem, but rather follow Kant's passage (KrV A137/B176), in which he states that the empirical concept 'plate' and the geometrical concept 'circle' belong to the common kind 'roundness', that in the first case is intuited while in the second is thought. But such a connection does not characterise the relation between pure concepts and empirical intuitions. The functions of the understanding and the representation provided by sensibility are so heterogeneous that, considered as such, cannot belong to a common kind. However, as already stressed, according to the "Transcendental Deduction" the empirical use of the categories is not only possible, but it is also the *only* use which can provide categories with a meaning. But then, again, the question is: how? How are categories applicable to intuitions? This is the opening question of the schematism chapter:

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134. Höffe 2003.

135. "In allen Subsumtionen eines Gegenstandes unter einen Begriff muß die Vorstellung des ersteren mit der letztern GLEICHARTIG sein, d. i. der Begriff muß dasjenige enthalten, was in dem darunter zu subsumierenden Gegenstande vorgestellt wird."

136. For instance, KrV A69/B94; KrV A307/B363-364.

> "This question, so natural and important, is really the cause which makes a transcendental doctrine of judgement necessary, in order, namely, to show the possibility of applying pure concepts of the understanding to appearances." (KrV A138/B177)[137]

Given the necessity of the application of categories to the intuitions and the impossibility of an immediate subsumption, a mediating function, homogeneous to both faculties is needed:

> "Now it is clear that there must be a third thing, which must stand in homogeneity with the category on the one hand and on the appearance on the other, and makes possible the application of the former to the latter. This mediating representation must be pure (without anything empirical) and yet **intellectual** on the one hand and **sensible** on the other. Such a representation is the **transcendental schema**." (KrV A138/B177)[138]

4.2 Time-mediation

According to Kant, the only element that can help in mediating between the intellectual and the sensible level, thus providing a solution to the main question schematism aims at solving (namely the inhomogeneity between categories and appearances), is *time*[139]: on the one hand, it shares homogeneity with sensibility, because each representation must be given in the inner sense. On the other hand, similarly to the categories, time is necessary and universal and it is the most general among the a priori rules, because it is the basic condition of all the possible representations. However, to affirm that time is the most general condition does not imply that it is also the most fundamental: as demonstrated in the "Analytic of Concepts" without the pure function of the 'I think' it is not possible to provide experience with a unity. For this reason only pure apperception is defined as the supreme ground of the justification of the possibility of experience.

Since time is the form of the inner sense, which is defined also as empirical apperception[140], in order to avoid certain ambiguities concerning the interpretation of time-mediation, it is helpful to stress the difference between the role of the empirical and transcendental self-consciousness: one thing is the inner experience of the 'I', i.e. the sum of representations in time, and another one is its ground, i.e. the transcendental unity. Temporality can be regarded as the very first feature of a

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137. "Diese so natürliche und erhebliche Frage ist nun eigentlich die Ursache, welche eine transzendentale Doktrin der Urteilskraft notwendig macht, um nämlich die Möglichkeit zu zeigen, wie REINE VERSTANDESBEGRIFFE auf Erscheinungen überhaupt angewandt werden können."

138. "Ist klar, dass es ein Drittes geben müsse, was einerseits mit der Kategorie, anderseits mit der Erscheinung in Gleichartigkeit stehen muß, und die Anwendung der ersteren auf die letzte möglich macht. Diese vermittelnde Vorstellung muß rein (ohne alles Empirische) und doch einerseits INTELLEKTUELL, anderseits sinnlich sein. Eine solche ist das TRANSZENDENTALE SCHEMA."

139. KrV A138-139/B177-178.

140. KrV A34/B51-51; KrV A107; KrV B158.

unitary and unique order in the experience, without which single representations would be indistinguishable and unidentifiable. It is the constitutive element of the empirical I, distinguished from its condition, the transcendental I, which is identified in the transcendental pure apperception.

But what does temporality actually mean? Is it a principle of physics?[141] An ideal, an abstract rule? As already remarked, it is not a feature of the 'I think', but it has an important role in characterizing only empirical consciousness, as Kant stresses in manifold passages. Moreover, it is the characterizing feature of schemata, here generally intended as those transcendental functions based on the "I think", which makes the application of its pure concepts to experience possible. If so, while the "Transcendental Deduction" deals with the general level of the justification of the categories, schematising the categories is the first attempt to apply them to the empirical level. This is why it has to come after the "Analytic of Principles" and not before. However, the doctrine of judgement is still inside a critique of reason[142], the aim of which is not to provide actual empirical knowledge about nature and its laws.

Furthermore, although Kant states that temporality characterizes empirical consciousness, it is not his purpose here to investigate that consciousness psychologically, but rather to determine its conditions of possibility. With the "Analytic of Principles" there is a change in the focus, but Kant remains within his project of philosophical criticism: after the argument of the Deduction, according to which the only meaningful use of the categories is the empirical one, now the attention is now on the realisation of categories through schemata:

> "We will call this formal and pure condition of the sensibility, to which the use of the concept of the understanding is restricted, the **schema** of this concept of the understanding, and we will call the procedure of the understanding with these schemata the **schematism** of pure understanding." (KrV A140/B179)[143]

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141. On the discussion about the interpretation of Kant's notions of space and time as pure forms in comparison to Mathematics and Physics, see Cassirer 1922 and Friedman 1992. Furthermore, Caimi suggests an interesting interpretation, according to which through schematism time (and not only concepts) receives a new determination. As he states: "The a priori synthesis performed by imagination is guided by a rule of unity. This rule of unity (the rule followed by imagination as it performs the synthesis of the manifold of time) is the pure concept of understanding. Time happens thus to be synthesised in accordance with concepts. Pure concepts grant time a conceptual or logical structure. Taken in itself, deprived of any other synthesis originated in understanding, time is just the form of passive receptivity. It contains merely an indeterminate manifold. As a work of imagination, the synthesis bestows unity upon the infinite manifold of time. Such unity displays several modalities or aspects. That is what we mean by '"logical structure of time'."(Caimi 2012, pp. 417-418) Following the draft of categories, Caimi provides a definition for each of the logical structures of time modified through the synthesis. For instance, the structure of time according to the category of quantity is that: "the instants of time make up a single continuous series of homogeneous elements" (Caimi 2012, p. 420) while the determination of time according to quality determines that "time is receptivity wherein the data of senses are collected." (Caimi 2012, p. 422)

142. See Kant, AA V, p. 176.

143. "Wir wollen diese formale und reine Bedingung der Sinnlichkeit, auf welche der Verstandesbegriff in seinem Gebrauch restringirt ist, das Schema dieses Verstandesbegriffs und das Verfahren des Verstandes mit diesen Schematen den schematismus des reinen Verstandes

4.3 Schemata and their faculty

As shown in the chapters which precede schematism and contain its necessary premisses, (in particular the whole "Transcendental Aesthetic" and the "Analytic of Concepts"), time and space as pure forms are given by sensibility, categories by the understanding. What about schemata? According to Kant schemata are produced by a further faculty, imagination, regarded as the faculty to represent an object independently from its actual presence in intuition. For this reason imagination can be seen as a medium between sensibility and understanding.[144.] But how can it be so? Kant here argues that, on the one hand, imagination belongs to sensibility since it provides to understanding the correspondent intuition; on the other hand, since synthesis is the proper function of the understanding, imagination constitutes a spontaneous activity in accordance with the categories.

Describing in more detail the activity of this mediating faculty, Kant distinguishes its productive and reproductive sides:

> "Now insofar as the imagination is spontaneity, I also occasionally call it the **productive** imagination, and thereby distinguish it from the **reproductive** imagination, whose synthesis is subject solely to empirical laws, namely those of association, and that therefore contributes nothing to the explanation of the possibility of cognition a priori, and on that account belongs not in a transcendental philosophy but in psychology." (KrV B152)[145]

More precisely put, reproductive imagination works through the empirical rules of association, which are topics for empirical psychological studies[146]. But Kant, to justify the possibility of affinity, by which empirical representations are associated with one another, has to refer to a transcendental affinity as its basis:

> "All possible appearances belong, as representations, to the whole possible self-consciousness. But from this, as a transcendental representation, numerical identity is inseparable, and certain a priori, because nothing can come into cognition except by means of this original apperception. Now since this identity must necessarily enter into the synthesis of all the manifold of appearances, insofar as they are to become empirical cognition, the appearances are thus subject to *a priori* conditions, with which their synthesis (of apprehension) must be in thoroughgoing accord. Now, however, the representation of a universal condition in accordance with which a certain manifold (of whatever kind) **can** be posited is called a **rule**, and, if it **must** be so posited, a **law**. All appearances therefore stand in thoroughgoing connection according to necessary

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nennen.

144. Cf. KrV B151.

145. "So fern die Einbildungskraft nun Spontaneität ist, nenne ich sie auch bisweilen die produktive Einbildungskraft, und unterscheide sie dadurch von der reproduktiven, deren Synthesis lediglich empirischen Gesetzen, nämlich denen der Assoziation, unterworfen ist, und welche daher zur Erklärung der Möglichkeit der Erkenntnis a priori nichts beiträgt, und um deswillen nicht in die Transzendentalphilosophie, sondern in die Psychologie gehört."

146. AA VII, p. 80.

laws, and hence in a transcendental affinity, of which the empirical affinity is the mere consequence." (KrV A113)[147]

This is the fundamental outcome of the "Transcendental Deduction": empiricism is not enough to explain the unity of experience, but this failure does not lead to a sceptical position, because scepticism does not explain how a kind of regularity can be given in the actual experience (although it might be a hallucinating experience). There are some associative rules, which need to be in some way justified. Therefore, in Kant's perspective, the universal value of laws of experience has to be found in this level of justification: empirical rules cannot explain the necessity according to which representations are unified lawfully; they can only describe the features of such regularities. The general question concerning the constitution of an object in the experience can be deepened and characterized in its transcendental and empirical psychological features, which are different: one thing is the description of the rules according to which a phenomena must be followed by another (and not vice versa), while another one is the explanation of their validity[148].

4.4 Schemata: images or concepts?

The necessity to provide distinctions between levels (logical, empirical, transcendental) is stressed by the fact that a schema differentiates itself deeply both from image as well as from concept.

According to Kant, schemata are not the only products of imagination: there are images[149], which are also dependent on its productive activity although they are described as empirical. Due to this, it might be better to regard them as a product of the reproductive side of imagination. However, perhaps Kant uses the world 'production' only to focus on the activity of the imagination in general, which produces an image in accordance to a kind of regularity. Images are conceived of as sensible figures formed by a rule of unity provided by the schema: for instance, the image of

147. "Alle mögliche Erscheinungen gehören als Vorstellungen zu dem ganzen möglichen Selbstbewußtsein. Von diesem aber als einer transscendentalen Vorstellung ist die numerische Identität unzertrennlich und a priori gewiß, weil nichts in das Erkenntniß kommen kann, ohne vermittelst dieser ursprünglichen Apperception. Da nun diese Identität nothwendig in der Synthesis alles Mannigfaltigen der Erscheinungen, so fern sie empirische Erkenntniß werden soll, hinein kommen muß, so sind die Erscheinungen Bedingungen a priori unterworfen, welchen ihre Synthesis (der Apprehension) durchgängig gemäß sein muß. Nun heißt aber die Vorstellung einer allgemeinen Bedingung, nach welcher ein gewisses Mannigfaltige (mithin auf einerlei Art) gesetzt werden kann, eine Regel und, wenn es so gesetzt werden muß, ein Gesetz. Also stehen alle Erscheinungen in einer durchgängigen Verknüpfung nach nothwendigen Gesetzen und mithin in einer transscendentalen Affinität, woraus die empirische die bloße Folge ist."

148. On the distinction and relation between transcendental and psychological affinity see de Vleeschauwer 1939 and Takeda 1969.

149. KrV A141-142/B180-181.

number five can be given by the succession of five dots in the space. In contrast, a concept is a product of the understanding, an extensive and intensive unity capable to comprehend in itself a multiplicity, something no sensible intuition can deliver. More precisely, concepts are seen as function of the understanding's spontaneity, the unities under which the different representations can be unified, thus constituting rules of conjunction of the multiplicity and therefore the constitutive elements of all possible judgements.

Concepts can be divided into pure and empirical concepts: while in the first the rule of the unity is given a priori, in the second it is a posteriori (with exceptions: for matter, some rules can be given a priori). For instance, while the concept of substance can be regarded as the universal and necessary rule according to which objects are conceived as permanent unities in the variation of their accidents; body, although grounded on a pure concept (substance) is a concept of a different kind. It is not pure, because it is derived from the empirical level. It is a rule, although sensible, learned through experience, to provide unity to impressions according to common sensible features (for example: the mass, the position in the space…).

In contrast to the functions mentioned above, schemata mediate between pure concepts and images, and constitute the rules of the imaginative synthesis of the multiplicity in intuition:

> "The schema of a pure concept of the understanding, on the contrary, is something that can never be brought to an image at all, but is rather only the pure synthesis, in accord with a rule of unity according to concepts in general, which the category expresses, and is a transcendental product of the imagination, which concerns the determination of the inner sense in general, in accordance with the conditions of its form (time), in regard to all representations, insofar as these are to be connected together *a priori* in one concept in accord with the unity of apperception." (KrV A142/B181)[150]

Using these definitions, it is possible to distinguish: 1) the mathematical concept of triangle; 2) the image of a triangle, given in intuition and inevitably inadequate to the concept of triangle (no sensible figure can perfectly reflect the definition of triangle); 3) the schema, the rule of the synthesis.

But are these distinctions as clear as they appear to be? Are images and empirical concepts actually distinguishable from schemata? To answer this question, it is helpful to refer to cases of images whose complexity reveals the necessity of referring to something else, namely a schema, a rule thanks to which it is possible to build images in intuition. For instance in mathematics we can think about great quantities, such as 1000, that aren't at first given in an intuition, but are rather concepts that might

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150. "Dagegen ist das Schema eines reinen Verstandesbegriffs etwas, was in gar kein Bild gebracht werden kann, sondern ist nur die reine Synthesis, gemäß einer Regel der Einheit nach Begriffen überhaupt, die die Kategorie ausdrückt, und ist ein transzendentales Produkt der Einbildungskraft, welches die Bestimmung des inneren Sinnes überhaupt, nach Bedingungen seiner Form, (die Zeit,) in Ansehung aller Vorstellungen, betrifft, so deren diese der Einheit der Apperzeption gemäß a priori in einem Begriff zusammenhängen sollten."

be used to build a sensible image (such as a sequence of 1000 dots) by "translating" them (tracing the dots on a paper) through some rules of application (schemata). However, if we consider not mathematical but empirical concepts, the capacity to build an image of them depends mostly on the previous experiences of the object considered: it is only from the careful observation of a human body, that a rule for forming a general representation of a human figure can be derived. Therefore, the difference between empirical concepts and schemata lies in the fact that while empirical concepts derive from sensibility, schemata, in so far as they are considered as transcendental, do not.

But what does the distinction between concepts and schemata consist in? Paton writes:

> "Kant always regards a concept, not merely as a concept of the marks common to a number of objects, but as a concept of the synthesis of these marks, and this means that every concept is the concept of a rule of synthesis. We might indeed regard the schema as the rule of synthesis unreflectively at work in imagination, and the concept as the concept of the rule, when the synthesis is, in Kant's phrase, brought to concepts." (Paton 1936, p. 65)

If so, a category cannot be defined in its reality[151](as if dealing with given things), it is a pure concept of the synthesis of a pure multiplicity with no reference to the synthesis in time, in reference to the given multiplicity. But a closer look at what schema understood as product, activity, rule, and in difference to concepts and pure forms really are, will be achieved by discussing different interpretations of Kant in later chapters. Moreover, I will introduce a further distinction which Kant seems to use in some passages, namely the separation of schema of the category and transcendental schema, intended, with this last expression, not as the rule of the synthesis in time, but rather as its product.[152]

4.5 The table of schemata

As shown in the previous sections, schemata are more than mere clarifications of categories, but they modify the pure concepts of understanding, that become a priori determinations of time in accordance with rules:

> "The schemata are therefore nothing but *a priori* **time-determinations** in accordance with rules and these concern, according to the order of the categories, the **time-series**, the **content of time**, the **order of time**, and finally the **sum total of time** in regard to all possible objects." (KrV A145/B184-185)[153]

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151. Cf. KrV A245.
152. Cf. Paton 1936.
153. "Die Schemate sind daher nichts als ZEITBESTIMMUNGEN a priori nach Regeln, und die-

Since schemata derive from the temporalisation of categories, Kant presents a draft in analogy to the "metaphysical deduction". It comprehends two mathematical classes (quantities and qualities), dealing with the homogeneous relation between concepts, and two dynamical classes[154] (relation and modality) characterised by a heterogeneous relation, which is a sort of mathematical proportion, where the connection among the terms is not given by their equality but by the rule of their unification[155].

Following Kant's exposition, the first schema, correspondent to the category of totality, dealing with the synthesis of the homogeneous multiplicity, concerns quantity:

> "The pure **schema of magnitude** (*quantitatis*), however, as a concept of the understanding, is *number*, which is a representation that summarizes the successive addition of one (homogeneous) unit to another. Thus number is nothing other than the the unity of the synthesis of the manifold of a homogeneous intuition in general, because I generate time itself in the apprehension of the intuition." (KrV A142-143/B182)[156]

Number is the first rule of the synthesis of the sensible multiplicity regarded as homogeneous (*gleichartig*)[157], insofar as it consists of elements, whose differentiation is not provided by their degree or quality, but by the reference to time, i.e. the order of succession in their apprehension. Moreover, quantity is prior to quality in this exposition, because of its generality, which is given not by the intensity of the representations, but by their unification in the one and only order of succession (otherwise, if more than one order were to be given to consciousness, no unified experience would be possible). Like the category of quantity, quality is also 'translated' to a unique schema, namely, reality:

> "Reality is in the pure concept of understanding that to which a sensation in general corresponds, that, therefore, the concept of which in itself indicates a being (in time). Negation is that the concept of which represents a not-being (in time)." (KrV A143/B182)[158]

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se gehen nach der Ordnung der Kategorien, auf die ZEITREIHE, den ZEITINHALT, die ZEITORDNUNG, endlich den ZEITINBEGRIFF in Ansehung aller möglichen Gegenstände."

154. KrV B110.

155. KrV A180/B222-223.

156. "Das reine Schema der Größe aber (quantitatis), als eines Begriffs des Verstandes, ist die ZAHL, welche eine Vorstellung ist, die die sukzessive Addition von Einem zu Einem (Gleichartigen) zusammenbefaßt. Also ist die Zeit nichts anders, als die Einheit der Synthesis des Mannigfaltigen einer gleichartigen Anschauung überhaupt, dadurch, daß ich die Zeit selbst in der Apprehension der Anschauung erzeuge."

157. Kant uses in these passages on schematism both '*gleichartig*' (KrV A137/B176) and *'gleichförmig'* (KrV A143/B183).They are both terms used in science,s and their meanings are quite close,although even though there is a slight difference between the two: 'homogeneity' refers to the similarities among different objects that share a "sameness of kind" (KrV A657/B685),; while 'uniformity' indicates a sort of regularity or stability. Kant says that each rule of causality requires uniform effects (KrV A577/B605) and, in a similar way, he uses the term '*gleichförmig'* in the moral context in reference to those negative behaviours that do not derive from a free and deliberate intentsion, rather but from the habit to behave in a certain way.(AA VI, p. 407).

158. "Realität ist im reinen Verstandesbegriffe das, was einer Empfindung überhaupt correspondirt,

Time is the form of each intuition, but each sensation holds a different and proper degree of intensity, thus generating a distinction among reality, negation and limitation (the tendency, never adequate, to degree 0). Time is differently filled by the strength of representations, the continuous succession of which constitutes reality:

> "[…] the schema of a reality, as the quantity of something in so far as it fills time, is just this continuous and uniform (gleichförmige) generation of that quantity in time, as one descends in time from the sensation that has a certain degree to its disappearance or gradually ascends from negation to its magnitude."(KrV A143/B183)[159]

To count implies to consider a unity as a unity of pluralities, and vice versa, each plurality can be regarded as a unity, i. e. totality; thus explaining how all categories of quantity can be summarized under only one schema. Similarly, quality comprehends a synthesis of reality, negation and limitation: each representation has reality, i. e., it has a degree between 0 and x, and it is limited and related to negation. Each representation, then, as long as it is real, is limited, quantifiable.[160]

The other two classes of schemata show how an object, in so far as it is an object of experience, has to be considered in a system of relation with other objects of its field. This system of relations, together with its quantity and quality, to the constitution of a unitary object of experience in general and for this reason schemata can be regarded as products of synthesis, as very first features of an object of experience.

To the three categories of the first dynamic class correspond three different schemata, the first of which is the schema of the category of substance, i. e. permanence of the real in time:

> "The schema of substance is the persistence of the real in time, I.e., the representation of the real as a substratum of empirical time-determination of time in general, which therefore endures while everything else changes." (KrV A144/B183)[161]

Kant aims at stressing the necessity of the permanence of a *quid*, in order to explain movement. Time does not move: it is a law, a condition of the unity of experience. What is subdued to change and motion is the variety of representations, among which it is necessary to individuate a substance. This substance is a *quid* that

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dasjenige also, dessen Begriff an sich selbst ein Sein (in der Zeit) anzeigt; Negation, dessen Begriff ein Nichtsein (in der Zeit) vorstellt."

159. "[…] als der Quantität von Etwas, so fern es die Zeit erfüllt, ist eben diese kontinuierliche und gleichförmige Erzeugung derselben in der Zeit, indem man von der Empfindung, die einen gewissen Grad hat, in der Zeit bis zum Verschwinden derselben hinabgeht, oder von der Negation zu der Größe derselben allmählich aufsteigt."

160. Kant seems here to open the way to a quantifiable psychology, as Herbart will do in *his Psychologie als Wissenschaft, neu gegründet auf Erfahrung, Metaphysik und Mathematik*. (Herbart 1824). Actually, Kant is not original: before him, for instance Baumgarten (Baumgarten 1779, *§747*) and Wolff (Wolff 1732, *§522*) theorise the possibility to elaborate a quantifiable psychology. Cf. Sturm 2009 (in particular chap.ter 4) .

161. "Das Schema der Substanz ist die Beharrlichkeit des Realen in der Zeit, d. i. die Vorstellung desselben als eines Substratum der empirischen Zeitbestimmung überhaupt, welches also bleibt, indem alles andre wechselt."

might assume the role of subject as point of reference in respect of which all other *phenomena* (predicates) change. This does not imply the perfect immutability of such a substrate; rather, experience can be seen as a system of reference within which something has to be considered as focus of all changes and variations.

The second category of relation is the pure concept of cause and effect, regarded in itself independently from temporal considerations. Its correspondent schema is that of necessary succession, according to which in the experience there is always an identifiable regularity. For instance, given event *A*, *A* must always be followed in time by event *B* according to a precise rule:

> "The schema of the cause and of the causality of a thing in general, is the real upon which, whenever posited, something else always follows. It therefore consists in the succession of the manifold insofar as it is subject to a rule."(KrV A144/B183)[162]

The last schema of this dynamic class is community:

> "The schema of community (reciprocity), or of the reciprocal causality of substances with regard to their accidents, is the simultaneity of the determinations of the one with those of the other, in accordance with a general rule."(KrV A144/B183)[163]

In contrast to the category of cause and effect, which does not refer to time but rather constitutes the concept of a synthesis in which the terms affected themselves with reciprocity, the transcendental schema of reciprocal action establishes the necessary simultaneity (according to a general rule) of the reciprocals determination of the substances' accidents.

The last class, modality neither aims at determining the content of the objects of experience, nor does it contribute to their identification. Instead, it defines their relation to time and consequently the kind of experience they provide. Analogically, judgements are divided into problematic, assertoric and apodictic, according to the way to formulate the predication:

> "It concerns only the way in which the judgement (whatever be its content) is thought. If we entertain the judgement as a logical possibility, it is problematic. If the affair is truth, it is assertoric. If we must think it because of the laws of thought, then it is apodictic" (Paton 1936, pp. 57–58).

For instance, the problematic judgement only indicates the possibility that a proposition is true, provided by the absence of internal contradiction in the relation between its subject and predicate. In a similar way, the category of possibility is the concept of a possible synthesis, i. e., of a synthesis in accordance to the formal laws

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162. "Das Schema der Ursache und der Kausalität eines Dinges überhaupt ist das Reale, worauf, wenn es nach Belieben gesetzt wird, jederzeit etwas anderes folgt. Es besteht also in der Sukzession des Mannigfaltigen, in so fern sie einer Regel unterworfen ist."

163. "Das Schema der Gemeinschaft (Wechselwirkung), oder der wechselseitigen Kausalität der Substanzen in Ansehung ihrer Akzidenten, ist das Zugleichsein der Bestimmungen der einen, mit denen der anderen, nach einer allgemeinen Regel."

of the thinking; while the schema refers to the possibility of an empirical synthesis in temporality. This latter is defined as determination of the representation of an object in a time, where no opposed predicates can at the same time be attributed to a subject. From this perspective the reference to time allows the shift from a mere logical possibility of the thinking to a more tangible one, thus determining the distance Kant takes from an absolute ontology, regardless of the reference to the conditions of possibility of experience and the difference between possibility of the thinking and of the actual experience:

> "In a word, all of these concepts could not be **vouched for** and their **real** possibility thereby established, if all sensible intuition (the only one we have) were taken away, and there then remained only **logical** possibility, i.e., that the concept (thought) is possible is not the issue; the issue is rather whether it relates to an object and therefore signifies anything." (KrV B302)[164]

Therefore, if on the one hand possibility refers to the conditions of reality, on the other hand, reality, defined as actual and effective (*Wirklichkeit*) is existence in a determined time: all the events of experience must take place in a defined time. From this point of view, the first characteristic of reality is its finiteness, its historical determination. Then, the last schema (necessity) is defined as the existence of an object in each time: what exists with necessity cannot not be, and so our respective judgements are true at all times. After these clarifications, Kant stresses that schemata are not mere complete definitions or clarifications of categories, rather general conditions of determination of objects of temporal experience according to categories.

4.6 Schemata as conditions of the significance of the pure concepts

As Kant states, the schematism chapter prepares the grounds for an explanation of how categories are actually employed in making judgements about objective experience:

> "Thus the schemata of concepts of pure understanding are the true and sole conditions for providing them with a relation to objects, thus with **significance**, and hencethe categories are in the end of none but a possible empirical use, since they merely serve to subject appearances to general rules of synthesis through grounds of an *a priori* necessary unity (on account of the necessary unification of all consciousness in an

164. "Mit einem Wort, alle diese Begriffe lassen sich durch nichts BELEGEN, und dadurch ihre REALE Möglichkeit dartun, wenn alle sinnliche Anschauung (die einzige, die wir haben) weggenommen wird, und es bleibt denn nur die LOGISCHE Möglichkeit übrig, d. i. daß der Begriff (Gedanke) möglich sei, wovon aber nicht die Rede ist, sondern aber sich auf ein Objekt beziehe, und also irgend bedeute."

original apperception), and thereby to make them fit for thoroughgoing connection in one experience." (KrV A146/B185)[165]

Only through schematism are categories realised (*realisieren*),[166] and the use of pure concepts in experience, i.e. their application to objects, is shown to be possible. At the same time, schemata limit the field of the use of pure concepts by restricting them to a system of reference (namely that of possible experience):

"Hence the schema is really only the phenomenon, or the sensible concept of an object, in agreement with the category. (**Numerus** *est quantitas phaenomenon*, **sensatio** *realitas phaenomenon*, **constans** et perdurabile rerum *substantia phaenomenon*, **aeternitas** *necessitas phaenomenon, etc.)*" (KrV A146/B186)[167]

On the contrary, if the empirical use of pure concepts were denied and if categories were considered only as proper of an intuitive understanding, they would be valid only for things in themselves and no distinction between being and thinking would be possible. With this remark, Kant aims to underline how categories in their pure use are without significance in reference to our finite understanding, which can achieve knowledge only through experience. However, it is possible to think about their meaning in reference to another kind of synthesis, regardless of a system of reference, i.e. the field of the possible experience. This possibility explains the introduction of a mere logical significance of pure categories intended as rules of the general logic, formal laws of unity with no content. From this perspective, for instance, the category of substance, formally considered with no reference to time, is a void position, valid as a mere logical subject:

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165. "Also sind die Schemate der reinen Verstandesbegriffe die wahren und einzigen Bedingungen, diesen eine Beziehung auf Objekte, mithin Bedeutung zu verschaffen, und die Kategorien sind daher am Ende von teile andern, als einem möglichen empirischen Gebrauche, indem sie bloß dazu dienen, durch Gründe einer a priori notwendigen Einheit (wegen der notwendigen Vereinigung alles Bewußtseins in einer ursprünglichen Apperzeption) Erscheinungen allgemeinen Regeln der Synthesis zu unterwerfen, und sie dadurch zur durchgängigen Verknüpfung in einer Erfahrung schicklich zu machen."

166. KrV A146/B185. Kant opposes 'real' (which comes from the latin *res)* to 'logical' in several passages of his works and he often relates 'real' to 'possibility', 'objectivity' and 'meaning' (*Bedeutung*). First, the contrast between 'real' and 'logical' concerns the possibility of the concepts.:a A concept has a logical possibility, when it does not contradict itself, whereas ; while a concept is real if,when it is (or might be) referred to a *datum* (AA II, p.77). Second, a related concept to that of "possible reality" is that of "objective reality": concepts possess objective reality insofar as they are related to objects, i.e. are used in judgements that are determinately and knowably true or false (KrV A320/B377). But this does not mean that these objects are actual objects of experience, ; rather it is sufficient that they are objects of the possible experience (KrV A109; Kant AA V, 134-138). Third, although Kant does not provide a proper definition of 'meaning' (*Bedeutung)*, he often uses this term to characterise concepts insofar as they are related to objects (KrV A239-241/B299-300; KrV B301). (Filippo Costa defends one possible interpretation of a Kantian distinction between *Sinn* and *Bedeutung*: whereas *Sinn* concerns the empirical realisation of a concept, *Bedeutung* refers to its possibility in experience (Costa 1995, p.151).

167. "Daher ist das Schema eigentlich nur das Phänomenon, oder der sinnliche Begriff eines Gegenstandes, in Übereinstimmung mit der Kategorie (NUMERUS est quantitas phaenomenon, SENSATIO realitas phaenomenon, CONSTANS et perdurabile rerum substantia phaenomenon - AETERNITAS, NECESSITAS, phaenomena etc.)"

> "Without schemata, therefore, the categories are only functions of the understanding for concepts, but do not represent any object. This significance comes to them from sensibility, which realizes the understanding at the same time as it restricts it."(KrV A147/B187)[168]

This passage is important to stress the difference between the "Transcendental Deduction" and the chapter "On the Schematism of the Pure Concepts of the Understanding" and consequently the necessity of the latter. As I will show in detail in the following chapter, many critics[169] accuse Kant of introducing the schematism chapter as a redundant addition to the "Deduction". Their reasons are similar, and can be discussed best by addressing the interpretations of Curtius, Cassirer and Kemp Smith.

First, Curtius[170] stresses how *§24* already solves the question on the application of categories. After all, *§24* is titled "On the application of the categories to objects of the senses in general"[171] and contains hints[172] to the way in which this application works, i.e. through time:

> "The understanding therefore does not find some sort of combination of the manifold already in inner sense, but produces it, by affecting inner sense." (KrV B155)[173]

Moreover, Kant also already appeals to the figurative synthesis of the imagination:

> "This synthesis of the manifold of sensible intuition, which is possible and necessary a priori, can be called figurative (synthesis speciosa), as distinct from that which would be thought in the mere category in regard to the manifold of an intuition in general, and which is called combination of the understanding (synthesis intellectualis); both are transcendental, not merely because they themselves proceed a priori but also because they ground the possibility of other cognition a priori.
> Yet the figurative synthesis, if it pertains merely to the original synthetic unity of apperception, i.e., this transcendental unity, which is thought in the categories, must be called, as distinct from the merely intellectual combination, the transcendental synthesis of the imagination." (KrV B151)[174]

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168. "Also sind die Kategorien, ohne Schemate, nur Funktionen des Verstandes zu Begriffen, stellen aber keinen Gegenstand vor. Diese Bedeutung kommt ihnen von der Sinnlichkeit, die den Verstand realisiert, indem sie ihn zugleich restringiert."
169. Prichard 1909; Curtius 1914; Kemp Smith 1918; Cassirer 1922; Warnock 1949.
170. Curtius 1914.
171. "Von der Anwendung der Kategorien auf Gegenstände der Sinne überhaupt."
172. KrV B150-B156.
173. "Der Verstand findet also in diesem nicht etwa schon eine dergleichen Verbindung des Mannigfaltigen, sondern bringt sie hervor, indem er ihn affizirt."
174. "Diese Synthesis des Mannigfaltigen der sinnlichen Anschauung, die a priori möglich und nothwendig ist, kann figürlich (*synthesis speciosa*) genannt werden zum Unterschiede von derjenigen, welche in Ansehung des Mannigfaltigen einer Anschauung überhaupt in der bloßen Kategorie gedacht würde und Verstandesverbindung (*synthesis intellectualis*) heißt; beide sind transscendental, nicht bloß weil sie selbst a priori vorgehen, sondern auch die Möglichkeit anderer Erkenntniß a priori gründen. Allein die figürliche Synthesis, wenn sie bloß auf die ursprünglich synthetische Einheit der Apperception, d. i. diese transscendentale Einheit, geht, welche in den Kategorien gedacht wird, muß zum Unterschiede von der bloß intellectuellen Verbindung die transscendentale Synthesisder Einbildungskraft heißen."

Similarly, Cassirer believes that the problem of the validity and applicability of pure concepts of the understanding has already been solved in the Deduction and for the purposes of the *Critique* the schematism chapter is not necessary. In addition, it does not deal with the application of categories to experience, but with "the question on the psychological possibility of general concepts." (Cassirer 1922, p. 713)[175] If so, then, its only sense is a mere psychological one and therefore the chapter is a redundant addition, but it also might lead to misunderstand the aims of the whole *Critique*, thus generating psychological-empirical interpretations which regard Kant's inquiry on cognition as psychological doctrine on the production of representations, images and concepts.

Finally, Kemp Smith accuses Kant of introducing the chapter only for the purposes of his architectonic, in which conceiving, judging (subsuming) and reasoning are distinguished:

> "Since general logic develops its teaching under three separate headings, as the logic of conception, the logic of judgment, and the logic of reasoning, the Critique has to be made to conform to this tripartite division. The preceding book is accordingly described as dealing with concepts, and this second book as dealing with judgements or principles; while understanding and the faculty of judgement, no viewed as independent, are redefined to meet the exigencies of this new arrangement, the former as being "the faculty of rules" and the latter as being "the faculty of subsuming under rules, i.e. of distinguishing whether something does or does not stand under a given rule (*casus datae legis*)." (Kemp Smith 1918, p. 332)

> "The architectonic has in this connection two very unfortunate consequences. It leads Kant to describe schematism as a process of subsumption, and to speak of the transcendental schema as 'third thing.' Neither assertion is legitimate." (Kemp Smith 1918, p. 334)

These criticisms are of great value in stressing the difficulties in interpreting the schematism chapter and in relating it to the "Transcendental Deduction". However, possible answers might be given to these worries. First, it is true that Kant makes reference to time and imagination already in the Deduction, but he does delve neither into the details of the problem of schematism (the inhomogeneity of pure concepts and intuition) nor into those of its solution (schemata as time determinations in accordance to each category). In *§24* Kant links the Deduction and the schematism chapter: to do that, he needs to make some anticipation of what he will state later in the text. Second, the problem of schematism is not a psychological at all. As I will show in the next chapters, schematism is not a psychological doctrine because Kant's focus deals with the conditions of possibility of experience and of epistemic judgements, and he is not interested in the mere description of the faculties of cognition. Sometimes his language and expressions do not help but the task of the work is very clear from the very first

175. "Ihr eigentliches Thema ist die Frage nach der psychologischen Möglichkeit des Allgemeinbegriff."

pages on "The General Problem of Pure Reason"[176] and the same *§24*.[177] Third, the problem of schematism is not mere artificial: it deals with the application of rules to particular cases or, better said, with their good application[178]. One thing is to possess a concept, one other is to know how to correctly apply it. As Kant himself states, one can have a great knowledge on a topic, but it does not mean that he can understand it, i.e. recognizing correctly the cases he is confronting to. The lack of this faculty, i.e. the lack of power of judgement (*secunda Petri*), is described as following:

> "The lack of the power of judgment is that which is properly called stupidity, and such a failing is not to be helped. A dull or limited head, which is lacking nothing but appropriate degree of understanding and its proper concepts, may well be trained through instruction, even to the point of becoming learned. But since it would usually still lack the power of judgment (the *secunda Petri*), it is not at all uncommon to encounter very learned men who in the use of their science frequently give glimpses of that lack, which is never to be ameliorated." (KrV A133/B172)[179]

This example concerning the peculiarity of the power of judgement, explains the distinction between the function of the Deduction and the schematism chapter: the first focuses on the possession of a priori rules, namely pure concepts of the understanding; while the second on the application of these rules to the cases. As shown in this chapter, schematism concerns the relation of subsumption of categories and intuitions, whose inhomogeneity finds a solution through time; categories, through time, become time determinations, i.e. schemata, that are results of the imagination in its productive side. In contrast, the reproductive activity of the imagination produces images, distinguished from schemata insofar as they are not a transcendental product but rather an empirical one.

I have already stressed the different tasks of the schematism chapter and the Deduction – namely, that the former demonstrates how pure concepts can be applied to intuitions, while the latter argues that such pure concepts have an objective validity). But given the complexity and difficulties of these ten pages, it is important to devote an entire chapter to analyse some of the most relevant criticisms raised against Kant's notion of schemata. For instance: why is it legitimate to develop schematism only through time? Are categories, schemata and principles clearly distinguishable? These questions express some of the main criticisms put forward by both Kant's immediate

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176. KrV B19.

177. KrV B152.

178. Scaravelli 1968, pp. 403 - 409; Höffe 2003, p. 151.

179. "Der Mangel an Urtheilskraft ist eigentlich das, was man Dummheit nennt, und einem solchen Gebrechen ist gar nicht abzuhelfen. Ein stumpfer oder eingeschränkter Kopf, dem es an nichts, als an gehörigem Grade des Verstandes und eigenen Begriffen desselben mangelt, ist durch Erlernung sehr wohl, sogar bis zur Gelehrsamkeit auszurüsten. Da es aber gemeiniglich alsdann auch an jener (der *secunda Petri*) zu fehlen pflegt, so ist es nichts Ungewöhnliches, sehr gelehrte Männer anzutreffen, die im Gebrauche ihrer Wissenschaft jenen nie zu bessernden Mangel häufig blicken lassen."

followers and by more contemporary scholars as well. I will consider them more specifically in the following chapter.

5. Debates over the schematism chapter in Kant scholarship

Among the manifold criticism of Kant's account on schematism (obscure terminology, artificiality of the arguments, lack of detailed distinctions between schemata and categories), the criticism against its necessary role inside the *Critique of Pure Reason* is the most challenging. I shall here focus on six authors, selected as representatives because of the strength of their arguments and the differences of their positions. While the first critic, Walter Zschocke (5.1), accuses Kant of introducing the theory of schematism as a superfluous section in the argument of the "Transcendental Analytic", Ernst Robert Curtius (5.2) takes a more moderate position, underlining the clarifying role of the chapter. Furthermore, I will discuss Hans Bussman's (5.3) peculiar and original interpretation of the schematism chapter as a self-reflection of the understanding's own activity, and William Henry Walsh's account (5.4), which tries to go beyond the obscureness of some passages of the of schematism chapter, stressing its importance in order to understand not only meaning and use of categories, but also Kant's view on the nature of concepts. After this, I will move to another interpreter who confronts the question on the importance and necessary role of schematism in the *Critique of Pure Reason,* namely Daniel Dahlstrom (5.5), who stresses the idea that through schemata Kant shows the conditions of applicability of categories. Then, I will present how Paul Guyer (5.6) harshly criticises the temporal nature of Kant's schemata, while in the last section (5.7) I will show how Henry Allison provides several contributionsfor understanding the several problems: the role of space, the differences between the three faculties, the troubles raised by the amount of definitions of schemata.

5.1 Zschocke's criticism of schematism and his theory of objectivity as "practical act" through categories

Walter Zschocke considers Kant's schematism as a redundant addition: Kant is supposed to have already provided the forms of sensibility with the ground of the justification of the unity of experience. If so, there is no inhomogeneity between categories and forms of sensibility and no need of a mediating function such as the schema. However, (see below, section 5.1.2), according to Zschocke categories are special in that they serve to provide necessity to the practical use of judgement(5.1.2). In this view, Kant provides a misleading illustration of an actual problem: the concept of a schema is misinterpreted if intended as a solution to the problem of the

gap between understanding and sensibility by reference to the pure form of time, because there is no inhomogeneity between them and because time is not as general as Kant claims it is. On the contrary, schematism has a role and value (5.1.3) , if it is developed by reference to space and if considered as a clarification of how the unity of experience is constituted -that is, in Zschocke's view, by showing "how the general rule descends to the field of sensibility." (Zschocke 1907, p. 207)

5.1.1 Schematism as a redundant addition

To understand the criticism levelled by Zschocke against Kant's doctrine of schematism, it might be helpful to consider his broader view of the *Critique of Pure Reason*. He regards Kant's work as an inquiry on the "[...] construction of a system of experience." (Zschocke 1907, p.161)[180] and characterizes experience as based on the empirical data of the "[...] multiplicity of subjective impressions [...]" (Zschocke 1907, p.161)[181], elaborated through two "methods" (*Methoden*; Zschocke 1907, p. 162)[182]: concepts and intuitions. Only thanks to a process that implies both functions of understanding and sensibility, can the object of knowledge be constituted, thus proceeding from a mere subjective level to an objective one:

> "Through this process the passage from subjectivity to objectivity is completed." (Zschocke 1907, p. 162)[183]

But Kant has here to confront an apparently severe problem, the solution of which should be the aim of the schematism chapter. On the one hand, as demonstrated in the "Transcendental Deduction", knowledge can be provided only by the joint process of understanding and sensibility; however, on the other hand the two are deeply different: understanding is active and discursive, i.e. consists in the application of general representations or concepts, while sensibility is passive and intuitive. Therefore, Zschocke underlines how there is a sort of gap, which Kant aims to bridge by referring to a function called schema, a *tertium*, sharing features with intuitions as well as concepts, thus mediating between them. But Zschocke asks if the schematism chapter stresses that pure concepts cannot constitute objects of experience independently from the forms of sensibility, does the chapter not only produce a repetition of the conclusion of the "Transcendental Deduction"? This remark is close to the critiques later elaborated by well-known commentators of Kant, such as Cassirer[184] and Kemp Smith[185]. In addition to their observations, which focus only on the assumption that

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180. "[...] der Aufbau des Kantischen Systems der Erfahrung."
181. "[...] Mannigfaltigkeit der subjektiven Empfindungsinhälte [...]"
182. The reference to intuition as method might sound not precise if referred to Kant's text, otherwise, in the Dissertation from 1770 Kant defines the forms of sensibility as rules, law of organisation. See *§5, §11, §14, §15* of Kant's Dissertation.
183. Durch diesen Prozess wird der Ubergang vollzogen von der Subjektivität zur Objektivität. (Zschocke 1907, p. 162)
184. Cassirer 1922, p. 713.
185. "The heterogeneity which Kant here asserts is merely the difference of nature which follows

schematism will repeat the conclusion of the "Transcendental Deduction", Zschocke claims that the necessity of the joint activity of pure forms of the understanding and those of sensibility has been demonstrated by Kant not only in the "Transcendental Deduction", but also earlier in the "Transcendental Aesthetic", where the receptive forms of our a priori sensibility are identified in space and time, through which the contents of impressions and their form are related: "Space and time are relations of intuitions." (Zschocke 1907, p. 175)[186]More specifically, in Zschocke's view, space and time consist in ways to give directions near and after ("*Neben*" and "*Nach*")[187] and therefore they have not only to be considered *both* as active functions (a claim which is in contrast with Kant's definition of sensibility as receptivity), but also presuppose other forms (such as unity and plurality), which Kant introduces explicitly only later in his inquiry on the understanding. For instance, a direction is thinkable only if it is intended as a direction between two points, thus implying the concept of plurality, which presupposes unity. Therefore, space and time themselves are not intelligible of the function Kant attributes to the categories of quantity. If this is so, then Kant has already presented, although not clearly and explicitly, in the "Transcendental Aesthetic", what the grounds of the unity of experience are. Nonetheless, there is no reason to introduce a deep discrepancy between the forms of a passive faculty, sensibility, and of an active one, the understanding.

Zschocke supports his interpretation referring to the remark of *§26*:

> "Space, represented as **object** (as is really required in geometry), contains more than the mere form of intuition, namely, the **comprehension** of the manifold, given in accordance with the form of sensibility in a intuitive representation, so that the **form of intuition** merely gives the manifold, but the **formal intuition** gives unity of the representation. In the Aesthetic I ascribed this unity merely to sensibility, only in order to note that it precedes all concepts, though to be sure it presupposes a synthesis, which does not belong to the senses but through which all concepts of space and time first become possible. For since through it (as the understanding determines the sensibility) space or time are first **given** as intuitions, the unity of this *a priori* intuition belongs to space and time, and not to the concept of the understanding." (KrV B161)[188]

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from the diversity of their functions. The category is formal and determines structure; intuition yields the content which is thereby organised. Accordingly, the "third thing", which Kant postulates as required to bring category and intuition together, is not properly so describable; it is simply the two co-operating in the manner required for the possibility of experience." (Kemp Smith 1923, p. 334)

186. "Raum und Zeit sind also Anschauungsverhältnisse."

187. "[…] die blosse Anschauung des Nach und Neben […] bloss jene typische Direktion…" (Zschocke 1907, p. 177).

188. "Der Raum, als Gegenstand vorgestellt, (wie man es wirklich in der Geometrie bedarf), entält mehr als blosse Form der Anschauung, nämlich Zusammenfassung des Mannigfaltigen, nach der Form der Sinnlichkeit gegebenen, in eine anscahauliche Vorstellung, so dass die Form der Anschauung bloss Mannigfaltiges, die formale Anschauung aber Einheit der Vorstellung giebt. Diese Einheit hatte ich in der Ästhetik bloss zur Sinnlichkeit gezählt, um nur zu bemerken, dass sie vor allem Begriffe vorhergehe, ob sie zwar eine Synthesis, die nicht den Sinnen angehört, durch welche aber alle Begriffe von Raum und Zeit zuerst moglich werden, voraussetzt. Denn da durch sie (indem der Verstand die Sinnlichkeit bestimmt) der Raum oder die Zeit als

According to Zschocke, in the above mentioned passage, when Kant refers to an *Einheit*, he is providing the forms of sensibility with a function of unity. Consequently, if this perspective is correct, the Analytic (and the chapter of schematism in particular) loses its role of primary importance in determining the grounds of possibility of the unity of experience.

Is this really the case? Do categories provide something additional to that kind of unity, which must already be presupposed as pertaining to the forms of sensibility?

5.1.2 The "thought of necessity" as the main value of the categories

To clarify whether categories have a different task from the forms of sensibility, Zschocke focuses on a definition that Kant gives of causality, which is a good example for explaining the distinction between the categories and the forms of space and time.

Causality, according to Kant, is first of all regarded as succession. For this reason, it might be explained by reference to the formal intuition of time as a synthesis of a manifold of temporally related, successive intuitions. If so, then, there would be no need to refer to pure concepts, and pure intuitions alone might be sufficient to provide grounds of causal knowledge. But actually the category of causality is not only succession, but a succession provided with necessity. It is precisely this feature which characterizes, in Zschocke's terminology, the "method" of the understanding, distinguishing it from sensibility. In this sense, the peculiarity of the understanding is not, as Kant states, that its categories are the core elements involved in the synthesis of intuitions (since the unity of the synthesis of multiplicity must already be presupposed in space and time), but lies in the necessity they provide through the "[...] practical act of affirmation and negation [...]"(Zschocke 1907, p. 194)[189] in the thinking:

> "We only lack the thought of necessity in order to have the necessary synthesis of the world of experience." (Zschocke 1907, p. 195, transl. L.S.)[190]

Categories, then, reflect a sort of practical moment of the judgement, which provides objectivity to statements of knowledge. Given so, if the unity of experience is grounded in the forms of intuitions and if categories have the purpose to provide objective value to statements through a practical act of judgement, what is the role of schemata? Are they only an unnecessary addition or do they maintain an essential role in the structure of the *Critique of Pure Reason*?

5.1.3. A misleading illustration of an actual problem

According to Zschocke, schematism is not unnecessary in the sense that it is trivially superfluous. It is unnecessary only in the way Kant developed it, i.e. as an answer

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Anschauungen zuerst gegeben werden, so gehört die Einheit dieser Anschauung a priori zum Raume und der Zeit, und nicht zum Begriffe des Verstandes."

189. "[…] das praktische Moment des Bejahens und Verneinens […]"

190. "Zur notwendigen Synthesis der Erfahrungswelt fehlt uns nichts mehr als der Gedanke der Notwendigkeit."

to the bridging problem. Kant is therefore accused of misunderstanding his own question, advocating schemata as time mediations, distinguished from the categories and principles of the understanding as well as from the forms of intuition.

Schemata do not have the purpose of bridging the heterogeneity of understanding and sensibility, as the philosopher himself claims (KrV A138/B177). Instead, they show *how* sensibility and understanding collaborate in the constitution of experience. Only in this particular sense, schematism is a meaningful and important step forward to the "Transcendental Aesthetic" and the Deduction. But beyond this point according Zschocke denies that Kant succeeds in elaborating a schematism, not only because he misunderstood its role in describing it as a medium for bridging a gap between distinctive epistemic faculties, but also because he is mistaken in referring to time as the more general form of sensibility. What persists in the apprehension of a substance is given, by the relation of its elements not only in time but in the other form of sensibility as well, i.e. in space. For example, a house is what it is, because it has walls, a roof on the top etc., and not because it is apprehended in a precise temporal order. Therefore, not only time, but also space, has to be regarded as a possible form through which categories can be schematised.

Therefore, to Zschocke Kant's schemata must be re-fashioned into "always" and "everywhere", which are sensible and intellectual, since the world of appearances is contingent and the necessity and totality we think in these "new" schemata are not already given but "to be given":

> "Then intuition and thought are related in the totality of temporal and spatial –order; *the everywhere and the always* is actually a true schema, that is on the one hand intellectual and on the other sensible." (Zschocke 1907, p. 212, trasl. L.S.)[191]

5.1.4 Critical remarks

In my opinion, Zschocke's interpretation of the chapter of schematism proposes a new conception of judgement, objectivity and schemata. More precisely, according to him, in a judgement we have to distinguish between the unity of a possible experience, whose conditions are given by the forms of intuition and the thought of the necessity, which is the only function properly developed by categories apart from sensibility. That is to say, categories, if compared to forms of sensibility, are different not because they are active, while the first are passive, rather, because they deal with a *plus* which lies in a "practical" act of the thought (affirmation or negation), which alone provides necessary objectivity to a claim. This necessity, then, is interpreted as an act of the thought, separated from the conditions of the possibility of experience. Consequently, knowledge need not to be explained in terms of a relation of subsumption between categories and intuitions, as Kant sometimes states[192], but as an accord of teleological

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191. "So begegnet sich in der Totalität der Zeit und Raumreihe Anschauen und Denken, das „überall" und „immer" ist in Warheit ein echtes Schema, das einerseits „intellektuell", anderseits „sinnlich" ist."

192. KrV A132/B171; KrV A137/B176.

relations by which the forms of sensibility and the understanding with its "thought of the necessity" complete each other pursuing a joint task.

As shown, Zschocke's interpretation does not lead to the conclusion that a schematism is meaningless. Rather it underlines that its task is not to mediate the heterogeneity between faculties but to show how the rules of the concept providing objectivity determine or "influence" (Zschocke**1**907, p. 207, transl. L.S.)[193] the formal intuitions giving them a shape, an actual, practical, sensible form:

> "Now the concern is to show, how the rule descends to the field of sensibility. But here we are no more looking for a third thing, a mediating function; the schema as bridge is a nothing (*Unding*). No, I want the schema in the precise sense of its definition: the schema shall show us the sensible form." (Zschocke 1907, p. 207, transl. L.S.)[194]

But in this way are not we losing the notion of schema as a *transcendental* function? Does Zschocke's view make justice Kant's schematism chapter?

In Zschocke's interpretation, I see three points that might be criticised: 1) his view of space and time as sufficient conditions of the possibility of experience; 2) his description of the value of categories as "thought of the necessity" and 3) their schematisation as "always" and "everywhere" and the reference to the teleological cooperation of sensibility and understanding in cognition.

For what concerns the first point, I think that it is important to remark Kant's distinction between subordination of concepts in a judgement and coordination of sensations. As Kant stresses in *Refl. 3051*[195] concepts belong to a consciousness only if thought as subordinated and not just coordinated; coordination characterises sensations connected through a contingent association that has no objective validity. Subordination (or subsumption), on the contrary, is an act of the thought that aims to express a relation of properties of the object. However, this does not imply that each judgement, insofar as it has the form of subsumption, is objectively truth:

> "[…] the form of a judgement is not by itself a guarantee that this judgement is the expression of the objective (rather than subjective) unity of our representations. But at least dint of its very form -concept subordination, not coordination of impressions – its goal or its immanent norm is to express the relation of concepts by expressing also their relation to objects." (Longuenesse 1998, p. 90)

Without this relation to the unity of the consciousness, epistemic judgement would not be possible. Kant himself states, in the *Prolegomena*, that the question

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193. "Einfluss […] ausübe."

194. "Jetzt handelt es sich zu zeigen, wie die Regel in das Gebiet der Sinnlichkeit herabsteige. Aber hierzu sehen wir uns nicht mehr nach einem Dritten um, welches vermittle; das Schema als Brucke ist ein Unding. Neine, ich will das Schema in dem genauen Sinne seines Wortes fassen, das Schema soll uns die sinnliche Gestalt zeigen, welche die Regel, die Notwendigkeit, anim-mt, sobald sie die formale Anschauung beherrscht; diejenige formale Anschauung soll Schema heissen, welche die Notwendikeit repräsentiert."

195. AA XVI, p.633

concerning the validity of epistemic judgements has no sense if consider only the function of sensibility:

> "[…] sensibility consists not in this logical difference of clarity or obscurity, but in the genetic difference of the origin of the cognition itself, since sensory cognition does not at all represent things as they are but only in the way in which they affect our senses, and therefore that through the senses mere appearances, not the things themselves, are given to the understanding for reflection; from this necessary correction an objection arises, springing from an inexcusable and almost deliberate misinterpretation, as if my system transformed all the things of the sensible world into sheer illusion.
> If an appearance is given to us, we are still completely free as to how we want to judge things from it. The former, namely the appearance, was based on the senses, but the judgement on the understanding, and the only question is whether there is truth in the determination of the object or not." (AA IV, p. 290)[196]

As Pippin remarks[197], sensibility does not represent objects, but only provides the content to the understanding, that brings the manifold of intuition to unity in judgements. Only then, the question on the truth or falsity of representations makes sense.

Besides, the passages to which Zschocke alludes to ground his argument (KrV B161), that he interprets as demonstration that sensibility already contains the conditions of the unity of the objects, might be differently explained. According to me, Kant aims at inquiring separately functions that work together in cognition. When he describes sensibility and its forms, he tries to leave aside (in his description) the intellectual elements[198], that are, however, always already presupposed in epistemic objective cognition.[199] This separation might be related to the two ways in which space and time are regarded: as forms of sensibility, separated from understanding, through which things inside and outside ourselves can be represented, and as (formal) intuitions, containing the unity (synthesis) of the manifold. The problem is: what is this unity provided by? This passage is controversial and there is no standard interpretation of it[200]. From my point of view, Kant is not suggesting, as Zschocke

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196. "[…] Sinnlichkeit nicht in diesem logischen Unterschiede der Klarheit oder Dunkelheit, sondern in dem genetischen des Ursprungs der Erkenntniß selbst bestehe, da sinnliche Erkenntniß die Dinge gar nicht vorstellt, wie sie sind, sondern nur die Art, wie sie unsere Sinnen afficiren, und also, daß durch sie blos Erscheinungen, nicht die Sachen selbst dem Verstande zur Reflexion gegeben werden: nach dieser nothwendigen Berichtigung regt sich ein aus unverzeihlicher und beinahe vorsetzlicher Mißdeutung entspringender Einwurf, als wenn mein Lehrbegriff alle Dinge der Sinnenwelt in lauter Schein verwandelte. Wenn uns Erscheinung gegeben ist, so sind wir noch ganz frei, wie wir die Sache daraus beurtheilen wollen. Jene, nämlich Erscheinung, beruhte auf den Sinnen, diese Beurtheilung aber auf dem Verstande, und es frägt sich nur, ob in der Bestimmung des Gegenstandes Wahrheit sei oder nicht."

197. Pippin 1982, pp. 24 – 39.

198. KrV A22/B36.

199. KrV A51/B75.

200. Apart from the already quotated Longuenesse, Aportone regards formal intuitions as a manifold of pure intuition brought to unity by reference to consciousness (Aportone 2011, p. 465),;

does, that space and time as formal intuitions already sufficiently determine the possibility of the objective validity of judgements, but rather, that it is possible to conceive space and time not only as forms, but also as (pure) objects themselves. When we refer to them in this sense, they do presuppose a synthesis of the (pure) manifold, but this is only a further demonstration of the unity of the functions implied in cognition. Even pure intuitions do need, if conceived as objects, a synthesis, i.e. to belong to a consciousness, although not in the same way as the empirical manifold synthesised through categories.

My second critical point regards Zschocke's description of the value of categories as "thought of the necessity". He refers to categories as providing, for instance, in the case of judgements concerning causality, the thought of the necessity of this causality. But what does he actually mean by 'necessity'? If this necessity has to be intended in a subjective sense, as a sort of psychological connotation, this would be in contrast with the aims of Kant's inquiry on the conditions of objective cognition. If, in contrast, it is regarded in an objective sense, then, why should it be necessary to advocate to categories? If space and time, from Zschocke's point of view, are already sufficient conditions of epistemic knowledge, then, they should be sufficient to justify, for instance, the validity of causality and the reference to additional functions seems to be redundant. In other words, Zschocke should have put his own thought to extreme and state that only space and time are the a priori condition of cognition.

My third point concerns the schemata "always" and "everywhere", i.e. as sensible representatives of what is not given in experience, conceived as task, and the reference to the "teleological" (Zschocke 1907, pp. 205-206) cooperation of sensibility and understanding in cognition. This terminology suggests that Zschocke is attributing to schemata and (to the cooperation of the faculties at their basis) characteristics that Kant attributes to other functions, namely the ideas of reason in their regulative[201] use. The functionsof cognition, can be constitutive or regulative: in the first sense they determine the possibility of experience, while in the second sense they provide rules towards the greatest unity[202]. Since ideas of reason (the soul, the world and God)[203], exceed the limits of possibility of experience, their good use can only be regulative. In this sense they rule the understanding towards the greatest unity of the synthesis:

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whilereas Fichant regards the formal intuitions as subject to a synthesis that do not belong to concepts and that is similar to the work of imagination, which has an intermediate role between sensibility and understanding. (Fichant 2004, p. 548).

201. In this sense, ideas can be interpreted as pragmatic-epistemic rules towards the greatest unity of knowledge: "The transcendental ideas (the cosmological, psychological and theological) dictate how we ought to act in scientific contexts and these too are devoid of instrumental justification on the part of the individual investigator. […] The methodological maxims are not pure or determinable a priori, instead the decision to employ one or another of them depends on individual interests. Although they are objective insofar as they presuppose that a systematic unity of our knowledge is possible, nonetheless, there is a pragmatic element inherent in the decision to adopt any one of them. As a result they are incapable of yielding laws that are pure and determinable a priori." (Morrison 1989, p. 172)

202. KrV A644/B672; KrV A647/675; KrV A684/B712.

203. KrV A682/B710; KrV A684/712; KrV A685/B713.

> "The understanding constitutes an object for reason, just as sensibility does for the understanding. To make systematic the unity of all possible empirical actions of the understanding is a business of reason, just as the understanding connects the manifold of the appearances through concepts and brings it under empirical laws. […] Thus the idea of reason is an analogue of a schema of sensibility, but with this difference, that the application of the concepts of the understanding to the schema of reason is not likewise a cognition of the object itself (as in the application of the categories to their sensible schemata) but only a rule or principle of the systematic unity of all use of the understanding." (KrV A664-45/B692-93)[204]

From this, it is possible to claim that there are similarities, as well as differences, between schemata and ideas. As Kang stresses:

> "In this characterization of the schema of an idea, in the first place, its analogous character to the schema of categories is clearly formulated: the schema of reason has no temporal character, but it is the idea of maximum of the unification and division of empirical knowledge. In the second place, the schema of reason is a rule by which the unity of reason is determined in a certain way. In other words, reason obtains a certain possibility of application as regards the empirical employment of the understanding, though the character of this application is different from that of categories to appearances." (Kang 1985, p. 136)

Schemata and ideas in their regulative use share similarity concerning their function, but work at different levels and have to be differentiated. Some years later, in the third *Critique*, Kant will refer to a further function which shares similarities with schema, although working at a different level, namely, the symbol[205]:

> "All **hypotyposis** (presentation, *subjecto sub adspectum*), as making something sensible, is of one of two kinds: either **schematic**, where to a concept grasped by the understanding the corresponding intuition is given a priori; or **symbolic**, where to a concept which only reason can think, and to which no sensible intuition can be adequate, an intuition is attributed with which the power of judgment proceeds in a way merely analogous to that which it observes in schematization, i.e., it is merely the rule of this procedure, not of the intuition itself, and thus merely the form of the reflection, not the content, which corresponds to the concept." (AA V, p. 351)[206]

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204. "Also ist die Idee der Vernunft ein Analogon von einem Schema der Sinnlichkeit, aber mit dem Unterschiede, daß die Anwendung der Verstandesbegriffe auf das Schema der Vernunft nicht eben so eine Erkenntnis des Gegenstandes selbst ist (wie bei der Anwendung der Kategorien auf ihre sinnliche Schemata), sondern nur eine Regel oder Prinzip der systematischen Einheit alles Verstandesgebrauchs."

205. Kang 1985, pp. 144 -152.

206. "Alle Hypotypose (*Darstellung, subiectio sub adspectum*) als Versinnlichung ist zweifach: entweder schematisch, da einem Begriffe, den der Verstand faßt, die correspondierende Anschauung a priori gegeben wird; oder symbolisch, da einem Begriffe, den nur die Vernunft denken und dem keine sinnliche Anschauung angemessen sein kann, eine solche untergelegt wird, mit welcher das Verfahren der Urtheilskraft demjenigen, was sie im Schematisieren beobachten, bloß analogisch ist, d. i. mMitihmin bloß der Regel dieses Verfahrens, nicht der Anschauung selbst, mithin bloß der Form der Reflexion, nicht dem Inhalte nach übereinkommt."

Since Zschocke's new schematism is in conflict with Kant's text, because disregards the distinction between ideas and schemata, it cannot be regarded as really doing justice to Kant's intentions. However, apart from these critical remarks, Zschocke's criticism can be regarded as one of the most challenging, especially if we put to extreme his refine interpretation of space and time. Unlike those critics who regards schematism as unnecessary because of *§24* of the Deduction, he finds his reason in the evaluation and careful analysis of the "Transcendental Aesthetic".

5.2 Curtius: The obscurity and unnecessity of the schematism chapter

Ernst Robert Curtius' criticism concerns the unnecessary elaboration of the schematism chapter - intended as a solution to the fictitious gab between sensibility and understanding-, and at the ambiguity of Kant's definition of a schema, which refers both to the notions of subsumption and rule. In the first subsection (5.2.1) I will focus on Curtius's claim that the chapter about schematism is a redundant addition to *§24* of the "Transcendental Deduction" and that the only difference between the two parts is that while *§24* refers to a process of synthesis by which categories might be applied to experience, schematism relies on the subsumption of intuitions under pure concepts. Nevertheless, in Curtius's view, the notion of subsumption (on which I focus in the second subsection. 5.2.2) is incorrectly used by Kant, because it is referred to things or objects that do not belong to the same kind, as it is required according to the classical definition of subsumption. The third subsection (5.2.3) focuses on Curtius's interpretation of Kant's definition of schema as a rule that modifies the pure synthesis through the determination of the inner sense. Consequently, schemata are not third things implied in the subsumption but rules for the synthesis of the understanding.

5.2.1 The redundancy of the problem of schematism

After having demonstrated that categories are meaningful only in their empirical use, Kant is confronted with the question concerning the way in which this application actually works. Dealing with this problem ought to be the proper task of the schematism.[207] But as Zschocke underlined, this question has already been answered by Kant. Curtius agrees; however, he focuses not on the Aesthetic, as Zschocke did, but rather on the section concerning the application of categories to objects of the senses in general (§24 V*on der Anwendung der Kategorien auf Gegenstände der Sinne überhaupt*)[208] relying on a synthesis developed by the faculty of imagination, mediating between understanding and sensibility. If both passages focus on the same question, what is the advantage of introducing schematism? It seems to be only a redundant

207. KrV A137/B176.

208. KrV B 150-156.

addition that increases the difficulty in the comprehension of the text. Is it actually the case?On the other hand, if there are two candidate passages where Kant explains how to apply categories to (empirical) intuitions, then we have to consider their relation. Is there any difference between the two passages?

Curtius points out[209] that there is a meaningful difference between the two parts, concerning not the problem of inquiry, but, its solution. While, as already indicated, *§24* advocates a synthesis, the chapter of schematism refers to a subsumtion and introduces the notion of a schema to mediate between categories and sensible data. In order to understand better this difference, Curtius gives a deeper focus on the terms subsumption and rule, since they define the function of schemata.

5.2.2 Subsumption

According to Aristotelian – Scholastic logic, the term 'subsumption' describes the act of judgement, intended as a relation between a subject (*contentum*), and a predicate (*continens*) through a copula[210]. Kant seems to refer to this perspective, when he states that:

> "In every judgement there is a concept that holds of many, and that among this many also comprehends a given representation of it, which is then related immediately to the object. So in the judgement, e. g., "All bodies are divisible," the concept of the divisible is related to various other concepts; among these, however, it is here particularly related to the concept of body" (KrV A68/B93)[211]

Then, a subsumption can be regarded as the subordination[212] of the particular under the universal in a judgement[213]. However, not all judgements deal at a very

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209. Curtius 1914, pp. 343-344.

210. Longuenesse 1998, pp. 86-95 and pp. 170-179.

211. "In jedem Urteil ist ein Begriff, der für viele gilt und unter diesem Vielen auch eine gegebene Vorstellung begreift, welche letztere dann auf den Gegenstand unmittelbar bezogen wird. So bezieht sich z. B, in dem Urteile: alle Körper sind teilbar, der Begriff des Teilbaren auf verschiedene andere Begriffe; unter diesen aber wird er hier besonders auf den Begriff des Körpers bezogen."

212. Kant's distinction between subsumption and subordination is not entirely clear. As Longueness suggests (Longuenesse 1998, p. 92), the only significant distinction is provided by the context of their use: Kant usually uses subsumption in the context of schematism and of syllogism, while subordination has a broader use (AA IX, pp. 120-123, p. 615, p. 617; KrV A322/B378).

213. It is important to note Kant's distinction between subordination of concepts in a judgement and coordination of sensations (Longuenesse 1998, pp. 87-90). As Kant stresses in Refl. 3051(AA XVI, p.633), concepts belong to a consciousness only if thought as subordinated and not just coordinated; coordination characterises sensations connected through a contingent association that has no objective validity. Subordination (or subsumption), on the contrary, is an act of the thought that aims at express a relation of properties of the object. However, this does not imply that each judgement, insofar as it has the form of subsumption, is objectively truth: "[…] the form of a judgement is not by itself a guarantee that this judgement is the expression of the objective (rather than subjective) unity of our representations. But at least dint of its very form -concept subordination, not coordination of impressions – its goal or its immanent norm is to express the relation of concepts by expressing also their relation to objects." (Longuenesse 1998, p. 90)

first sight with a subsumption and a constraint has to be added to define it better. For instance, a judgement such as: *all bodies are divisible* can be regarded as a subsumption only if subject and predicate are homogeneous, i.e. they are comparable terms since they belong to a same order:

> "[…] the judgement – bodies are divisible – can only be interpreted as subsumption, when you refashion it in this way: bodies are divisible things. It is in fact impossible (even if forced) to build an order in which bodies and divisible things occur at different levels." (Curtius 1914, p. 346)[214]

But Kant's use of the notion of subsumption provides a variation of the definition of homogeneity: it concerns not two terms that belong to a same order, but rather two elements sharing a common sign of distinction (*Merkmal*)[215]. Therefore, a plate and a circle can be considered homogeneous not because they belong to a same kind (the first is a concrete object while circle is a mathematical concept), but because they share the reference to roundness. If this variation of definition of homogeneity were not accepted, it would not be possible to link them in a proper subsumtive judgement, but only in a nonsensical statement such as, "a plate is a circle". [216]. From the viewpoint of the traditional notion of subsumption, this Kantian example can be considered as a "[...] complete misunderstanding" (Curtius 1914, pp. 346-347)[217], one that increases the chapter's obscurity.

Another cause of misunderstanding is given by the difficulty in identifying the terms implied in the subsumption[218]. Some passages of the chapter suggest that it refers to the relation between (empirical) intuitions and categories[219], while others address phenomena and categories[220]. Then it seems that Kant uses the notion of intuitions and phenomena as interchangeable; and since he sometimes refers to phenomena as the objects of knowledge's claims, this formulation turns out to be an exact repetition of §*24*. But if that so, then schematism as subsumption might lead Kant to a severe contradiction. Concepts and intuitions are completely inhomogeneous: the first are active and general, the second are passive and individual. If homogeneity

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214. Das Urteil Die Körper sind teilbar kann nur dann als Subsumtion aufgefasst werden, wenn man es umformt in: die Körper sind teilbare Dinge. Es ist nämlich unmöglich (wenn auch gekünstelt) eine Ordnungsreihe zu bilden, in der Körper und teilbare Dinge auf verschiedenen Stufen vorkommen.

215. KrV A137/B176.

216. Curtius 1914, p. 346.

217. "[...] ein völliger Missgriff."

218. Apart from Curtius, Longuenesse also reflects on Kant's ambiguous terminology. In Refl. 3095 (AA XVI, p. 656) Kant interchanges subordination of concepts and subordination of objects under concepts: "This should not mask the fact, however, that he is aware of the difference between the two relations. This is precisely why he (correctly) restricts the domain of the logic he knows to concepts and concept subordination." (Longuenesse 1998, p. 92) Therefore, according to her interpretation, subsumption should be referred to the relation of objects and concepts, while subordination to the relation between concepts.

219. KrV A137/B176.

220. KrV A139/B178.

is a necessary the condition of subsumption, then a subsumption between the two is in principle impossible.[221] Curtius underlines that this is not the conclusion of Kant, who, once aware of the problem of heterogeneity, asserts that a "third" must be given, a medium that on the one hand is pure and on the other sensible.[222] Why does Kant proceed in this way? Here there are two possibilities: Kant is contradicting himself (at first he states that no subsumption is possible between terms that are not homogeneous and now he claims that a subsumption between inhomogeneous terms is possible) or he uses the notion of a subsumption in a different connotation. However, In order to further explore this option, he relies on the definition of "inferences of reason" (*Vernunftsschlusse)* in the *Jäsche Logik*:

> "What stands under the condition of a rule also stands under the rule itself." (AA IX, p.120)[223]

That is to say, each inference (*Schluss*) is composed of a major premise (the general rule), a minor premise i.e. the subsumption of the condition of a proposition under the condition of the rule, and finally the *conclusio*, the affirmation or negation of the rule in the given case of the subsuming judgement. This perspective can be reasonably related to schema, since Kant himself states that a schema is a rule[224], for instance: *permanence in time* is the schema of the category of substance. That is to say (and here we have the rule): when there is experience of permanence in time, then the category of substance is to be applied. Where the schema is valid, its category is valid[225]. Only by interpreting the notion of subsumption as rule, relying on Kant's (and Wolffian) *Logik*, is it possible to provide a meaning to the concept of a schema.

5.2.3 Schema as rule

As indicated, Kant defines 'schema' not only in terms of subsumption but also as a rule. More precisely, as a rule of the unity in accordance to concepts in general.[226] That is to say, schemata (transcendentally intended) are rules for the application of categories, i. e. they modify the pure synthesis through the determination of the inner sense. They are time-determinations: "*a priori* time-determinations in accordance with

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221. Actually, *§24* might lead to a similar difficulty in the interpretation. How can categories be applied directly to objects, as the title suggests, given the incomparability between pure and empirical levels? Curtius (Curtius 1914, pp. 343-344) explains the ambiguity of the title of section referring to the passages A124/B150-152, in which it is clarified that the object of synthesis are not directly empirical intuitions, but rather, the a priori forms of intuition. Categories are indirectly applied to objects, directly to space and time. Kant's title is thus imprecise and misleading.
222. KrV A138/B177.
223. "Was unter der Bedingung seiner Regel steht, das steht auch unter der Regel selbst."
224. KrV A141/B180.
225. Curtius reports Sigwart's Logik: "Wenn A gilt, so gilt X. A gilt bei B. Also X gilt bei B." (Curtius 1914, pp. 349-350)
226. KrV A141/B181. For sure Kant's address to schema as a rule and as a process might cause some ambiguities, as we will consider also in the following sections.

rules" (KrV A145/B184)[227]. This second definition is directly based on the result of the "Transcendental Deduction", namely *§24*, where Kant restricts the meaningful use of categories to experience. From this perspective, what here is called schematism can be regarded as a synonym of the "*synthesis speciosa*" (KrV B151), the transcendental synthesis of the imagination. This interpretation is supported by those statements addressing schema as product of the transcendental function of Imagination and by *§24* itself, where Kant underlines how the transcendental synthesis is determined through time. Moreover, in his own copy of the *Critique of Pure Reason (Refl. LVII E 27-A 137)*, near the word 'schematismus' Kant wrote:

> "The synthesis of the understanding, when it determines the internal sense according to the unity of the apperception, is so called [schematismus]." (AA XXIII, p. 27)[228]

Then, Curtius concludes, it is not necessary to refer to the notion ofsubsumtionin order to define schema, which is better explained through the reference to synthesis. A schema is not well definable as a *tertium* implied in a process of subsumtion, but rather a rule - a well-known core concept of Kant's theory of knowledge - because in each schema the process of synthesising representations of the functions of understanding and sensibility is advanced. However, if the schema is not a *tertium*, but a rule of the *synthesis speciosa*, then there is no distinction between the solution of *§24* and that of schematism. Instead, the schematism chapter then is only an organic clarification of *§24*. Therefore, as Curtius declares[229] in his final considerations, the reference to schemata is a meaningful clarification of the necessary conjunction of sensibility and understanding, which is Kant's conclusion expressed in the "Transcendental Deduction".

5.2.4 Critical remarks

Curtius's interpretation is one of the best contribution to the clarification of Kant's use of the notion of subsumption. His suggestion that Kant's problem of the relation of the functions of understanding and sensibility has to be solved relying on a synthesis an not to a third element, is in accordance with Kant's stress on the joint works of the functions of cognition. However, I think that he does not sufficiently consider the importance of subsumption in constituting objective epistemic judgements and that schematism has a own function in the *Critique*. My first objection can be explained by referring to *§18-20* in the *Prolegomena 230*, in which Kant introduces the distinction between judgements of perception and of experience, i.e. judgements that are subjective, insofar as do not aim at claiming something of the object, but only of the subjective coordination of sensations ("I feel pain in my feet") and judgements on the objects ("water freezes at 0°"). I do not intend to delve into the details of

227. "Zeitbestimmung a priori nach Regeln."

228. "Die Synthesis des Verstandes, wenn sie den inneren Sinn der Einheit der Apperzeption gemass bestimmt, heißt so."

229. Curtius 1914, p. 366.

230. AA IV, pp. 297-302.

this question, but rather stress that here Kant uses the notion of subsumption to discriminate between the two kinds of judgements:

> "A completely different judgement therefore occurs before experience ca arise from perception. The given intuition must be subsumed under a concept that determines the form of judging in general with respect to the intuition, connects the empirical consciousness of the latter in a consciousness in general and thereby furnishes empirical judgements with universal validity; a concept of this kind is a pure a priori concept of the understanding, which does nothing but simply determine for an intuition the mode in general in which it can serve for judging." (AA IV, p. 300)[231]

And some lines later:

> "If one analyzes all of one's synthetic judgements insofar as they are objectively valid, one finds that they never consist in mere intuitions that have, as is commonly thought, merely been connected in a judgement through comparison, but rather that they would not be possible if, over and above the concepts drawn from intuition, a pure concept of the understanding had not been added under which these concepts had been subsumed and in this way first combined into an objectively valid judgement." (AA IV, p. 301)[232]

This, at least, suggest that Kant's notion of subsumption is more complex than how Curtius present it, and that Kant, in the period between the first and second edition of the Critique does not abandon the notion, but rather uses it to explain the passage from judgements that reflects an associations of impressions to those expressing a connection valid for everyone, insofar as it has universal rules (categories) as its condition.[233]

> "The question of subsumption which is assumed to be self-evident in the Prolegomena, is indeed the problem which Kant is confronted with in his effort to prove the objective validity or objective reality of the category and in particular its application to phenomena (A137/B176). Subsumption and application are not two different things but one and the same procedure which connects understanding and nature as phenomena, or in other words, between concepts and representations of objects." (Kang 1985, p. 60)

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231. "Es geht also noch ein ganz anderes Urtheil voraus, ehe aus Wahrnehmung Erfahrung werden kann. Die gegebene Anschauung muß unter einem Begriff subsumiert werden, der die Form des Urtheilens überhaupt in Ansehung der Anschauung bestimmt, das empirische Bewußtsein der letzteren in einem Bewußtsein überhaupt verknüpft und dadurch den empirischen Urtheilen Allgemeingültigkeit verschafft; dergleichen Begriff ist ein reiner Verstandesbegriff a priori, welcher nichts thut, als blos einer Anschauung die Art überhaupt zu bestimmen, wie sie zu Urtheilen dienen kann."

232. "Zergliedert man alle seine synthetische Urtheile, so fern sie objectiv gelten, so findet man, daß sie niemals aus bloßen Anschauungen bestehen, die blos, wie man gemeiniglich dafür hält, durch Vergleichung in einem Urtheil verknüpft worden, sondern daß sie unmöglich sein würden, wäre nicht über die von der Anschauung abgezogene Begriffe noch ein reiner Verstandesbegriff hinzugekommen, unter dem jene Begriffe subsumirt und so allererst in einem objectiv gültigen Urtheile verknüpft worden."

233. Cf. Longuenesse 1998, pp. 167-197.

Moreover, another point of criticism concerns the reference to *§24* of the Deduction. In this paragraph Kant refers to time[234] as the way in which categories have to be applied. Nevertheless, at least in my opinion, Kant does not sufficiently delve into the problem but only hints at the solution of the question concerning how categories are applicable, but do not delve into it. This hints, in my opinion, should be on the contrary be regarded as the demonstration of the importance of the schematism chapter: Kant in the first edition separated clearly the justification of the objective validity of pure concepts from the question concerning how they are applied. In contrast, in the second edition, he adds the *§24*:

> "[…] in the second edition these two matters ('that' and 'how') are integrated into the Transcendental Deduction itself. This shows that the process of schematization is not superfluous, but is rather an integrating moment of Kant's deduction. In other words, the matter of application is not merely supplementary but is essential to the 'concept-possession': the objective reality and validity of the pure concepts can be guaranteed if and only if th possibility of their application to appearances is demonstrated. The application of a concept is as it were constitutive of real understanding and cognition." (Kang 1985, p. 87)

Since possession and use of concepts are two different questions, I do not agree with positions such as that of Prichard, who states: "[…] it seems clear that if the first part [the Deduction] is successful, the second [Schematism] must be unnecessary" (Prichard 1909, p. 246). Rather, I agree when Kang claims that schematism is not a redundant addition, but has a own question to deal with (the use of pure concepts), and therefore is an essential chapter of the *Critique* and not an appendix of the Deduction.

5.3 Bussmann: schematism as a self-reflection of the understanding's own activity

According to Hans Bussmann's interpretation, homogeneity is the actual topic of the schematism chapter. As I shall show, he (5.3.1) regards homogeneity as a necessary condition for the possibility to carry out a subsumption, namely the process of unification of the representation of a thing and the form of its concept. Moreover (5.3.2), Bussmann gives an original interpretation of schematism as self-reflection of the understanding. As will become clear, he views this as a ground for the claim that schemata are self-referential applications of categories through time. Schemata are necessary insofar as categories alone do not contain the conditions of inner sense, or, stated differently, are insufficient for the possibility of experience in time. Finally (5.3.3), Bussmann argues that schematism is a necessary dynamic and recursive process, which provides things with a conceptual order. Schemata, then, are not

234. KrV B155.

"third things" but rather the result of a process in which the understanding reflects on itself in time.

5.3.1 Homogeneity

In Bussmann's interpretation, the topic of the schematism chapter is homogeneity, intended as the possibility of unifying object and concept, by means of a relation between the representation that we have when confronted with an object in its empirical shape and the representation that we have when thinking of the general form of its concept[235]. This process, called subsumption[236], involves three kinds of relations between representations, namely those between: an empirical thing and its empirical concept; a pure image and its pure concept; an empirical thing and its pure concept[237]. One of Kant's examples of the first case is given by the empirical object of a table and its related concept 'circle', which is produced through the intellectual activity of comparison and reflection. We observe that some objects can rotate and others cannot (act of comparison) and among the latter some can better rotate thanks to their circular shape (act of reflection). From these observations the empirical concept of "rotational shape" is constructed through abstraction[238]. A concept produced in this way is then ready to be schematised, i. e. applied to experience. For instance, if we take a piece of clay, we can model the matter so that its particles will be related next to one another to construct a circular shape. In contrast, in the second case of subsumption the act of schematisation does not allow the application of an empirical concept to a material object, but rather the construction of a pure image according to its mathematical, pure concept. When a point in the space is represented at a certain distance from another one (the centre) and then another one is added next to it and so on, a perfect circle is produced. Moreover, following this same method, it is possible to draw a particular circle on a paper. There is homogeneity between the processes of subsumption in these first two cases: in both the concept of circle is used to build a circular shape consisting of points set one near the other in the space, whether it is a material or a pure one. The third case of relation is more complicated: how can pure concepts be applied to experience? How can sensible images of pure concepts (such as measure in general) be adequately constructed and how can they be found in the material experience in space and time, given that categories are pure, i.e. they share nothing with the empirical things?[239] Kant answers by stating that empirical intuitions are subsumed under concepts of the understanding, through the application of categories to appearances in the schematisation. Kant shows that the geometrical concept of a circle can subsume the empirical one of a table, and

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235. Bussmann 1994, p. 394.
236. Bussmann refers to KrV A137/B176; KrV A657-658/B685-686.
237. Bussmann 1994, p. 394.
238. Cf. Kant AA IX, p. 94.
239. Bussmann 1994, p. 398.

more than that, that it can be regarded as a principle guiding the construction of all images in the pure or empirical intuitions.

Moreover, there is a particular method through which the general concept of circle is related to its infinite particular images, and this method is homogeneous to both the conceptual and the empirical side. When the conceptual side consists of a category, i.e. the rule of synthesis through which the steps of combination are unified in a consciousness, then this method[240] is called a transcendental schema. Categories are not directly applied not to empirical objects but rather to their conditions, namely space and time: to each category corresponds a categorical temporal determination (a transcendental schema), that works in precisely the same way as the application of the concept of circle. Since each schema is homogeneous to time, then, in this sense, Bussmann claims that it can be reasonably interpreted as a medium between the rule of the synthesis, the category, and the empirical impressions in time.

5.3.2 Schematism of the understanding

Once explained how schemata have to be understood as mediating functions, Bussmann points at the passages A131 and A139 of the *Critique of Pure Reason* in order to stress the difference between the schemata of categories and the schematism of the understanding, intended as a reflective act of the understanding on itself, the possibility of which relies on a further faculty, namely imagination. Schemata not only allow the material construction of an empirical image according to concepts, but also the self-reflection of the understanding. When we think of a number, this thought might be a mere reflection on the principle of numbering that might or might not lead to its application in the empirical intuition: we can think about a number without representing it empirically. As Kant states:

> "The schema is in itself always only a product of the imagination; but since the synthesis of the latter has as its aim no individual intuition but rather only the unity in the determination of sensibility, the schema is to be distinguished from the image. […] This representation of a general procedure of the imagination for providing a concept with its image, is what I call the schema for this concept." (KrV A140/B179)[241]

Furthermore:

> "The schema of a pure concept of the understanding, on the contrary, is something which can never be brought to an image at all." (KrV A142/B181)[242]

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240. "Similarily as Like Zschocke, Bussmann reefers tos schema merely as a procedure, an act rather than a particular kind of product or function."

241. "Das Schema ist an sich selbst jederzeit nur ein Produkt der Einbildungskraft; aber indem die Synthesis der letzteren keine einzelne Anschauung, sondern die Einheit in der Bestimmung der Sinnlichkeit allein zur Absicht hat, so ist das Schema doch vom Bilde zu unterscheiden. […] Diese Vorstellung nun von einem allgemeinen Verfahren der Einbildungskraft, einem Begriff sein Bild zu verschaffen, nenne ich das Schema zu diesem Begriffe."

242. "Ist dagegen das Schema eines reinen Verstandesbegriffe etwas, was in far kein Bild gebracht werden kann."

It is only through imagination in time and space, that the application of the concepts of the understanding, namely the activity of the understanding, becomes self-referential. Returning on the example of the circle, the the general process of construction of schematism does not result in a particular empirical image, rather in a general one. And this general image deals not with how sensibility is determined but with unity of the whole process through which sensibility id determined that is defined by Bussman "as conception of the conception" (Bussmann 1994, p. 403)[243] which is possible when the understanding's activity of conjunction is conceived. For this, imagination is necessary: neither it carry on the synthesis, nor receives the impressions, but it is perfect suitable "to depict, to represent and pre-present" (Bussmann 1994, p. 403)[244]. both functions (synthesis and receptivity) Here Bussman does not refer to further passages of the *Critique* (apart from the already quoted KrV A140/B179; KrVA142/B181), rather he refers to aparticular interpretation of imagination, namely that of Heidegger[245]. Moreover, schemata as self-reflective acts of the understanding are not completely separated from each other. Rather, as categories referto each other through their common relation to the highest unity (the synthetic unity of apperception), so do schemata: each appearance has extensive (as numerical quantity) as well as intensive[246] determination, and these determinations are reciprocally referred to each other. To explain their connection, Bussmannn notices that the extensive measure of the radius of a circle is related to the distance between the centre and a point in the circumference. But the distance between one point and another in the circumference can be always shortened or limited, that demonstrate that qualitative determination is always in question. Then a line (the distance between two points in the circumference), to be experienced, needs as conditions both intensity and extension, otherwise it would not be possible to determine the position of the points it consists in[247]. But what is the difference between categories and schemata, given that they are both grounded on a supreme unity, the transcendental apperception[248]?

Schemata are "self-referential applications of categories in time" (Bussmann 1994, p. 407)[249], that is to say: categories as pure concepts do not contain in themselves the formal condition of the internal sense. This further step is possible only through schematism, in which through the transcendental synthesis of the imagination the understanding's functions are limited in time and, conversely, this activity is

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243. "Begreifens des Begreifens."

244. "Abbilden, nachbilden, vorbilden."

245. Bussmann quotes Heidegger 1991, p. 147

246. Bussmann 1994, p. 405. According to Bussmann appearances are determined not only for what concerns their number, but also their intensity: each phenomenon can be regarded as a entire unity, in which it is possible to negate some parts, till it disappears.

247. Bussmann 1994, p. 405 - 406.

248. KrV A145/B184.

249. "Die Schemata einzeln und allein für sich genommen sind lediglich selbstreferentielle Anwendugen der Kategorien in der Zeit."

reflected by the understanding, which lies beyond the synthesis carried on through the imagination. In this sense Bussmann explains Kant's claim[250] that consciousness is temporal. Then, given the recursivity of the process of schematism, there is a slight difference between the activity of schemata and schematism[251] in a strict sense: the former refer to the application of categories through the transcendental synthesis of the imagination, the latter to the self-referential activity[252] of the understanding, which underlies this process and becomes temporally determined. Further support for this interpretation of schematism as recursive activities of the understanding is found by Bussmann in a draft to a letter to Tieftrunk[253], in which Kant states that the schematism of the understanding is the consciousness of the synthesis of the multiplicity of the intuitions, insofar as it is situated under a general rule.

5.3.3 Schematism as a model of the understanding's activity

Besides his attempt to clarify Kant's text, the more original contribution of Bussmann lies in his transformation of Kant's schematism into a model of a cognitive-psychological kind. Bussmann proposes a model that should not be understood as a mechanic rigid structure; instead, we should view it as a dynamic process combining three functions[254], sensibility, which receives impressions in space and time; understanding, which is responsible of the synthesis of the multiplicity according to universal rules and, finally, imagination. This latter, in Bussman's account, plays a central role in cognition: not only does it carry out the subsumption by applying categories to

250. KrV A362.

251. Cf. Bunte 2016, 74-75.

Fig.1

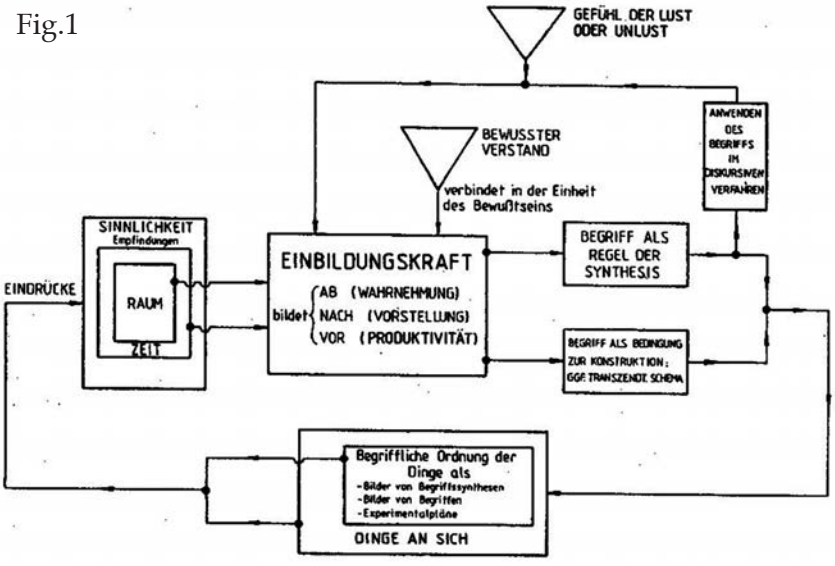

Abbildung 1: Schematisieren und Schema als Regelkeis

252. KrV A140.

253. AA XII, p. 470.

254. Bussmann 1994, p. 408.

intuition, but it is also responsible for cognitive actions such as building simulations, expectations and experimentations. Schemata, in this view, express plans for "experiments" (*Experimentalspläne*; Bussmann 1994, p. 411), intended as questions or expectations directed to nature.[255] In other words, imagination not only has a primary role in applying categories to intuitions, giving them a structured order to the multiplicity, but it is the faculty through which it is expected that things will be given in experience in a certain way and "the degree of accordance between the order prognosticated and the actual determined one, provides the feeling of pleasure and disgust." (Bussmann 1994, p. 411)[256] In Bussmann's Heideggerian terminology, imagination is threefold: through the reproductive activity of the imagination the rudimentary first order provided by space and time is presented (*abbilden*) and stored in memory (*nachbilden*) and then, through the productive side of imagination, this order is defined and refined, thus producing images of the concepts in the empirical as well as pure intuition (i.e. schemata). Bussmann is interpreting schematism not as a static explanation but rather as process, which provides things in themselves a conceptual order involving: first, a conjunction of images, which results from the process of synthesis; second, a construction of images of the concepts applied to time and space as schemata; third, productions of experiments as expression of schemata.[257] However, some data are not completely ordered through these three steps but are left in the background as rudimentary orders in the perception, thus explaining the distinction between that which is proved through experiments and that which has not yet been demonstrated. The degree of the undetermined between a defined and sure order and one that is only expected (prognosticated) causes a sense of pleasure or displeasure, resulting in the tendency to modify the already determined orders, i. e. changing the extension of concepts or building new ones through the faculty of thought. In this model of schematism the faculty of imagination finds itself in a central position, to which the different structures of orders of concepts might be referred and compared (for instance: those of the synthesis of recognition; the one which are recognized but not clearly distinct, those involved in the subsumption). These orders are considered by the imagination from two sides: in the process which structures things in themselves so as they appear to us and in the process of reflection, which characterises schematism as a recursive activity of the understanding, as it is possible to see in the schema proposed by Bussmann (see fig. 1, taken from Bussmann 1994, p. 412):

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255. Bussmann does not provide particular examples of such plans for experiments, but they should be regarded as sorts of anticipations of what it is expected from experience, that, in the scientific filed, correspond to hypothesis, that have to be verified. They are similar to schemata insofar as they pre-determine experience.

256. "Der Grad der Ubereinstimmung zwischen prognostizierter und festgestellter Ordnung wird als Gefühl der Lust oder Unlust emfunden."

257. Bussmann 1994, p. 411.

In the last section of the article, Bussmann summarized the characteristics of his model of schematism[258], explaining the schema presented below in six points[259]. First, schematism is a dynamic, recursive process. It is not a mechanism in which appearance are first given, from which representations are built, and later subsumed under concepts. On the contrary already at the beginning of the subsumption it is available "an order in the appearance"(Bussmann 1994, p. 414)[260], which is based on the activity of the understanding. Secondly, schemata are not a medium or a third function between understanding and sensibility in the sense that they share something with the former and the latter, which makes them bridge a presupposed gap. They are the result of a process, in which the understanding reflects on itself with respect to the form of time, i.e. a process in which the pure multiplicity according to time (*nach der Zeit*) is ordered in conformity to categories through the productive imagination. Thirdly, "knowledge through subsumption" (Bussmann 1994, p. 415)[261] implies a new process: since it deals with appearances, it is also indirectly related to things in themselves[262], that, consequently, are questioned again in the whole process of knowledge. The understanding might produce new judgements, as well as experiments and mathematical constructions to grasp things in themselves. For instance, without a schema of causality, it would be impossible to investigate particular causes through experiments. Fourthly, schematism, as recursive act of the understanding intended, makes the double definition of object as phenomena and as thing in themselves understandable. According to Bussmann, at this point, the unity between sensibility and understanding is only a vague one, from which it is possible only to produce judgements of perception, the objective value of which is not determined and does not allow a clear distinction between things in themselves and empirical objects in space. It is only through a further process of construction and experimentation that judgements of perception might become judgements of experience, provided with comparative validity, which then eventually turn into objective judgements (necessary and valid for everyone). Without this recursive and reflective action of the understanding, i.e. schematism, the twofold meaning to which Kant refers addressing to objects would not be clear.

> "But if the critique has not erred in teaching that the object should be taken in a twofold meaning, namely as appearance or as thing in itself." (KrV B XXVII)[263]

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258. Bussmann 1994, pp. 413-418.
259. Since the terminology is quite difficult and the references to the *Critique* are not abundant, I will here only report Bussmann's account and then, in the following subsection, I will make my own remarks.
260. "Ordnung in den Erscheinung."
261. "Erkenntnis durch Subsumtion."
262. From these passages we can see how Bussmann assums a realistic position concerning things in themselves.
263. "Hat die Kritik gar nicht geirrt, da sie das Objekt in zweierlei Bedeutungen nehmen lehrt, nämlich als Erscheinung, oder als Ding an sich selbst."

Fifthly, Bussmann's recursive model of schematism shows how the forms of our judgement differ from things in themselves: if it were not so, it would not be possible to explain the distinction between the recognition of a concept thought the reproductive imagination (that works as if it were a record of an already experienced image in the intuition) and new perceptions. Consequently, there would be no possibility to judge in an objective way and to know things instead of our forms of judgements.

Lastly, the schematism's model shows how pure concepts can contain further formal conditions of the sensibility. Schematism is a mean through which the understanding reflects on its own activity: when the understanding, through imagination, produces determinations in time; it becomes at the same time conscious of its conditions of productions (time and space), thus determining itself through time in a recursive activity (schematism).

According to Bussmann, given that these six points are central in the *Critique*, the schematism chapter is not a redundant addition to the Deduction, but rather the core of the whole project of *Critique of Pure Reason*.

5.3.4 Critical remarks

Bussmann's article is a clear example of how the schematism chapter might be refashioned from other philosophical perspectives, for instance that of Heidegger, as well as from a psychological point of view. First, Bussmann interprets the passages of the *Critique* from a clear different perspective. He often uses a terminology which is not Kant's, which leads to two consequences: on the one hand, it expresses the hermeneutic doctrine that we cannot but interpret the text in the light of later authors; the history of philosophy and the critical work of interpretation consists in a constant dialogue between the past and the present. On the other hand, if Bussmann's task is to clarify Kant's passages, it is problematic to explain them through a terminology[264] which presupposes a different philosophical theory. This is particularly problematic when one uses a theory and terminology that is as demanding and unclear as Heidegger's. Kant's doctrine of schematism is difficult to understand, and so we should use considerations that are more clear and more perspicious than his own. Rather than *reading* Kant through Heidegger, it is more instructive to *confront* both authors. For instance, Bussmann simply maps Kant's notions of productive and reproductive imagination and Heidegger's concepts of *abbilden-nachbilden-vorbilden* onto each other, without a preliminary inquiry on the legitimacy of this choice. Second, as emerged in his modified version of Kant's schematism as model of the understanding's activity, Bussmann is presenting a sort of adaptation of the schematism to a cognitive-psychological theory of faculties. As seen, he constantly refers to faculties and their activity, and some notions come abruptly in his article with no specific preliminary inquiry or clarification. One example concerns things in themselves. Bussmann addresses things in themselves while explaining the distinction between them and the appearances.

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264. For instance, notions such as: "Being" -"*Sein*"- (Bussmann 1994, p. 417), "available"– "*vorhanden*"- (Bussmann 1994, p. 414).

Here he assumes that appearances are objects of vague judgements (judgements of perception) while things in themselves of objective judgement in which the relation between understanding and sensibility (schematism) has been reflected (judgements of experience)[265]. This assertion raises some difficulties: is Bussmann assuming, that Kant has a realistic perspective on things in themselves? How is the reference to judgements of perception and of experience justified, given that they are topic of the *Prolegomena* and not of the *Critique*? There are several claims that seem to confirm that Bussmann has a realistic view of things in themselves: for instance, in II.3.5[266] he seems to allude to the possibility that we are affected by things in themselves, in order to explain the distinction between recognition of something that is situated under the forms of the judgement and perception of something brand new. Bussmann is not the first to refer to the possibility to be affected[267] by things in themselves, however, at least, he should have better inquired this problematic, introducing the reader to the problem and making more references to Kant's text. For instance, this interpretation should take into account Kant's claim[268] that of things in themselves only to refer to the possibility to think (not to know!) objects beyond the limits of experience. In this perspective, an affection through the things in themselves, is possible only insofar as it is regarded as the thought of an affection(which implies the category of causality) deprived of content. The cognition of such a relation is not in question, given that things in themselves are objects of the thinking (namely, of reason)[269]and can not be given in the possible experience.

5.4 Walsh's criticism of Kant's one way-schematisation

More than concentrating on the obscureness of some passages of the schematism chapter (concerning terminology, the notion of subsumption and sensibility and the examples provided from Kant) William Henry Walsh aims to underline its importance in order to understand not only meaning and use of categories (5.4.1), but also Kant's view of the nature of concepts. Moreover, in the section 5.4.2, I show how schemata are differentiated from empirical concepts, categories and ideas, while in 5.4.3 the discussion will turn towards Walsh's accusation that Kant's procedure of is excessively rigid: why should schematism work in one way only? Why categories must be determined only through time? Because of this criticism, he suggests to refashion schemata by putting aside the mechanical Newtonian physics and introducing non mechanical principles of organisations (such as analogy).

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265. Bussmann 1994, p. 416.
266. Bussmann 1994, p.416.
267. Cf. Bunte 2016, pp. 251–253.
268. KrV B XXXVI; KrV B307-308.
269. KrV B307.

5.4.1 The importance of the problem of schematism: use and meaning of categories

Similarly to many other interpreters who focus on the *Critique of Pure Reason*, Walsh underlines the difficulties to interpret the schematism chapter. He states that the arguments and terminology used are often unclear[270] as well as unclear is the point and results Kant aims to establish: even if assumed that the main purpose of the section is the one expressed in its first lines, namely to establish how categories are concretely empirically applicable (KrV A138/B177), the solution proposed is not freed from accusations and might seen as an artificial one. But despite this, Walsh aims to underline the reasons of the importance of the doctrine on schemata, not only within the work of the philosopher, but also in relation to the context of the time and today's debates[271]. With this purpose in mind, he first locates the schematism chapter within the overall project of the *Critique of Pure Reason:* he stressses how the chapter belongs to the transcendental logic, a discipline dealing with origins, sources and objective value[272] of the higher faculties (understanding, judgement and reason). In the section of "Analytic of Concepts", after having inquired the function of the understanding in its a priori operative power through concepts, Kant focuses on its use: the purpose of the schematism chapter is to deal with the conditions of the use of a priori concepts, that is at the basis of particular judgements. This consideration illuminates the function of the chapter within the *Critique of Pure Reason:* it is a necessary step in a broader inquiry into the faculty of knowledge in its conditions and use. Besides, Walsh stresses that the doctrine of schemata finds a further justification of its importance in other works of Kant and moreover also relates to the debate of the tradition he was confronting, as well as current disputes concerning meaning and significance of concepts. More specifically, schematism allows Kant to be situated in the controversy on the nature of non-empirical concepts, which saw as its main exponents of the time and the British empiricists, on the one side, and the rationalistic tradition from Descartes to Leibniz on the other side. But while the problem they all addressed is the same, Kant's solution is different although linked to both theories. On the one hand, Kant goes against the empiricists and agrees with the rationalists, in stating that there are concepts whose origin is remote from the senses; on the other, he supports the empiricists by rejecting the possibility of an intellectual intellection as well as an intuitive immediate use of the concepts. According to Kant, the understanding is exclusively a discursive faculty, not an intuitive one: from this perspective, it is assumed that there are pure concepts, whose roots can be found in pure logic that is in no sense empirical and therefore does not vary in content and is valid for every discursive understanding. If pure concepts have an empirical use, if they have meaning in relation to senses, this has to be distinguished from that of

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270. For instance, when Kant refers to schemata both as features of things or third things (KrV A138/B177) as well as to procedures (KrV A141/B180).

271. Walsh 1857/58, p. 95.

272. KrV A58/B82-83.

empirical concepts. This problem concerning the meaning of non-empirical concepts, in Walsh's view, is the actual topic of schematism, namely:

> "[…] to deal with the problem of the meaning and reference of a priori ideas, left conspicuously vague in the inaugural Dissertation." (Walsh 1957/58, p. 97)

In his Dissertation from 1770 Kant refers to forms both of the world of senses and the one of understanding, but does not focus on the possibility of referring non-empirical concepts to the world of senses. Therefore, the doctrine of schemata reveals its relevance not only for the *Critique of Pure Reason* and in the debate between empiricists and rationalists, but is also a new theory with respect to Kant's previous writings. Moreover, Walsh provides a third reason for the importance of the chapter: if its task consists of solving the problem of reference and meaning of a priori concepts, it is almost redundant to underline its relevance in the more contemporary debate on sense and reference, for instance, in relation to Frege, Quine, and Davidson. Putting the problem in terms of Frege's distinction according to which there may be words with meaning but lacking in reference, the question of schemata can be presented as follows: can pure concepts have a meaning, even if they are lacking in content? In what sense? And apart from this: does the fact that they have no empirical origin necessarily imply that they have no empirical use at all?

Kant's answers are based on the distinction between a logical and a real significance(in Frege's sense). First, categories are significant if they are intended as formal rules to make intelligible propositions, although they might not refer to anything. Walsh gives the example of the propositions of metaphysics:

> "[…] despite what positivists have said about metaphysicians talking nonsense, their books are not nonsense in the literal sense. There are rules for the use of even the most unpromising looking metaphysical term. […] to put it in terms of the well-known distinction of Frege's, it may be that their words have meaning but lack in reference. It may be that, for all their argument, they do not succeed in saying anything about anything." (Walsh 1957/58, pp. 97-98)

Hence, Walsh seems to say that, the significance of the categories deals with their application to the empirical level, despite the fact that their origin is pure. This empirical use of categories is interpreted by Walsh as similar to one of the main questions Hume confronts, i.e. to establish from which impression an idea derives. Nevertheless, Kant's position is more subtle[273] than Hume's, because it opens at least the possibility that concepts with no correspondent features in the world of experience might still have a kind of meaning[274]. But then the urgent question is: how can a schema make possible the empirical use of a non-empirical concept? What is Walsh's answer to this fundamental question?

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273. Walsh 1957/58. p.100

274. The well-known passage B57 might leave place to the possibility that concepts might not have an empirical content.

5.4.2 How to define schemata in distinction to empirical concepts, categories and ideas

Some lines of Walsh's paper suggests his hidden interpretation of categories as linguistic universal forms shared by humankind from nature. For instance, he states: "It is being argued that knowledge has two wholly distinct components, a priori or linguistic and a posteriori or factual, and that categories belong to the former." (Walsh 1957/58, p. 101).[275] Given that knowledge has two separate components, a priori (or linguistic) and a posteriori (factual) ones, how can the operations of the former be related to a particular content in order to result in something more than a mere linguistic game? What is the function of categories?

According to Kant categories have two important roles: first, if they are considered alone, they are useful in so far as they constitute the thought of things that are beyond possible experience; second, if connected to time, that is, the form of inner sense at the basis of everything given in the experience, these pure concepts can refer to concrete contents of experience and so constitute more than mere thoughts. Time-determination, then, seems to be Kant's solution for explaining the empirical use and meaning of categories. But this conclusion, if considered in detail, is more complicated than it might appear.

Firstly, Walsh notices how schematism, as presented in the opening passages by Kant, deals only with pure concepts and the problem of their heterogeneity to intuitions, and so does not deal with empirical concepts and intuitions. This interpretation could be supported by some passages of the *Critique of the Power of Judgement* (AA V, p. 351), in which the author states that only schemata are the proper exhibition of pure concepts, even though his examples are empirical ones. However, if we focus only on the *Critique of Pure Reason*, it is possible to find references (for instance KrV A141/B180) which support a broader use of schemata concerning mathematical as well as empirical concepts. How can this ambiguity be solved? According to Walsh, this discrepancy might be explained by referring to the fact that Kant was interested in the problem of the real reference of categories and then, after delving into it, he became aware of the importance of the question also in reference to other types of concepts. If so, then the function of schemata in general is to give to each concept a proper use in relation to sensible items, thus clarifying the relation among schemata

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275. Does this interpretation actually reflect Kant's exposition? Some lines of Kant's text might suggest such an interpretation: since Logic, which is the science dealing with understanding, is complete (KrV B VIII) from Aristotelian times, categories, as functions of the understanding, must be stable and rigid logical structures. Otherwise, when Kant refers to categories, he's committed in the development of a transcendental logic, that doesn't share the purpose of the formal Aristotelean one nor of an anthropological-biological one dealing with the existence of cognitive structures shared by humankind. When he states that categories are pure logical forms, he does so in order to address to their function of universal conditions of the possibility of experience, i.e. he engages himself with the transcendental question on knowledge. If the point of view is transcendental, then there is no reason, in this field, to open to this question, that deals, with fields of knowledge such as biology, psychology and anthropology, separated from a philosophical inquiry on the conditions of possibility of knowledge as Kant's one.

and images (the first being meaningful uses of a concept, while the second deal with the mere ability to actually visualise something):

> "[…] we must be able to imagine the sorts of situation to which it applies, which means having the ability to produce a series of images. Having this ability is what Kant means by possessing the schema of the concept in question, and it is obvious that what he says here applies to concepts generally." (Walsh 1957/58, p. 99)

Secondly, connected to this first problem, is the difficulty in understanding whether a schema has to be interpreted statically or dynamically, or, in other words, if as a "third thing" (KrV A138/B177) or the rule of a process (KrV A141/B180). According to Walsh, the two possibilities do not exclude each other, but rather stress two different focuses: while the second definition describes the general capability of schemata to indicate the circumstances to which concepts in general (not only pure ones) apply, the first case stresses that schemata have to assume a special (mediating) function in the case of a priori concepts, given their heterogeneity to intuitions.

Thirdly, Walsh stresses a further obscurity of the chapter referring to the meaning of "transcendental time-determination". Given the plausibility of determining categories through time, what is left is a good explanation of what that actually means. Walsh refers to the passage A149, defining schemata as features of things:

> "[…] phenomenal counterpart to what is thought in the pure category, a feature of things which can at once be identifies empirically and be taken to reflect the logical idea which is at pure category's root."(Walsh 1957/58, p. 102)

For instance, the schema of the permanence of the real in time corresponds to the category of substance, which is the logical notion of that which is always a subject and can never be predicated, while the schema of the invariable succession corresponds to the category of causality.

Interestingly enough, Walsh concludes that a schema can be regarded as a concept in the same way that categories are, but it has some advantage over them:

> "[…] a second concept which has the advantage over the category in its abstract form of being directly cashable in terms of sense-experiences, and yet be plausibly thought to provide an interpretation of it. And in each case, as the examples show, the schema has to do with determining the temporal relations within which the objects of human experience stand." (Walsh 1957/58, p. 102)

But there are serious difficulties in understanding the exact relation between each category and its schema. According to Walsh, this lack of clarity does not threaten the philosophical relevance of the schematism, which consists of Kant's distinction among pure and empirical concepts as a matter of logical order **276**the highest of which is found in the categories, as having a meaning which cannot be

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276. "[…] they (categories) are of a higher logical order than the everyday concepts which fall under them;" (Walsh 1957/58, p. 103)

grasped so directly as that of empirical concepts. Because of this, it becomes difficult to explain how these pure concepts might refer to experience and the importance of schemata lies in providing a solution to this question. But what about the other non-empirical concepts addressed by Kant, namely ideas? Are they condemned to be always beyond the sensible level?

Besides categories, empirical concepts and their schemata, Walsh stresses the presence in Kant's works of a "quasi-schematisation"(Walsh 1957/58, p. 103) of other concepts that are remote from senses too, namely the ideas of reason. But in this case the process which relates them to intuitions cannot be properly called schematisation, since no intuition is commensurable with ideas (AA V, pp. 351-354). However, it is possible to make meaningful use of them due to another procedure, namely symbolisation: to make an idea comprehensible, empirical situations might be used as models or analogies. Kant, for example, refers to the comparison between a monarchy and a living organism. In this analogical process:

> "[…] by means of an analogy […] the power of judgment performs a double task, first applying the concept to the object of a sensible intuition,and then, second, applying the mere rule of reflection on that intuition to an entirely different object, of which the first is only the symbol. Thus a monarchical state is represented by a body with a soul if it is ruled in accordance with laws internal to the people, but by a mere machine (like a handmill) if it is ruled by a single absolute will, but in both cases it is represented only **symbolically**. For between a despotic state and a handmill there is, of course, no similarity, but there is one between the rule for reflecting on both and their causality." (AA V, p. 352)[277]

A monarchy differentiates from a living organism (we could say that they belong to different "orders" or conceptual fields of reference). For this reason they do not share the very same meaning, but the one might be helpful in making partial sense of the other, because the two are analogically related, i.e. they share a similarity in the way the elements they consist of are related. Interestingly enough, in Walsh's interpretation, one of the novelty introduced by Kant is the relation between ideas, categories, symbols and schemata in respect to intuition: Kant does not opposes symbols and intuitions as some of his predecessors (for instance, Leibniz) do, but rather he stresses the contrast between intuitive and discursive elements in cognition. In the *Critique of the Power of Judgement* he asserts:

> "The use of the word symbolic in contrast to the intuitive kind of representation has, of course, been accepted by recent logicians, but this is a distorted and incorrect use of

277. "Die Urteilskraft ein doppeltes Geschäft verrichtet, erstlich den Begriff auf den Gegenstand einer sinnlichen Anschauung und dann zweitens die blosse Regel der Reflexion uber jene Anschauung auf einen ganz andern Gegenstand, von dem der erstere nur das Symbol ist, anzuwenden. So wird ein monarchicscher Staat durch einen beseelten Körper, wenn er nach inneren Volksgesetzten, durch eine blosse Maschine aber (wie etwa eine Handmühle), wenn er durch einen einzelnen absoluten Willen neherrscht wird, in beiden Fallen aber nur symbolisch vorgestellt. Denn zswischen einen despotischen Staate und einer Handmühle ist zwar keine Ähnlichkeit, wohl aber zwischen den Regeln, über beide und ihre Causalität zu reflectieren."

the word: for the symbolic is merely a species of the intuitive. The latter, namely (the intuitive), can be divided into the schematic and the symbolic kinds of representation." (AA V p. 351)[278]

In Walsh's interpretation the root of the discrepancy between schemata and symbols lies in this gap between the possibility to demonstrate the former and the arbitrariness of the latter[279]. It is possible to demonstrate the correspondence between category and its schema in the sense that each category can be schematized in one way only; while a symbol reflects an idea in a variety of modalities, thus stressing the arbitrariness of this process.

5.4.3 Walsh's fundamental criticism to Kant: an incorrect view of metaphysics and the project of "organic" schemata

Once underlined both the importance as well as the limitations of Kant's theory of schemata, Walsh criticizes Kant's interpretation of traditional metaphysics and the definitiveness and uniqueness of the correspondence between category and schema.

As discussed, categories form the basis of objective knowledge insofar as they are empirically applicable. In contrast, according to Kant, metaphysicians pretend to ground objective knowledge referring only to pure, abstract and definitive concepts, which do not deal with experience and therefore possess no empirical meaning at all. This is, at least, how Walsh reads Kant:

"Even the most abstract and scholastic system of metaphysics, on this way of thinking, has some basis in fact […]. Thus notions like the notion of a monad are not, as Kant would have suppose, nothing more than logical skeletons dressed, but have real flesh on their bones thanks to the fact that they originate in particular experiences. And accepting them does not, as opponents of metaphysics allege, bring us news from nowhere, but enables us rather to see familiar objects and events in a new illuminating way." (Walsh 1957/58, p. 105)

The interpretation Kant gives of metaphysics is, in Walsh's view, a misleading one: metaphysics does not consist in nothing more than a sort of "circle of words" (Walsh 1957/58, p. 105), but is always related to experience. Metaphysics, then, is considered as a method of interpreting the world of experience and the discrepancies

278. "Es ist ein von den neuern Logikern zwar angenommener, aber sinnverkehrender, unrechter Gebrauch des Worts symbolisch, wenn man es der intuitiven Vorstellungsart entgegensetzt; denn die symbolische ist nur eine Art der intuitiven. Die letztere (die intuitive) kann nämlich in die schematische und in die symbolische Vorstellungsart eingetheilt werden."

279. Walsh characterizes here the difference between schemata and symbols relying on the arbitrariness of the link of the second to the idea they correspond to. But, actually, Kant does not describe to symbols as arbitrary elements of cognition; rather he states that while schemata are demonstrative exhibitions of pure concepts, symbols are analogical ones. Arbitrariness and analogy are deeply different notions: the former indicates the absence of regularity, while the latter maintains the reference to a kind of regularity, that - differently from a demonstrative procedures such as the structure of a syllogism - might be intended as a mathematical proportion. That is still a way of trying to provide explanations, although not conclusive and demonstrative ones.

it contains through the reference to symbolic notions, that do not constitute a perfect world beyond our senses, but rather are concepts that enable us to explain objects, that otherwise would remain unintelligible.

The second fundamental objection presented by Walsh concerns the necessity of the way in which Kant illustrates the schematisation of categories. According to Walsh, an important topic is still open: namely the reason why concepts that are remote from the senses can be meaningful if and only if they are schematised, and whether this schematisation has to be carried out in the way described by Kant. In contrast to other critics (for instance Zschocke), Walsh notices[280] that Kant suggests the necessity, or at least, the possibility of replacing time with space-determination, but unfortunately does not develop it. Besides this, the difficulty in explaining why schematism has to be developed in one way (time or space) only is still left open. To Walsh, this rigidity of Kant finds its roots in the influence of Newton's physics, regarded as a hidden model to elaborate a unique and static system of categories and principles, the application of which is in turn based on schemata. However, interestingly enough, Walsh does not limit himself to stress the limitations of Kant's doctrine, but rather proposes a new solution to overcome them. In the concluding passages of his paper he suggests developing organic schemata, more dynamic and "alive" than the rigid and mechanic Kantian ones:

> "Elements in an organic complex would here take the place of elements in a temporal situation. Substance might be interpreted in terms of growth and form as opposed to what underlies mechanical change, and causality be thought of in terms of purpose and function." (Walsh 1957/58, p.106)

If such a project were fulfilled, it would be possible to elaborate a new philosophical system, dealing with the account of the presupposition of experience, which far from the Newtonian mechanic rigidity, would, on the contrary, re-echo the Aristotelian teleological conception of the world. It is true, that Kant deals with the teleological principles in the *Critique of the Power of Judgement* (AA V, pp. 381-389) but, according to the critic, he does not engage himself deeply in it and fails in understanding their role in elaborating schemata. Nevertheless, Walsh concludes, since there is no concrete alternative to Kant's theory on schemata:

> "Kant's doctrine of schematism, if not altogether satisfactory at the theoretical level, will continue to stand on the strong empirical ground that the schemata offered do enable us to give real meaning to the categories and find for them a genuine use." (Walsh 1957/58, p.106)

5.4.4 Critical remarks

Walsh' first accusation, based on the statement that Kant is wrong in addressing metaphysics as a discipline unrelated to experience, provokes some points of discussion. Walsh states that:

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280. Walsh 1957/58, p.102.

> "Even the most abstract and scholastic system of metaphysics, on this way of thinking, has some basis in fact: every metaphysician seizes on some feature or aspect of the world which he proceeds to make central in the system he constructs. Thus notions like the notion of a monad are not, as Kant would have us suppose, nothing more than logical skeleton dressed up, but have real flesh on their bones thanks to the fact that they originate in particular experiences. And accepting them does not, as opponents of metaphysics allege, bring us news from nowhere, but enables us rather to see familiar objects and events in a new illuminating and way."(Walsh 1957/58, p. 105)

I think that this evaluation of metaphysics as having "some basis in facts" is somehow unclear in Walsh's account and it can be interpreted in at least two ways: first, as the claim that metaphysical entities, even the most abstract, are generated in our experience or second, that metaphysical questions originate from empirical observations, thus helping us in our inquiry, giving us general abstract concepts that could help in elucidating our problems. But how can the first possibility be justified, from Kant's perspective? If metaphysical notions originate in experiences, they should be the result of a process of abstraction and therefore they would have no "flesh and bones": they would be only concepts with no particular empirical content. Thus, it should be more reasonable to support the second possibility and agree that all philosophical questions can find as a starting point some circumstances of experience: for instance, Aristotle's unmoved mover is nothing more than a pure metaphysical principle that has to explain an empirical event, namely, change; or the metaphysical "real entities"[281] Johann Freiderich Herbart refers to in order to explain the difficulties concerning contradictions of the senses. However, the actual accusation of Kant against the metaphysics is that their solutions are not sufficiently grounded and therefore they do not succeed in providing explanations but rather leads to mere daydreams and therefore it has to be refuted. In other words, Kant does not reject metaphysics because it is has no reference at all to experience, but because this doctrine, although its questions can come from experience, has not succeed in explaining them properly. It is an accusation based on a lack of methodology and not an accusation to metaphysics with regard to its topics: Kant is not actually proposing an abandonment of metaphysics, but rather a methodological reform, based on the claim that knowledge has to be inquired systematically, establishing links between faculties and objects in order to examine each entity in its legitimate field of reference. Hence a fundamental mistake of traditional metaphysics consists of the amphiboly of concepts of reflection, which is given by the lack of an adequate reflection:

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281. In his *Hauptpuncte der Metaphysik* Herbart proposesa doctrine in which he explains the contradictions provided by experience through the reference to a conceptual meta-level of real entities. For instance, to explain that a substance has some characteristics, but it does not consist in the mere sum of them, he relies on a unknown x, a limit-concept, to explain it. The same with the notion of causality and change. Concepts-limits, sort of noumena (but with a different, positive meaning), have to be put in order to justify the contradictions provided by experience (Herbart 1808, *§1-14*). To Herbart, metaphysics is like an arch: it originates from questions concerning experience, then move to a meta level of realities able to justify the contradictions founded and finally come back to experience (Herbart 1093, vol. VIII, *§163*).

> "Reflection *(reflexio*) […] is that state of mind in which we first prepare ourselves to find out the subjective conditions under which we can arrive at concepts. It is the consciousness of the relation of given representations to our various sources of cognition; through which alone their relation among themselves can be correctly determined. The first question prior to all further treatment of our representations is this: In which cognitive faculty do they belong together? Is it the understanding or is it the senses before which they are connected or compared?" (KrV A260/B316)[282]

Only by avoiding amphibolies of concepts, it is possible to elaborate a system of knowledge including metaphysics, differentiated into metaphysics of morals aimed at proving (the a priori principles of actions) and of nature (in general), i. e. an ontology dealing with the conditions of the natural objects, at the basis of particular sciences. In this way Kant's system reveals itself as a metaphysics[283]: not beyond the particular disciplines, but at their basis:

> "Now the philosophy of pure reason is either **propaedeutic** (preparation), which investigates the faculty of reason in regard to all pure [a priori] cognition, and is called critique, or, second, the system of pure reason (science), the whole (true as well as apparent) philosophical cognition from pure reason in systematic interconnection, and is called **metaphysics**. […] Metaphysics is divided into the metaphysics of the **speculative** and the **practical** use of pure reason, and is therefore either **metaphysics of nature** or **metaphysics of morals.** The former contains all rational principles from mere concepts (hence with the exclusion of mathematics) for the **theoretical** cognition of all things; the latter, the principles which determine action and omission a priori and make them necessary." (KrV A841/B869)[284]

These observations put into question Walsh's accusation: he disregards the actual motivations of Kant's criticism to the traditional metaphysics, namely the lack of an adequate method.

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282. "Die Überlegung (reflexio) […] ist das Bewußtsein des Verhältnisses gegebener Vorstellungen zu unseren verschiedenen Erkenntnisquellen, durch welches allein ihr Verhältnis unter einander richtig bestimmt werden kann. Die erste Frage vor aller weitern Behandlung unserer Vorstellung ist die: in welchem Erkenntnisvermögen gehören sie zusammen? Ist es der Verstand, oder sind es die Sinne, vor denen sie verknüpft, oder vergleichen werden?"

283. **K**ant stresses in several other passages, that he wants to transform the procedure of metaphysics (B KrV XXII), the "queen of all sciences" (KrV A VIII) and replace the incorrect procedure of those methaphysics that aimed to know objects beyond the limit of cognition with the idea of metaphysics as the science concerning the first principles of knowledge (Cf. Baumgarten, *Metaphysica*, *§1*).

284. "Die Philosophie der reinen Vernunft ist nun entweder Propädeutik (Vorübung), welche das Vermögen der Vernunft in Ansehung aller reinen Erkenntnis a priori untersucht, und heißt Kritik, oder zweitens das System der reinen Vernunft (Wissenschaft), die ganze (wahre sowohl als scheinbare) philosophische Erkenntnis aus reiner Vernunft im systematischen Zusammenhange, und heißt Metaphysik. […] Die Metaphysik teilet sich in die des spekulativen und praktischen Gebrauchs der reinen Vernunft, und ist also entweder Metaphysik der Natur oder Metaphysik der Sitten. Jene enthält alle reine Vernunftprinzipien aus bloßen Begriffen (mithin mit Ausschließung der Mathematik) von dem theoretischen Erkenntnisse aller Dinge; diese die Prinzipien, welche das Tun und Lassen a priori bestimmen und notwendig machen."

A second reason of perplexity regards Walsh's understanding of Kant's system of principles as possessing a static and rigid validity. According to his interpretation, it seems that Kant gives a mere mechanical interpretation of the laws of natures, one that does not comprehend, for instance, more dynamic rules, such as organic or teleological ones. Besides the already considered Cassirer's defence[285] of Kant against the interpretation of the categories as Newtonian mechanical laws, it's important to stress that it is Kant himself,when discussing the principle of causality, who refers to a non-mechanical principle, namely, analogy. An analogy is comparable to a mathematical proportion: it does not consist in the identity between the terms of a relation, but rather between the rules according to which they are linked. Moreover, (as I will present in more detail in 5.7) in the *Opus Postumum*, Kant suggests to elaborate a particular schematism, that works dynamically through forces such as the organic one are made. One of the aims of the *Opus postumum*[286] is to bridge the gap left unsolved in the *Metaphysical Foundations of Natural Science*, namely that between the conditions of the nature in general and those of the nature in particular in a similar way as the schematism aims at "realise" the pure concepts

Apart from these remarks, Walsh's interpretation is rich in hints to a large variety of topics that stresses the importance and actuality of Kant's schematism: from his reading of the text in the perspective of Frege's distinction between meaning and reference, to his own original way to refashion schemata.

5.5 "Knowing that and knowing how": The transcendental meaning of schemata in Dahlstrom's interpretation

In this section I will present Daniel Dahlstrom's defence of the importance of Kant's doctrine of transcendental schemata by referring to the separation between "knowing that" something is the case, and "knowing how" it is. One thing is the possession of a concept, (categories as transcendental principles of the unity of knowledge that must be applied to experience); one other is the knowledge of the use (how they are applicable to experience).

In the conclusive critical remarks I will stress the difficulties to find an adequate justification of this separation, that might be regarded as a mere psychological or descriptive one. Dahlstrom seems to be aware of them, however, a possible help to solve this worries might be given relying on the difference between *intellectualis* and *speciosa synthesis*.

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285. Cassirer 1907.

286. Cf. Marcucci 2001; Mathieu 1989.

5.5.1 "Knowing that and knowing how"

The aim of Dahlstrom's paper *Transzendentale Schemata, Kategorien und Erkenntnisarten* of 1984 is to stress how one of the key to evaluate significance and role of the section on schematism is provided by focusing on the distinction between "how" and "that" at both empirical and transcendental levels.

An opponent of this position is Prichard, who claims[287] that there is no need of a schematism: if categories are valid, then they are applicable. According to Dahlstrom, Prichard's criticism disregards the distinction between the case of pure concepts and that of the empirical ones:

> "As Kant's own commitment to experimental science demands, there is a legitimate distinction to be drawn between possession and applicability of empirical concepts. By contrast, a successful transcendental deduction of the categories, ie., the demonstration of their validity, effectively establishes the very equivalence of categorial possession and their proper applicability." (Dahlstrom 2011,p.18)

Some of our concepts[288] are empirical (such as 'dog') and can be translated without difficulty into sensible images thanks to particular rules of construction, called empirical schemata. Since there are several way to bring a concept into an image, the way to translate them is not universal and these schemata are contingent and not a priori. A different case is the one of categories, which on the one hand cannot be represented in sensible images but on the other have to be related with necessity to the empirical level, insofar as they are conditions of possibility of experience. To solve the apparent impossibility of the link between pure concepts and sensibility, a type of schemata, which differ from the empirical ones, is needed; namely, transcendental schemata, which are functions that through the mediation of the form of time (which is homogeneous to both the concepts and the intuition**s)** show how to apply categories to experience. But what does the relation between transcendental schemata and categories consist in? This diversification is not clearly defined by Kant; however, Dahlstrom draws attention[289] to some passages of the *Critique of Pure Reason* that might be helpful to support, at least, Kant's intention to make this distinction. For instance Kant defines the "Analytic of principles" as a canon of the judgement:

> "The **analytic of principles** will accordingly be solely a canon for **the power of judgement** that teaches it to apply to appearances the concepts of understanding, which contain the condition for rules *a priori.* (KrV A132/B171)"[290]

In this sense, schematism has the task to provide categories with a proper and correct use, thus suggesting that there is a distinction between possession and use

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287. Prichard 1909, p. 246.
288. Dahlstrom 1984, p.42.
289. Dahlstrom 1984, p. 44.
290. "Ein Kanon fur die Urteilskraft […], der sie lehrt, die Verstandesbegriffe, welche die Bedingungen zu Regeln a priori enthalten, auf Erscheinungen anzuwenden."

of pure concepts. Moreover, schemata[291] give a help to ensure the correctness of judgements, thus providing a priori indications for the cases to which categories have to be applied. However, these definitions provided by Kant are not clear enough to clarify the distinction between transcendental schemata and categories**.** For instance: is it possible to provide through a schema the a priori case of the application of the category without already presupposing this case? Why is a category alone not already sufficient to indicate it and why does schematism not lead to a *regressum ad infinitum* in the search for the condition of the possibility of the categories' application? According to Dahlstrom, Kant makes a distinction between categories and their condition of applicability. If schemata are the above mentioned conditions, then the objective meaning of categories depends on them. A category might have a logical meaning but not an objective one, and for this reason schemata are necessary:

> "Thus the schemata of the pure concepts of understanding are the true and sole conditions for providing them with a relation to objects thus with **significance**." (KrV A146/B185)[292]

Schemata, therefore, can provide categories with an objective meaning insofar as they determined a priori the inner sense, through a pure synthesis produced by the transcendental faculty of imagination[293]. They are not mere rules, but time-determinations according to rules[294].

This is clear in the case of an empirical concept, where it is possible to distinguish between thinking and knowing, between possession and application of a concept to an object:

> "If it is a matter of cognitive applicability, that is to say, a matter of being able to recognize an object as an instance of a concept, possessing an empirical concept is by no means equivalent to being able to apply it. […] the lack of an equivalence between possession and cognitive applicability of an empirical concept is one of the feature that distinguish empirical concepts from the categories. And this non equivalence entails a different relation between the concepts and schemata. Empirical concepts may have accompanying schemata, but these procedures, like the images they yield, are neither universal nor necessary. How you form an image of a concept of economy or a concept of polluted air, if you can be said to have such a procedure at all, need not be the same as my technique for imagining instances of these concepts." (Dahlstrom 2011, pp. 19-20).

However, the case of pure concepts is different from that of the empirical ones: categories can have a meaning without being referred to experience (i.e. a logical

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291. KrV A135/B174.

292. "Also sind die Schemata der reinen Verstandesbegriffe die wahren und einizigen Bedingungen, diesen eine Beziehung auf Objekte, mithin Bedeutung zu verschaffen."

293. Schemata are mediating elements between categories and sensibility (KrV A138/B177); they are subsuming functions at the basis of the possibility of the application of categories to appearances (KrV A139/B178); they determined the inner sense in accordance to rules (categories) (KrV A145-146/B184-185); this temporal determination is a pure synthesis produced by the transcendental imagination (KrV A142/B181).

294. Dahlstrom 1984, p. 45.

one[295]), but insofar as they are regarded not as mere logical rules but as conditions of possibility of experience (as demonstrated through the "Transcendental Deduction"), possession and applicability of categories must be the same: there is no experience outside the limits of categories, which are referred with necessity to objects. According to Dahlstrom this point is actually a valid criticism to the separation between "how" and "that": one of the most important of the whole *Critic of Pure Reason*, the main purpose of which consists of the demonstration of the necessary relation between the possession of a category and the knowledge of an object of experience in general:

> "[…] the categories contain the grounds of the possibility of all experience in general on the side of the understanding. But more about how they make experience possible, and which principles of its possibility they yield in their application to appearances, will be taught in the following chapter on the transcendental use of the faculty of judgement." (KrV B167)[296]

However, it is still possible to give significance to the separation lies in the stress on the generality of categories and the specificity of schemata: One thing is that categories must be applied to experience, another is how *each* category is applied to experience.: "[…] the schematism is concerned, not with the procedure in general, but with finding the specific temporal form necessary for each category". (Dahlstrom 2011, p. 20)

If the distinction makes sense, then the schematism chapter and "Transcendental Deduction" are both necessary; otherwise, the former would be a mere repetition of the latter. But critics differ in interpreting the above mentioned passage: on the one hand some interpreters focus on the distinction between 'that' and 'how' regarding the knowledge how as psychological (by Pippin, for instance[297]). On the other, many (such as Detel[298]) stress the importance of developing such an inquiry inside transcendental research, as a last step of the "Transcendental Deduction".

The interpretation of Dahlstrom, which relies on the distinction between two modalities of knowledge (that and how), provides ground in this direction: he evaluates schematism as possessing its own transcendental role distinct from the one of the deduction. One thing is the knowledge that x is something; another is the knowledge of how such a knowledge is possible (it is possible to understand that x is a dog without knowing how such a knowledge is possible). Yet, this distinction seems to be meaningful only inside a transcendental research, where transcendental[299] is

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295. For instance, in some plays, we can use words that are not referred to any object. (Dahlstrom 1984, p. 49)

296. "[…] die Kategorien von Seiten des Verstandes die Grunde der Möglichkeit aller Erfahrung Überhaupt enthalten. Wie sie aber die Erfahrung möglich machen, und welche Grundsätze der Möglichkeit derselben sie in ihrer Anwendung auf Erscheinungen an die Hand geben, wird das folgende Hauptstück von dem transz. Gebrauche der Urteilskraft das mehrere lehren."

297. Cf. Pippin 1976.

298. Cf. Detel 1978.

299. To give evidence of th etranscendental value of the distinction between categories and schemata, Dahlstrom refers to KrV B 151: KrV B152; KrV B 162.

interpreted as the inquiry on the conditions of possibility of knowledge, which is distinct from mere empirical knowledge.

As Dahlstroms points out:

> "What I am suggesting, then, is that for Kant to be able to sustain his argument, the relation or, better, knowledge of the relation between "knowing that" and "knowing how" in the transition from Analytic of Concepts to the Analytic of Principles (i.e., between categories' deduction and schematization) has to be transcendental. By "transcendental" I mean that each term of the relation, i.e., each type of knowledge, is a ground for the possibility of the other, and that there needs to be some principle making knowledge of the relation possible a priori" (Dahlstrom 2011, p. 27)

But how can such a a transcendental separation be explained? Why cannot it be a mere psychological or descriptive separation?

5.5.2 Critical remarks

Dahlstrom himself recognizes that the main criticism that can be moved against the necessity of the schematism chapter is based on the validity of the distinction between "knowing that" and "knowing how." A footnote of the *Metaphysical Foundations of Natural Science* might be regarded as an evidence in favour of those who negate the importance of the distinction:

> "For it can be proved that the categories which reason must make use of in all its knowledge have no other use than merely in relation to objects of experience […] then the answer how they make such possible is, to be sure, important enough in order to complete this deduction when possible, but in relation to the chief purpose of the system, viz., the determination of the boundary of pure reason, it is no way necessary, but simply helpful." (AA IV, p. 474)[300]

This passage has been interpreted not only by Dahlstrom but also by Pippin and Detel. The former claims[301] that it does not refer to transcendental schemata, but rather concerns a psychological inquiry on "how" concepts are applied; in contrast, the latter, states that it refers to the distinction between categories and schemata and that Kant assumes that schematism is only a further elaboration or completion[302] of the Deduction. Dahlstrom suggests a third possibility, relying on Kant's own words: "in relation to the chief purpose of the system". Considering the determination of the boundary of pure reason, schematism is not a necessary step, because categories

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300. "Denn wenn bewiesen werden kann, daß die Kategorien, deren sich die Vernunft in allem ihrem Erkenntniß bedienen muß, gar keinen anderen Gebrauch, als blos in Beziehung auf Gegenstände der Erfahrung haben können […], so ist die Beantwortung der Frage, wie sie solche möglich machen, zwar wichtig genug, um diese Deduction wo möglich zu vollenden, aber in Beziehung auf den Hauptzweck des Systems, nämlich die Grenzbestimmung der reinen Vernunft, keinesweges nothwendig, sondern blos verdienstlich."

301. Pippin 1976b, p. 160.

302. Detel 1978, p. 44.

are sufficient to indicate the general conditions of possibility of cognition. But if the aim is to show how each specific category is applied, then schemata are necessary.

I agree with this position: Detel's statement that schematism is a further elaboration of the deduction disregards the importance of the distinction between "that" and "how", while Pippin's distinction between a transcendental and a psychological schematism is not so easy to demonstrate in reference to the passage above mentioned, because there Kant makes no allusion to such a distinction. Nevertheless I think that Dahlstrom's tendency to claim the transcendental validity of the distinction between "how" and "what" might still generate some problematic. He is aware of most of them, as suggested by his worries concerning the validity of the separation between the *ordo essendi* (know that) and *ordo cognoscendi* (know how):

> "The ordo essendi of Kant's subject's matter […] is transcendentally constituted and, in that sense, inseparable from the ordo cognoscendi. In other words, conditions of the possibility of real experience are also cognitive principles, o.e., principles of knowing that experience. […] is it legitimate to claim that one knows something, particularly something universal and necessary, if one cannot account for how this universal and necessary feature applies to its supposed field of application?" (Dahlstrom, 2011 p. 30)

A possible solution (that would be the position of Pippin) might be to claim that there is in principle, no actual distinction between knowing "that" and "how" and the reason of the separation is given only by a matter of order of exposition[303]. This solution, according to Dahlstrom raises some perplexities concerning the justification of this distinction, but it opens a path for a clarification of the problem, that can be further elaborated if we refer to the distinction between *intellectualis* and *speciosa syntehsis* and to Dahlstrom's explanation of the footnote above quoted. On this, I agree with Dahlstorm in focusing on the perspective in which the distinction between "that" and "how" is made: in relation to the general purpose of the system, categories can already indicate the general grounds of the possibility of cognition of an object in general. In principle, then, they should indicate the case to apply a rule. In principle, but not for an i*ntellectus ectypus*, whose synthesis needs not only categories. Kant states:

> "This synthesis of the manifold of sensible intuition, which is possible and necessary a priori, can be called figurative (*synthesis speciosa*), as distinct from that which would be thought in the mere category in regard to the manifold of an intuition in general, and which is called combination of the understanding (*synthesis intellectualis*); both are transcendental, not merely because they themselves proceed a priori but also because they ground the possibility of other cognition a priori.
>
> Yet the figurative synthesis, if it pertains merely to the original synthetic unity of apperception, i.e., this transcendental unity, which is thought in the categories, must be called, as distinct from the merely intellectual combination, the transcendental synthesis of the imagination." (KrV B151)[304]

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303. Dahlstrom 2011, p.30.

304. "Diese Synthesis des Mannigfaltigen der sinnlichen Anschauung, die a priori möglich und nothwendig ist, kann figürlich (*synthesis speciosa*) genannt werden zum Unterschiede von der-

Some lines above this passage, Kant stresses that we could think about an object of a non-sensible intuition[305] which, consequently, regards the "that" and not the "how". Cohen seems to have a similar point of view when he stresses the transcendental importance of schematism by relying on the difference between object in general and object of experience: the former lies on a synthesis that relies on categories, the latter to the unity of both categories and forms of intuition[306]. This might find some evidence in the following passage concerning the definition of a transcendental object, that might be regards as the most general possible way to conceive an object:

> "This signifies, however a something = x, of which we know nothing at all nor can know anything in general (in accordance with the current constitution of our understanding), but is rather something that can serve only as a correlate of the unity of apperception for the unity of the manifold in sensible intuition, by means of which the understanding unifies that in the concept of an object."(KrV A 250)[307]

In this sense, the distinction between categories and schemata might lie on the separation between "knowing that" and "knowing how", intended as the distinction between the necessity of the application of categories and their specific application through time in the case of the *speciosa synthesis* of the imagination.

5.6 Guyer's criticism of the temporality of schemata and their unclear relation to categories

The next interpreter that I shall consider is Paul Guyer. In 5.6.1. I will present how Guyer harshly criticizes the temporal nature of Kant's schemata by underlining that it might be the case that a category applies to representation that do not require a temporal principle of unification, but only space. In 5.6.2. I will report Guyer analysis of the unclear relation between categories and their correspondent schemata and then provides some critical remarks.

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jenigen, welche in Ansehung des Mannigfaltigen einer Anschauung überhaupt in der bloßen Kategorie gedacht würde und Verstandesverbindung (*synthesis intellectualis*) heißt; beide sind transscendental, nicht bloß weil sie selbst a priori vorgehen, sondern auch die Möglichkeit anderer Erkenntniß a priori gründen. Allein die figürliche Synthesis, wenn sie bloß auf die ursprünglich synthetische Einheit der Apperception, d. i. diese transscendentale Einheit, geht, welche in den Kategorien gedacht wird, muß zum Unterschiede von der bloß intellectuellen Verbindung die transscendentale Synthesisder Einbildungskraft heißen."

305. KrV B149.

306. Cohen 1918, p. 495.

307. "Dieses bedeutet aber ein Etwas = x, wovon wir gar nichts wissen können, sondern, welcher nur als ein Correlatum der Einheit der Apperzeption zur Einheit des Mannigfaltigen in der sinnlichen Anschauung dienen kann, vermittelst deren der Verstand dasselbe in den Begriff eines Gegenstandes vereinigt."

5.6.1 Schemata and temporality

Guyer develops a severe critique of the temporality of schemata:

> "Kant's reason for holding that all the schemata must be time-determination is that as the form of the inner sense time is the form of all representations, those of inner sense directly and those of outer sense indirectly, while as the form of the outer sense space is the form only of some of our representations; thus if there were spatial schemata for the categories, they could apply only to some but not all of our representations. But to infer from this that there can be no spatial schemata for any of the categories would require the additional assumption that *each* of the categories must be able to be applied to *all* of our experiences, while Kant does not explicitly assert." (Guyer 2006, p.98)

In other words, it might be the case that a category applies to representations which require only a spatial schema and not also a temporal one. Unfortunately, the author does not provide any example and he limits his criticism to stress this lack in Kant's thought.

Beyond this general observation, Guyer draws attention to some incongruences of Kant's definitions of schemata, in particular those of number and magnitude. First, he states that the schema of a number can be provided not only by units of time, but also of space. The definition of schema of magnitude determines only that a number is "a representation that summarizes the successive addition of one (homogeneous) unity to another" (KrV A142/B182)[308] without specifying which kind of unities are to be added. Therefore it might be the case that a schema of magnitude determines representations of sum of spatial unities. Second, there are cases in which the involvement of space seems to be inevitable: for instance in the case of a causal relation, in which cause and effect are contiguous and not only temporally related. However, in both cases the necessity of a time-determination seems not to be in question. A sum of unities is always a temporal one: a sum is by definition provided by a process of addition, that is a succession and therefore temporal. In a similar way causality, consists of the necessity of the succession of cause and effect and therefore it occurs through time. This is also the case if the two terms implied in a simultaneous process of causation are contiguous. But the more interesting accusation concerns some passages which might put into question the priority of space over time. It is Kant himself who claims that some temporal relations can be represented only through spatial ones; for instance in the passage B155:

> "The understanding therefore does not **find** some sort of combination of the manifold already in inner sense, but **produces** it, by **affecting** inner sense. But how the I that I think is to differ from the I that intuits itself (for I can represent other kinds of intuition as at least at possible) and yet be identical with the latter as the same subject, how therefore I can say that **I** as intelligence and **thinking** subject cognize myself as an object that is **thought**, insofar as I am also given to myself in intuition, only, like other

308. "[…] die Zahl, welche eine Vorstllung ist, die die sukzessive Adddition von Einem zu Einem (Gleichartigen) zusammenbefasst."

phenomena, not as I am for the understanding but rather as I appear to myself, this is no more and no less difficult than how I can be an object for myself in general and indeed one of intuition and inner perceptions. But that it really must be so can be clearly shown, if one lets space count as a mere pure form of appearances of outer sense, from the fact that time, although it is not itself an object of outer intuition at all, cannot be made representable to us except under the image of a line, insofar as we draw I without which sort of presentation we could not know the unity of its measure at all, or likewise from the fact that we must always derive the determination of the length of time or also of the positions in time for all inner perceptions from that which presents external things to us as alterable; hence we must order the determinations of inner sense as appearances in time in just the same way as we order those of outer sense in space; hence if we admit about the latter that we cognize objects by their and only insofar as we are externally affected, than we must also concede that through inner sense we intuit ourselves only as we are internally affected by **our selves**, i.e.., as far as inner intuition is concerned we cognize our own subject only as appearance but not in accordance with what it is in itself."(KrV B155-156)[309]

And elsewhere:

"It is even more remarkable, however, that in order to understand the possibility of things in accordance with categories, and thus to establish the **objective reality** of he latter, we do not merely need intuitions, but always **outer intuitions**. If we take, e. g., the pure concept od relation, we find that 1) in order to give something that **persists** in intuition, corresponding to the concept of **substance** (and thereby to establish the objective reality of this concept), we need an intuition in space (of matter), wince space alone persistently determines, while time, "however, and this everything that is in inner sense, constantly flows" (KrV B291)[310]

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309. "Der Verstand *findet* also in diesem nicht etwa schon eine dergleichen Verbindung des Mannigfaltigen, sondern *bringt sie hervor*, indem er ihn *affiziert*. Wie aber das Ich, der ich denke, von dem Ich, das sich selbst anschauet, unterschieden (indem ich mir noch andere Anschauungsart wenigstens als möglich vorstellen kann) und doch mit diesem letzteren als dasselbe Subjekt einerlei sei, wie ich also sagen könne: *Ich*, als Intelligenz und *denkend* Subjekt, erkenne *mich* selbst als *gedachtes* Objekt, so fern ich mir noch über das in der Anschauung gegeben bin, nur, gleich andern Phänomenen, nicht wie ich vor dem Verstande bin, sondern wie ich mir erscheine, hat nicht mehr auch nicht weniger Schwierigkeit bei sich, als wie ich mir selbst überhaupt ein Objekt und zwar der Anschauung und innerer Wahrnehmungen sein könne. Daß es aber doch wirklich so sein müsse, kann, wenn man den Raum für eine bloße reine Form der Erscheinungen äußerer Sinne gelten läßt, dadurch klar dargetan werden, daß wir die Zeit, die doch gar kein Gegenstand äußerer Anschauung ist, uns nicht anders vorstellig machen können, als unter dem Bilde einer Linie, so fern wir sie ziehen, ohne welche Darstellungsart wir die Einheit ihrer Abmessung gar nicht erkennen könnten, imgleichen daß wir die Bestimmung der Zeitlänge, oder auch der Zeitstellen für alle innere Wahrnehmungen, immer von dem hernehmen müssen, was uns äußere Dinge Veränderliches darstellen, folglich die Bestimmungen des inneren Sinnes gerade auf dieselbe Art als Erscheinungen in der Zeit ordnen müssen, wie wir die der äußeren Sinne im Raume ordnen, mithin, wenn wir von den letzteren einräumen, daß wir dadurch Objekte nur so fern erkennen,als wir äußerlich affiziert werden, wir auch vom inneren Sinne zugestehen müssen, daß wir dadurch uns selbst nur so anschauen, wie wir innerlich *von uns selbst* affiziert werden, d.i. was die innere Anschauung betrifft, unser eigenes Subjekt nur als Erscheinung, nicht aber nach dem, was es an sich selbst ist, erkennen."

310. "Noch merwurdiger aber ist, dass wir, um die Moglichkeit der Dinge, zu Folge der Kategorien, zu verstehen, und also die objektive Realitat der letzeren darzutun, nicht bloss Anschauungen, sondern sogar immer aussere Anschauungen bedurfen. Wenn wir z. B. Die reinen Begriffe der

If so, then space in these particular cases might be regarded as a sufficient and necessary condition and consequently Kant is wrong in asserting that transcendental schemata must always be temporal.

5.6.2 Some incongruences in the relation between categories and schemata

Beside the problem of temporality, Guyer draws attention to the unclear relation between categories and schemata. For example, the schema of the category of limitation presupposes more than the mere pure structure of time. It asserts, namely, that each representation has a *quantum* but this claim:

> "[…] seems to rest on an empirical assumption that all sensations come in a continuum of degrees, which does not seem to be derivable from the pure structure of time." (Guyer 2006 p. 99)

But is it actually an illegitimate empirical assumption or a legitimate assumption about empirical objects? I will try to provide an answer in the following paragraph.

According to Guyer, another example of a misleading definition regards the schema of the modality of possibility which do not reflect fully the category it is supposed to refer to. Some objects, for instance a square circle, are not possible because they do not satisfy a spatial condition although they satisfy a temporal one: "A square circle is no more possible than someone who is married and unmarried at the same time." (Guyer 2006, p.100)

Moreover, another criticism might be raised against Kant's description of necessity which is not well defined as "the schema of the existence of an object at all times" (KrV A145/B184)[311]. According to Guyer:

> "The only sense of necessity that we are entitled to use in empirical knowledge is necessity in accordance with causal laws, and causal laws do not entail the existence of any objects at all times but rather the existence of particular states of affairs (effects) at particular times (following the existence of their causes)." (Guyer 2006, p. 100)

However, apart from these criticisms, Guyer claims that obscurities and incongruence present in Kant's chapter are of little importance, since Kant will more clearly specify the fundamental features required to apply categories to experience in the "System of all principles", that, therefore, could be regarded as entailing a sort of schematism:

> "Kant's overall argument does not really suffer […]. Throughout the chapter on the "System of all principles", Kant will essentially provide arguments from fundamental features of our experience that require us to apply the categories to our experience in

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Relation nehmen, so finden wir, dass 1) um dem Begriffe der Substanz korrespondieren etwas Beharrliches in der Anschauung zu geben, (und dadurch die objektive Realitat dieses Begriffs darzutun) wir eine Anschauung im Raume (der Materie) bedurfen, weil der Raum allein beharrlich bestimmt, die Zeit aber, mithin alles was im inneren Sinne ist, bestandig fliesst."

311. "[…] das Dasein, eines Gegenstandes zu aller Zeit".

particular ways; we can thus take the argument of that second chapter to entail a certain schematism of the categories rather than vice versa." (Guyer 2006, p.100)

Guyer, stressing that the "System of all principles of pure understanding" contains a sort of applied schematism, put himself in the interpretative perspective[312] of Enzo Paci, Cohen and Camartin. That is an important point insofar as it might suggest that schematism is not a superfluous addition to the Deduction, but rather a mere preparation or an incomplete description of the following chapter of the *Critique*. This position should be better investigated and I limit here to stress that schemata and principles are linked, but are not at the same level: through schemata the most general conditions of cognition are applied to intuitions, while the system of principles consists of the systematic exhibition of the a priori judgements. As Kant states:

"In the previous chapter we have considered the transcendental power of judgement only in accordance with the general conditions under which alone it is authorized to use the pure concepts of the understanding for synthetic judgements. Now our task is to exhibit in systematic combination the judgements that the understanding actually brings about a priori subject to this critical warning, for which our table of the categories must doubtless give us natural and secure guidance" (KrV B187)[313]

5.6.3 Critical remarks

For what concerns the main accusation moved by Guyer, I think that it is possible to reply wondering whether Kant's claim about the possibility to represent spatially temporal schemata actually puts into question their temporal structure. One thing is to provide a representation in the intuition, another is to affirm that temporal schemata are the more fundamental functions needed to apply the pure concepts of the understanding. In other words, it would be more immediate and easier to represent a category spatially, but this does not imply that space is more fundamental than time in its application to experience.

Besides, in relation to Guyer's criticism to the quantum that Kant arbitrary presupposed in each sensation, I shall reply stressing that the aim of Kant is to explain the general conditions of possibilities of experience. Given that experience is provided by a multiplicity of intuitions which constitute a whole, the purpose of the *Critique of Pure Reason* is to define the ultimate invariant functions, that are at the basis of the possibility of the objective world and the sciences focused on it. It is true, then, that Kant does not provide a physical demonstration of the continuity of degrees of sensations; however, his main focus and interest is another one: he introduces the continuity of degrees as consequence of the temporality of sensations

312. Camartin 1971, p. 84.

313. "Wir haben in dem vorigen Hauptstücke die transscendentale Urtheilskraft nur nach den allgemeinen Bedingungen erwogen, unter denen sie allein die reinen Verstandesbegriffe zu synthetischen Urtheilen zu brauchen befugt ist. Jetzt ist unser Geschäfte: die Urtheile, die der Verstand unter dieser kritischen Vorsicht wirklich a priori zu Stande bringt, in systematischer Verbindung darzustellen, wozu uns ohne Zweifel unsere Tafel der Kategorien die natürliche und sichere Leitung geben muß."

and the categorical structure that is at their ground. If experiences are temporal and if they are joined together through relational categories such as limitation, then sensations are temporally limited and differentiated in degree of intensity. Besides, regarding Guyer's criticisms to the schema of possibility, I believe that the example provided by Guyer is misleading: I do not see why Guyer claims hat a square is not a circle not because it does not satisfy the conditions of space. I rather suppose, that a thing cannot be a circle and a square at the same time, in the very same way that someone cannot be married and unmarried at the same time. The important thing in the second case is namely that the two predicates (circle, square or married and unmarried) are not applicable to the same subject at the same time. Finally, for what concerns criticism to the schema of necessity, I wonder why should necessity be intended only in its relation to causality, as Guyer does. What Kant claims concerning the category of necessity is that everything that is necessary is not contingent and cannot be something else[314] (it is always what it is). In Kant's text there is no explicit declaration that implies the exclusiveness of the identification of causality and necessity. Therefore Guyer's remark might be regarded more as an alternative rather than a refutation of Kant's assumptions.

5.7 Allison's view of Kant's schematism

To conclude this section concerning the interpretations of the schematism chapter, I shall present the perspective of Henry Allison.

Allison (5.7.1) claims how the necessity of the chapter about schematism lies in the fact that it shows in what consists the real use of categories, namely "how" (and not that) pure concepts are applied to experience. Moreover, he focuses on the priority of time on space (5.7.2) and underlines (5.7.3) the role of judgement (distinct from reason and understanding) as faculty of the use of discursive rules to guide perception. Besides, focusing on the problem concerning the interpretation of subsumption (5.7.4) , Allison underlines how it has to be referred to judgement, as faculty of subsuming under rules. While the understanding provides the rule, the judgement indicate the case whether a given case falls under the rule or not. Then (5.7.5) I will present how he tries to provide a order to the eighteen definitions related to 'schema', that are present in Kant's chapter, by distinguishing them into definitions of what schemata do and of what they are. Besides, he distinguishes schemata from categories (5.7.6) and principles (5.7.7).

5.7.1 The necessity of schematism in the *Critique of Pure Reason*

As shown in the previous paragraphs, the most important criticism moved to the schematism chapter deals with the worries concerning its function in the whole

314. AA II p. 285; KrV A80/B106.

project of the *Critique of Pure Reason*. If in the "Transcendental Deduction" Kant has already demonstrated that categories must be related to experience, then, what is the role of schematism, which deals with the application of pure concepts?

Many of the critics that I have considered share this question, for instance Zschocke and Curtius. Beyond them, Warnock and Prichard formulate similar qualms concerning the necessity of Kant's schematism. As Warnock underlines[315], if Kant has achieved the goal of demonstrating through the "Transcendental Deduction" that pure concepts of the understanding are the conditions of possibility of experience, then there can be no further doubt about their applicability. As already said in the paragraph 5.5, if categories are valid, then they are applicable to experience and there is no discrepancy between the possession of a category and its use, its condition of applicability:

> "We naturally feel a preliminary difficulty with respect to the existence of this second part of the Analytic at all. It seems clear that if the first part is successful, the second must be unnecessary. For if Kant is in a position to lay down that the categories must apply to objects, no special conditions of their application need be subsequently determined, If, for instance, it can be laid down that the category of quantity must apply to objects, it is implied either that there are no special conditions of its application, or that they have already been discovered and shown to exist." (Prichard 1909, p. 258)

To answer the question as to whether schematism is necessary or not, Allison makes reference to its task in comparison to the "Transcendental Deduction". The aim of the latter is not to show that there are some pure concepts of the understanding, but rather, that they have a real use, i.e. they are applied to experience:

> "Among the many concepts, however, that constitute the very mixed fabric of human cognition, there are some that are also destined for pure use a priori (completely independently of all experience) and these always require a deduction of their entitlement, since proofs from experience are not sufficient for the lawfulness of such a use, and yet one must know how these concepts can be related to objects that they do not derive from experience. I therefore call the explanation of the way in which concepts can relate to objects *a priori* their **transcendental deduction**, and distinguish this from the **empirical** deduction, which shows how a concept is acquired through experience and reflection on it, and therefore concerns not the lawfulness but the fact from which the possession has arisen." (KrV A85/B117)[316]

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315. Warnock 1949, pp. 77 - 82.

316. "Unter den mancherlei Begriffen aber, die das sehr vermischte Gewebe der meschlichen Erkenntnis ausmachen Gewebe der mensschlichen Erkenntnis ausmachen, gibt es einige, die auch zum reinen Gebrauch a priori (völlig unabhängig von aller Erfahrung) bestimmt sind, und dieser ihre Befugnis bedarf jederzeit einer Deduktion; weil zu derRechtmassigkeit eines solches Gebrauchs Beweise aus der Erfahrung nicht hinreichend sind, man aber doch wissen muss, wie diese Begriffe sich auf Objekte beziehen können, die sie doch aus keiner Erfahrung hernehmen. Ich nenne daher die Erklärung der Art, wie sich Begriffe a priori auf Gegenstände beziehen können, die transzendentale Deduktion derselben, und unterscheide sie von empirisschen Deduktion, welche die Art anzeigt, wie ein Begriff durch Erfahrung und Reflexion uber dieselbe erworben worden, und daher nicht die Rechtmässigkeit, sondern das Factum betrifft, wodurch Besitz entsprungen."

And elsewhere in the definition of categories:

> "They are concepts of an object in general, by means of which its intuition is regarded as **determined** with regard to one of the logical functions for judgements. Thus, the function of the **categorical** judgement was that of the relationship of the subject to the predicate, e. g.., "All bodies are divisible." Yet in regard to the merely logical use of the understanding it would remain undetermined which of these two concepts will begin the function of the subject and which of these two concepts will be given the function of the subject and which will be given that of the predicate. For one can also say: "Something divisible is a body". Through the category of substance, however, if I bring the concept of a body under it, it is determined that its empirical intuition in experience must always be considered as subject, never as mere predicate; and likewise with all the other categories." (KrV B129)[317]

Therefore, given the conclusion of the "Transcendental Deduction", according to which categories have to be related to experience, what is left open to inquiry is how pure concepts are applied to objects. According to Allison[318] the Deduction shows that the category of quantity, in order to have a significance, must be applied to experience, yet, it does not explain in which way the particular concepts are to be employed.

In this sense, Allison agrees with Dahlstrom separation between "knowing that" and "knowing how", however, in contrast to Dahlstrom, he does not delve into the difficulties that this distinction might cause.

5.7.2 What about space?

The second point that I shall consider is Allison's concern about the role of space. Analysing in the first edition of his *Kant's Transcendental Idealism*, the categories of modalities, Allison reports Kant's definition of possibility, as it is presented in the "Postulates of Empirical Thought":

> "Whatever agrees with the formal conditions of experience (in accordance with intuition and concepts) is possible" (KrV A218/B265)[319]

Not only time, but also space, is a condition of intuition, why does Kant not refer to it regarding schemata? According to Allison[320] the reason lies in the difference

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317. "Sie sind Begriffe von einem Gegenstände überhaupt, dadurch dessen Anschauung in Ansehung einer der logischen Funktionen zu Urteilen als bestimmt angesehen wird. So war die Funktion des kategorischen Urteils die des Verhaltnisses des Subjekts zum Predikat, z. B. Alle Körper sind teilbar. Allein in Ansehung des bloss logischen Gebrauchs des Verstandes blieb es unbestimmt, welchem die des Predikats mn geben wolle. Denn man kann auch sagen: Einiges Teilbare ist ein Körper. Durch die Kategorie Substanz aber, wenn ich den Begriff eines Korpers darunter bringe, wird es bestimmt: dass seine empirishce Anschauung in der Erfahrung immer nur als Subjekt, niemals als blosses Pradikat betrachtet werden musse; und so in allen ubrigen Kategorien."

318. Allison 2004, p. 203.

319. "Was mit den formalen Bedingungen der Erfahrung (der Anschauung und den Begriffen nach) übereinkommt, ist möglich."

320. Allison 1983, p. 190.

between the postulates and schemata: while the former deals with geometrical possibility, the latter only with appearances. Since all appearances have, as their condition, the form of the inner sense but not necessarily that of the outer, then it makes sense that Kant refers only to time for what concerns transcendental schemata. The case of actuality is not so problematic: given that all appearances have to be in time, than something, to be actual, must have a determinate location in time. More difficulties are raised concerning the schemata of necessity: it seems simply false, that necessity can be identified by existence in all times. Moreover, as Guyer also reports, Kant relates material necessity with causality:

> "Necessity concerns only the relations of appearances in conformity with the dynamic law of causality and the possibility grounded upon it of inferring a priori from a given existence (a cause) to another existence (the effect)." (KrV A227-28/B280)[321]

Allison suggests that the only way to explain difficulties is to interpret Kant's expression "at all times" as: "in relation to the whole of time […] in the sense that, qua effect, it is the product of a causal chain, which, since it can have no first member, must itself exist throughout all of time." (Allison 1983, p. 192) Nevertheless, apart from the passages to which Allison refers, there are others which raises several perplexities regarding the role of space. I shall comment on them in the successive paragraph.

Another problem inquired by Allison concerns the legitimacy of the introduction of a further faculty beside reason and understanding, the judgement, responsible for the use of schemata.

5.7.3 Judgement and its role between reason and understanding

A first possibility to clarify the reason of the introduction of the faculty of judgement to explain the process of schematism is given by its relation to the notion of subsumption and the architectonic structure of the *Critique of Pure Reason*. As Kant affirms, the problem schematism aims at solving might be regarded in terms of a subsumption of intuitions under categories. If so, stressed Allison[322], then it is not surprising that the schematism chapter constitutes the first part of the second book of the "Transcendental analytic", i.e. the "Analytic of principles", also addressed as the "Transcendental doctrine of the power of judgement". Judgement is here the capacity to judge or of "subsuming under rule" (KrV A132/B172)[323], which differs both from the understanding in general "the faculty of rules" as well as reason "the faculty of principles." (KrV A405)[324]In this way, through the introduction of the faculty of judgement, the transcendental Analytic completes the architectonic

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321. "Die Nothwendigkeit betrifft also nur die Verhältnisse der Erscheinungen nach dem dynamischen Gesetze der Causalität und die darauf sich gründendeMöglichkeit, aus irgend einem gegebenen Dasein (einer Ursache) a priori auf ein anderes Dasein (der Wirkung) zu schließen."
322. Allison 2004, p. 205.
323. "Wenn der Verstand uberhaupt als das Vermögen der Regeln erklart wird, so ist Urteilskraft das Vermögen unter Regeln zu subsumieren."
324. "Vernunft ist das Vermögen der Prinzipien."

project of the analysis of all three superior faculties. But are there further consistent reasons to introduce a third element (a third faculty: judgement and in a similar way a schema as a middle function between categories and intuitions)? Or is it only for a systematic purpose, as Kemp Smith[325] states, that Kant adds the faculty of the power of judgement?

Allison answer the difficulties concerning the distinction between understanding and judgement stressing that understanding is the faculty of rules, i.e. it illustrates which rules are valid; while judgement is the power of subsuming under rules: it is, in this sense, more a sort of attitude, a practice:

> "[…] are epistemic conditions in the sense that they provide the rules validating a synthesis of representations. As such, they ground the normative claim of such a synthesis (or judgements) on the agreement of others. Accordingly, they may also be described as "validating conditions". But just as objective validity is not equivalent to truth, so conformity to these normative demands does not guarantee the truth of a judgement. Thus there seems to be a need for a distinct condition (or set of conditions) pertaining to judgement."(Allison 2004, p. 205)

Moreover, to underline the need to introduce a third faculty, Allison draws attention to the distinction among schemata, categories and images. To clarify the function of categories and that of schemata, he introduces the example of chess[326]: categories are comparable to the knowledge of rules and goal of the play, while schemata are sorts of perceptual abilities through which the player can recognize when it is the case to follow one rule or another. Knowing all rules is necessary, but it is not sufficient to play well. For this purpose a particular talent is needed. as Kant points out:

> "[…] although the understanding is certainly capable of being instructed and equipped through rules, the power of judgement is a special talent that cannot be taught but only practiced."(KrV A133/B172)[327]

Judgement improves through training: similarly to an athlete who knows the movement he has to do, but to do it well requires repetition and demonstrations from his trainer, so judgement might be improved through the reference to examples:

> "[…] examples are the leading-strings of the power of judgement, which he who lacks the natural talent or judgement can never do without." (KrV A134/B173)[328]

It is one thing to know the list of properties of an entity and determine, for instance, the mathematical concept of triangle or the empirical one of dog, it is another

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325. Kemp Smith 1918, p. 332.
326. Allison 2004, p. 205.
327. "[…] dass zwar der Verstand einer Belehrung und Ausrustung durch Regeln fähig, Urteilskraft aber ein besonderes Talent sei, welches gar nicht belehrt, sondern nur geubt sein will."
328. "[…] so sind Beispiele der Gangelwagen der Urteilskraft, welchen derjenige, dem es am natürlichen Talent derselben manget, niemals entbehren kann."

to have the ability to construct a triangle or to recognize an animal as a dog. In this sense, the understanding is defined as the faculty of rules, intended in a discursive way, while judgement works through schemata, intended as perceptive ways:

> "Since it guides perception rather than thought, a perceptual rule (or schema) can neither be spelled out discursively in terms of a set of necessary or sufficient conditions nor function predicatively in a judgement. Instead, it functions to process the sensible data in a determinate way, thereby giving one a sense of what to look for or expect on the basis of certain perceptual "clues". For example, on seeing the front of a house, one naturally expects that it will have sides and a back with appropriate "house-ish" features. Rules of this sort are intimately connected with the perspectival nature of perception and, therefore, with the imagination." (Allison 2006, p. 210)

Therefore, given the distinction between a discursive and a perceptual rule, there is the need to introduce a different function from the understanding, which does not provide discursive rules, but uses them to guide perception.

5.7.4 Subsumption

Besides the lack of clarity concerning the role of schematism, in its difference from the "Transcendental Deduction" and the importance of introducing a mediating faculty between understanding and reason, another important critical point concerns schematism as solution to the heterogeneity between a concept and what is subsumed under it.

Critics such as Kemp Smith and Curtius deny that the schematism deals with a subsumption in terms of relation between a class concept and the particular case falling under it: schematism focuses more on the link between form and content, rather than the universal and the particular. As Curtius stresses, Kant's example of the homogeneity between the roundness thought in the empirical concept of a plate and that intuited in the geometrical concept of circle, is completely misleading. The two are not related in class and member, rather in form and content. However, if Kant's passage is taken literally, it might suggest that the homogeneity regards not a class concept and a member, rather what is intuited in the pure concept of a circle and what is thought in the empirical intuition of a plate, i.e. the roundness. If the homogeneity might be explained in this way, what is the usage and meaning of subsumption in reference to schematism? According to Allison, it is important to stress how the first usage of the term in the chapter is given in the definition of the power of judgement as "faculty of subsuming under rules", in the sense that while the understanding, as faculty of rules intended, provides the rule, the judgement indicates whether a given case falls under a rule.

> "His (Kant's) intent is not to suggest that the act of judging can be adequately analysed in terms of subsumption; it is rather to call attention to a set of synthetic a priori judgements (the Principles of Pure Understanding) which, unlike, ordinary judgements of experience, do not merely make use of the categories but actually subsume all appearances under them. Kant's concern is with the possibility of such judgements." (Allison 2004, p.212)

These judgements are so special because they deal with the case of the relation of categories to intuition. In contrast to this, concepts such as circle are heterogeneous from the intuition of a plate, but they are not as heterogeneous to experience as categories are. The case of categories, that must have a relation to intuitions, although they are inhomogeneous to it, is analogous to syllogistic reasoning, where the major premise (the universal rule) and the conclusion (the case to which it is applied) are related through the subsumption of the particular case under the condition of the universal rule. This condition, then, functions as middle term, schema, between the two. As Allison puts it:

> "[…] inferring or judging mediately takes place through the subsumption of a condition of a possible judgement under the condition of something given. The given judgement is the universal rule that functions as the major premise ("Everything composite is alterable"). The minor premise is characterized as "the subsumption of the condition of another possible judgement under the condition of the rule" ("Bodies are composite"). The conclusion is the "mediate judgement", which results from the application of the rule to the subsumed case (Consequently, bodies are alterable") (A 330-31 / B386-87). The crucial term here is "condition", since in the minor premise it is the "condition of another possible judgement" (bodies) that is subsumed under "the condition of the rule" (not the rule itself)." (Allison 2004, p. 213)

Besides these considerations, it is also possible to reinterpret Curtius' accusation to Kant's use of subsumption in a more positive sense. Curtius blames Kant of using this term in a logical (and incorrect) sense, which is incompatible with the (correct) epistemic use of the notion of synthesis. However, it is precisely this different connotation of the two terms that provides the compatible possible coexistence of the two in reference to schematism. One thing is to regard schematism as a solution of the logical problem of the subsumption of a case under a rule, one other is to intend it as the explanation of the process of synthesis of both the form of the understanding and of the intuition.

5.7.5 "To be and to do": Definitions of schemata

Once the role of schematism and the problem of the subsumption have been clarified, Allison draws attention to the main definition given by Kant of the term schema in the chapter, trying to clarify this notion. In the passages of the section on schematism (less than ten pages), Kant provides no fewer than eighteen definitions of the notion of a schema or schematism:

> "This mediating representation must be pure (without anything empirical) and yet **intellectual** on the one hand and **sensible** on the other. Such a representation is the **transcendental schema**." (KrV A138/B177)[329]

> "[…] transcendental time-determination […]" (KrV A139/B178)[330]

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329. "Diese vermittelnde Vorstellung muss rein (ohne alles Empirische) und doch einerseits intellektuell, anderseits sinnlich sein. Eine solche ist das transzendentale Schema."

330. "[...] eine transzendentale Zeitbestimmung [...]"

"[…] this formal and pure condition of sensibility to which the use of the concept of understanding is restricted […]" (KrV A140/B179)[331]

"[…] the procedure of understanding with these schemata […]"(KrV A140/B179)[332]

"The schema is in itself always only a product of imagination; [...]" (KrV A140/B179)[333]

"[…] this representation of a general procedure of the imagination for providing a concept with its image is what I call the schema for this concept." (KrV A140/B179)[334]

"[…] a rule of the synthesis of the imagination […]" (KrV A141/B180) [335]

"[…] a rule for the determination of our intuition […]" (KrV A141/B180)[336]

"[…] a hidden art in the depths of the human soul […]" (KrV A141/B180)[337]

"[…] a product and, as it were a monogram of pure *a priori* imagination […]" (KrV A142/B181)[338]

"[…] the pure synthesis, in accord with a rule of unity according to concepts in general which the category expresses […]" (KrV A142/B181)[339]

"[…] transcendental product of imagination […]" (KrV A142/B181)[340]

"The schemata are thus nothing but *a priori* **time-determinations** in accordance with rules […]" (KrV A145/B184)[341]

"[…] the unity of all the manifold of intuition in inner sense […]" (KrV A145/B185

"[…] the schemata of the pure concepts of understanding are thus the true and sole conditions for providing them with a relation to objects, concepts obtain relation to objects, thus with **significance**…" (KrV A146/B185)[342]

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331. "[...] formale Bedingungen der Sinnlichkeit auf welche der Verstandesnegriff in seinem Gebrauch restringiert ist [...]"
332. "[...] das Verfahren des Verstandes mit diesen Schematen [...]"
333. "Das Schema ist an sich selbst jederzeit nur ein Produkt der Einbildungskraft [...]"
334. "[...] diese Vorstellung nun von einem allgemeinen verfahren der Einbildungskraft, einem Begriff sein Bild zu verschaffen, nenne ich das Schema zu diesem Begriffe."
335. "[...] eine Regel der Synthesis der Einbildungskraft [...]"
336. "[...] eine Regel der Bestimmung unserer Anschauung [...]"
337. "[...] eine verborgene Kunst in den Tiefen menschlichen Seele."
338. "[...] ein Produkt und gleichsam ein Monogramm der reinen Einbildungskraft a priori [...]"
339. "[...] die reine Synthesis, gemass einer Regel der Einheit nach Begriffen überhaupt, die die Kategorie ausdruckt [...]"
340. "[...] ein transzendentales Produkt der Einbildungskraft [...]"
341. "Die Schemate sind daher nichts als Zeitbestimmungen a priori nach Regeln [...]"
342. […] also sind die Schemate der reinen Verstandesbegriffe die wahren und einzigen Bedingungen,

"[…] the schemata of sensibility first realize the categories, yet they likewise also restrict them…" (KrV A146/B185)[343]

"[…] the schema is really only the phenomenon, or the sensible concept of an object in agreement with the category…" (KrV A146/B186)[344]

Given this amount of definitions, it is clear that the notion of schema (and schematism) is hard to conclusively define. Allison[345] gives an help in trying to provide order to these definitions, dividing them into: definitions describing what a schema does and definitions claiming what a schema is.

Among the first, there is the definition of schema as a mediating function, a third thing, which has the task to mediate between categories and phenomena. It:

"[…] must stand in the homogeneity with the category on the one hand and the appearance on the other and which makes possible the application of the former to the latter" (KrV A138/B177)[346]

Moreover, a schema does provide meaning to categories and can be regarded as:

"[…] the true and sole condition for providing them with a relation to objects, thus with significance" (KrV A146/B185)[347]

Therefore, schemata do provide a mediation between categories and intuitions, giving significance to the former. But what are they? Kant describes schemata as pure sensible conditions which restricts the use of concepts; "a priori time-determination in accordance with rules" (KrV A145/B184)[348] and "transcendental product of the imagination" (KrV A142/B181)[349] or "only the pure synthesis, in accord with a rule of unity according to concepts in general, which the category expresses" (KrV A142/B181)[350]. If so, then schemata are rules produced by the transcendental imagination, which provides a non- conceptual unity, although in accordance to the categories. Besides, schemata are connected to the inner sense so that they could serve as middle term between pure concepts and intuitions. But are not the formal intuitions described in the very same way? Is Zschocke's critique right, when he advocates the fact that the properties of schema as time determination are the very same of the formal intuitions?

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diesen eine Beziehung auf Objekte, mithin Bedeutung zu verschaffen [...]"

343. "[…] die Schemate der Sinnlichkeit die Kategorien allererst realisieren, sie doch selbige gleichwohl auch restringierem [...]"
344. "[…] daher ist das Schema eigentlich nur das Phänomenon, oder der sinnliche Begriff eines Gegenstandes, in Ubereinstimmung mit der Kategorie."
345. Allison 2004, pp. 214- 215.
346. "[…] einerseits mit der Kategorie, anderseits mit der Erscheinung in Gleichartigkeit stehen muss, und die Anwendung der ersteren auf die lezte moglich macht."
347. "[…] die wahren und einzigen Bedingungen, diesen eine Beziehung auf Objekte, mithin Bedeutung zu verschaffen."
348. "Zeitbestimmungen a priori nach Regeln."
349. "Ein transzendentales Produkt der Einbildungskraft."
350. "Nur die reine Synthesis, gemass einer Regel der Einheit nach Begriffen überhaupt, die die Kategorie ausdrückt."

According to Allison[351] to understand the difference between the function of schemata and the formal intuitions of space and time, it is important to understand the meaning of a transcendental time determination intended as formal intuition, i.e. to determine intuition through time transcendentally. First, to determine an intuition means to perceive something as something determinate, or to interpret it. For instance, it means to perceive that a sum of perceptions constitutes a whole (a house, a book), provided by the imagination which guides the apprehension of the sensible data in a no-discursive way. Second, this apprehension is not casual, but it is temporally characterized: it is a perception of data which are simultaneous or successive. Finally, there is a transcendental determination when the temporal apprehension takes place according to an objective rule of unity, i.e. a category, thus providing the temporal relations with an intersubjective validity.

Now, in the same way as the formal intuitions, schemata determine the relations of appearances in time, but what type of time is here intended?

Kant refers to *time in general*, which can be regarded as a sort of correlate of the *object in general*. As Allison explains:

> "Just as the latter consists in the unification of representations in accordance with a discursive rule through which they are brought under the objective unity of apperception, so the former is the connection of appearances in time on the basis of the temporal expression or exhibition of such a rue. Admittedly, this makes transcendental time-determinations formal intuitions in a sense somewhat different from the determinate pure intuitions of space and time. The latter are formal features of space and time themselves, whereas transcendental time-determinations are determinations or necessary characteristics of things in time." (Allison 2004, p. 217)

Therefore, Allison's perspective contrasts Zschocke's, because space and time, alone considered, are not sufficient to determine an objective unity intersubjectively valid.

5.7.6 Categories and schemata

Another source of obscurity and difficulty in the chapter consists of the relation between categories and schemata. As Kant puts it, it seems that this question is of little importance:

> "Rather than pausing for a dry and boring analysis of what is required for transcendental schemata of pure concepts of the understanding in general, we would rather present them according to the order of the categories and in connection with these." (KrV A142/B181)[352]

However, the relation between schemata and categories, given the importance attributed to both functions, needs a deeper analysis and this has driven many

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351. Allison 2004, pp. 216-217.

352. "Ohne uns nun bei einer trockenen und langweiligen Zergliederung dessen, was zu transcendentalen Schematen reiner Verstandesbegriffe überhaupt erfordert wird, aufzuhalten, wollen wir sie lieber nach der Ordnung der Kategorien und Verknüpfung mit diesen darstellen."

commentators to attack Kant's laziness. How can this problem be solved? How can these incongruences be solved?

An interesting suggestion comes from Allison's view. According to him, the connection between categories and schemata is a claim and therefore a judgement. Moreover, given Kant's classification of judgements, since there is heterogeneity between the sensible and the intellectual that are taken together in the schemata, that are a priori, these schema-judgements must be intended as synthetic a priori judgements. Or, as Lewis White Beck puts it, schema-judgement must be synthetic a priori, because they deal not with mere discursive conditions, but with the connection of a concept and the condition of sensibility itself:

> "[…] a *transcendental addendum*, a real predicate, a synthetic predicate, a *Bestimmung*, an element in the *ratio essendi* as well as the *ratio cognoscendi*-" (Beck, 1965a, p. 241-242)[353]

Given that schema-judgements are synthetic a priori ones, how can they differ from the principles (i.e. those synthetic a priori judgement founded on schemata)? The two differ in their focus: while the principles make claims about the universal conditions of possible objects of experience; the schema-judgements deal with the sensible conditions of the applicability of pure concepts to experience. If so, these claims invite a deduction which Allison develops in two parts: the first aiming at determining their general conditions and the second directed to the justification of the particular judgements. The first purpose consists of showing that transcendental philosophy does not limit itself to stating what the pure concepts are, but rather:

> "In addition to the rule (or rather general conditions for rules), which is given in the pure concept of the understanding, it can at the same time indicate *a priori* the case to which the rule ought to be applied." (KrV A135/B174)[354]

But how is it possible? Kant claims that transcendental philosophy deals with concepts that have to be related to objects a priori but what are the grounds of this statement? The answer lies in the "Transcendental Deduction", which teaches that categories are not empty (they have a transcendental content insofar as they give the conditions of possible experience) and are necessarily connected with the inner sense, since they are functions of transcendental synthesis of imagination working through time. Then, the general conditions of the possibility of schema-judgements are explained in the "Transcendental Deduction". However, dealing with particular judgements is a more complicated topic, and cannot be solved through a demonstration or a discursive argument, because it is not a matter of analysis, or logic. Instead, what is needed is a translation of a discursive rule into a non-discursive or temporal form. It is similar to the art of the genius who provides sensible expression of non-sensible concepts or ideas; however, schema-judgements are a priori and cannot be produced by

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353. Cf. Beck 1965b.

354. "Es hat aber die Transzendental-Philosophie das Eigentumliche: dass sie ausser der Regel (oder vielmehr der allgemeinen Bedingung zu Regeln), die in dem reinen Begriffe des Verstandes gegeben wird, zugleich a priori den Fall anzeigen kann, worauf sie angewandt werden sollen."

a contingent faculty such as the genius. Therefore the power of judgement, in order to determinate schemata, has to provide time determinations that are the only ones able to be used as conditions of the category. For instance, the relational schemata achieve the first requirement (being time determinations) because they deal with the order of time (KrV A145/B184) as well as the second one since they are the only possible temporal expressions of the rule contained in the categories. In this way, the category of substance can be translated into the schema of absolute persistence: a subject is as such when it is re-identifiable through a change of states, i.e. it must persist through time. Therefore, the schema of a substance is "[…] the persistence of the real in time."(KrV A144/B183)[355] Moreover, Allison as stresses[356], while the concept of causality expresses an order of dependence (if *A*, then *B*); its schema conveys a temporal sequence of this dependence (if *A* at *t1*, then *B* at *t2*). Besides, things in time could be related in two ways: succession (as shown in the example of causality) and coexistence. In the second case, the relation between events is not a mere dependence, but a reciprocal interdependence, whose temporal expression is a rule-governed coexistence:

> "The schema of community (reciprocity), or of the reciprocal causality of substances with regard their accidents is the coexistence of the determinations of the one with those of the other in accordance with a general rule." (KrV A144/B183)[357]

5.7.7 Schemata and principles

After having clarified the connection and distinction of categories and schemata the link between schemata and principles might be established. Allison[358] considers schemata as conditions into two senses: of the realization and restriction of categories and of the determination of the possibility of experience. It is in this second sense that schemata are at the grounds of the principle and do mediate between pure concepts and phenomena.

Now, the principles of pure understanding are synthetic a priori judgements, which claim that some conditions (schemata) are necessary at the basis of the possibility of experience (for instance, the anticipations of perceptions state that each object, in order to be an object of experience, must own an intensity or an extension, as the axioms of intuitions assert). The case of the analogies of perception, grounded on the relational categories is more complicated, although of more importance. As Allison underlines, Kant uses the notion of analogy in a double sense. First, analogy taken in the mathematical sense of proportion, characterizes the principles, which give the rule of searching for an unknown but necessary element of experience (for instance the cause of the event *x*), in the same way as in mathematics we aim at determining

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355. "Das Schema der Substanz ist die Beharrlichkeit des Realen in der Zeit."

356. Allison 2004, p.224.

357. "Das Schema der Gemeinschaft (Wechselwirkung), oder der wechselseitigen Kausalität der Substanzen in Ansehung ihrer Akzidenzen, ist das Zugleichsein der Bestimmungen der Einen, mit denen der Anderen, nach einer allgemeinen Regel."

358. Allison 2004, p. 225.

the fourth not-given element of the proportion by applying a rule. As Kant himself states, an analogy is a rule for looking for the fourth, unknown term:

> "[…] a rule for seeking it in experience, and a mark for discovering it there." (KrV A180/B222)[359]

The second usage is directed to characterising the relation between principles and categories through schemata, in virtue of which principles own their a priori value: they contain a rule provided by categories, which subsume phaenomena through the use of schemata. If there is an analogical relation between schemata and categories and if principles make use of the former, then they are analogous to the latter. As Kant puts it:

> "These principles, therefore, justify us in compounding appearances only in accord with an analogy with the logical and general unity of concepts, and hence in the principle itself we make use of the category, but in its execution (its application to appearances) we set its schema in its place as the key to its use, or rather set the latter alongside the former, as its restricting condition, under the name of its formula." (KrV A181/B224)[360]

Therefore a schema, since it is a sort of temporal expression of a pure concept, is analogous to the related category. Consequently there is an analogy between the categories and the principles, based on schemata, which ensure the a priori value of the former. If the relation between categories and schemata were one of identity, the synthetic feature of the principles would be not granted: to state that schemata and categories are identical would imply the denial of the distinction between the sensible and the intellectual and therefore the denial of the reference to objects apart from those of the mere pure understanding. Thus, the importance of schemata lie in their function as analogies, which guarantee a synthetic feature and apriority to the principles considered as synthetic a priori judgements. As Allison puts it:

> "[…] the possibility of these judgements, and, therefore, the possibility of "a metaphysic of experience", rests upon the possibility of specifying the temporal "analogues" of the categorical rules provided by the pure concepts of the understanding. Moreover, this explains why, in a letter to Reinhold, Kant suggests that it is in the schematism that we find the real beginning of the account of synthetic a priori judgements." (Allison 2004, pp. 227-228)

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359. "[…] eine Regel es in der Erfahrung zu suchen, und ein Merkmal, es in derselben aufzufinden."

360. "Wir werden also durch diese Grundsätze die Erscheinungen nur nach einer Analogie, mit der logischen und allgemeinen Einheit der Begriffe, zusammenzusetzen berechtigt werden, und daher uns in dem Grundsätze selbst zwar der Kategorie bedienen, in der Susfuhrung aber (der Anwendung auf Erscheinungen) das Schema derselben, als den Schlüssel ihres Gebrauchs, an dessen Stelle, oder jener vielmehr, als trestringierende Bedingung, under dem Namen einer Formel des ersteren, zur Seite setzen."

5.7.8 Critical remarks

Although Allison's interpretation provides a great contribution to clarify several difficulties concerning schemata, some of his claims raise further questions.

The first critical point that I shall consider regards the role of space.

Kant declares clearly that all appearances require time, but not necessarily space, as their formal condition:

> "Time is the a priori formal condition of all appearances in general. Space, as the pure form of all outer intuitions, is limited as an a priori condition merely to outer intuitions. But since, on the contrary, all representations, whether or not they have outer things as their object, nevertheless as determinations of the mind themselves belong to the inner state, while this inner state belongs under the formal condition of inner intuition, and thus of time, so time is an a priori condition of all appearance in general, and indeed the immediate condition of the inner intuition (of our souls), and thereby also the mediate condition of outer appearances. If I can say $^{\text{a priori}}$: all outer appearances are in space and determined a priori according to the relations of space, so from the principle of inner sense I can say entirely generally: all appearances in general, i.e., all objects of the senses, are in time, and necessarily stand in relations of time." (KrV A34/B51)[361]

Consequently, given that categories apply universally, the application must work through reference to time, that, as already seen, can be regarded as the first indication towards a unity in the experience: without a temporal order all representations would be almost indistinguishable from each other, thus avoiding the possibility of a unity.

However, there are passages that seem almost incompatible to this statement. For instance:

> "But through inner *experience* I am conscious of *my existence* in time (consequently also of its determinability in time), and this is more than to be conscious merely of my representation. It is identical with the *empirical consciousness of my existence*, which is determinable only through relation to something which, while bound up with my existence, is outside me. This consciousness of my existence in time is bound up in the way of identity with the consciousness of a relation to something outside me, and it is therefore experience not invention, sense not imagination, which inseparably connects this outside something with my inner sense. For outer sense is already in itself a relation of intuition to something actual outside me, and the reality of outer sense,

361. "Die Zeit ist die formale Bedingung a priori aller Erscheinungen überhaupt. Der Raum, als die reine Form aller ausseren Anschauung ist als Bedingung a priori bloß auf äussere Erscheinungen eingeschränkt. Dagegen weil alle Vorstellungen, sie mögen nun aussere Dinge aum Gegenstande haben, oder nicht, doch an sich selbst, als Bestimmungen des Gemuts, zum inneren Zustande gehoren: dieser innere Zustand aber, unter der formalen Bedingung der inneren Anschauung, mithin der Zeit gehoret, so ist die Zeit eine Bedingung a priori von aller Erscheinung uberaupt, und zwar die unmittelbare Bedingung der inneren (unserer Seelen) und eben dadurch mittelbar auch der äusseren Erscheinungen. Wenn ich a priori sagen kann: alle äussere Erscheinungen sind im Raume, und nach den Verhaltnissen des Raumes a priori bestimmt, so kann ich aus dem Prinz des inneren Sinnes ganz allgemein sagen: alle Erscheinungen überhaupt, d. i. Alle Gegenstande der Sinne, sind in der Zeit, und stehen notwendiger Weise in Verhaltnissen der Zeit."

in its distinction from imagination, rests simply on that which is here found to take place, namely, its being inseparably bound up with inner experience, as the condition of its possibility." (KrV B XL-XLI)[362]

How can this incongruence be explained? It might be possible to distinguish two levels of the problem: the first regards which is the most general form of intuition, the second concerns the objectivity of inner and outer experience, If the focus of the inquiry concerns the possibility of representations, time must to be regarded as the most fundamental condition. All representations are given in the inner sense according to temporal relations, while some kinds of experiences (such as emotions and taste) have no external spatial extension. However, as Allison[363] states in the first edition of his *Kant's Transcendental Idealism*, space is needed to demonstrate the objective reality of categories, which is a different problem to schematism:

"It is even more remarkable, however, that in order to understand the possibility of things in accordance with the categories, and thus to establish the objective reality of the latter, we do not merely need intuitions but always outer intuitions." (KrV B291)[364]

One question, namely, concerns the search for the most general form of intuition through which categories are applied to appearances, another concerns the refutation of a mere idealistic or solipsist position. Kant aims to answer not only the question concerning how categories can be applied, but also to demonstrate that the inner experience is not a mere stream or flow with nothing permanent and objective and he achieves this purpose by means of the reference to something external which persists, namely a substance or matter.

This leads to the consideration of the passages of the *Refutation of the idealism*:

"**The mere, but empirically determined, consciousness of my own existence proves the existence of objects in space outside me**. I am conscious of my existence as determined in time. All determination of time presupposes something **persistent** in perception. This persistent thing, however cannot be something in me, since my own existence in time can first be determined only through this persistent thing. Thus perception of

362. "Allein ich bin mir meines Daseins in der Zeit (folglich auch der Bestimmbarkeit desselben in dieser) durch innere Erfahrung bewußt, und dieses ist mehr, als bloß mich meiner Vorstellung bewußt zu sein, doch aber einerlei mit dem empirischen Bewußtsein meines Daseins, welches nur durch Beziehung auf etwas, was, mit meiner Existenz verbunden, außer mir ist, bestimmbar ist. Dieses Bewußtsein meines Daseins in der Zeit ist also mit dem Bewußtsein eines Verhältnisses zu etwas außer mit identisch verbunden, und es ist also Erfahrung und nicht Erdichtung, Sinn und nicht Einbildungskraft, welches das Äußere mit meinem inneren Sinn unzertrennlich verknüpft; denn der äußere Sinn ist schon an sich Beziehung der Anschauung auf etwas Wirkliches außer mir, und die Realität desselben, zum Unterschiede von der Einbildung, beruht nur darauf, daß er mit der inneren Erfahrung selbst, als die Bedingung der Möglichkeit derselben, unzertrennlich verbunden werde, welches hier geschieht."

363. Allison 1983, p. 191.

364. "Noch merkwürdiger aber ist, daß wir, um die Möglichkeit der Dinge zu Folge der Kategorien zu verstehen und also die objective Realität der letzteren darzuthun, nicht bloß Anschauungen, sondern sogar immer äußere Anschauungen bedürfen."

this persistent thing is possible only through a **thing** outside me and not through the mere **representation** of a thing outside me." (KrV B275)[365]

As Ferrarin points out, discussing the question on the priority of time:

"Admittedly, Kant does not say much about it. In the chapter on schematism there is a definite priority of time over space, whereas in the Refutation of Idealism the relation seems inverted. […] the main reason for our understanding's privileged relation to time is that time is the medium in which every manifold is apprehended and successively unified in our consciousness, Only time, and not space, mediates between concept an sensibility in schematism. […] But space is more essentially related to time, it seems to me, than Kant argues in the schematism section. […] the very concept of change in inner sense is made comprehensible, in the Analogies of Experience and the Refutation of Idealism, by an appeal to the permanence of objects in external sense." (Ferrarin 1995, p. 163)

I agree that space and time are deeply related, but here it is important to pay attention to the fact that Kant has two aims: to determine the conditions of possibility of experience in generaland the objective reality of science. The bridge between the two inquires is situated exactly in the chapter of schematism, that is in the middle between the conditions of possibility of experience in general (categories) and the those of science (the principles of pure understanding), that will be further specified in the *Opus Postumum*[366] , where Kant elaborates a schematism[367] through space. I think that this second schematism is elaborated through space because it has a different purpose, which needs a focus on the objective external existence of things. In this work, namely, Kant aims at bridging the gap between the laws of the nature in general (the principles) and in particular: through the principle of ether, entities

365. "Das bloße, aber empirisch bestimmte, Bewusstsein meines eigenen Daseins beweiset das Dasein der Gegenstande im Raum ausser mir. Ich bin mir meines Daseins als in der Zeit bestimmt bewusst. Alle Zeitbestimmung setzt etwas Beharrliches in der Wahrnehmung voraus. Dieses Behärrliche aber kann nicht eine Anschauung in mir sein."

366. AA XXI, pp. 373-412.

367. In the *Opus Postumum*, namely, those principles towards the greater unity of knowledge that in the *Critique of Pure Reason* and in the *Critique of the Power of Judgement* have only an epistemic subjective value (*als ob*, they are rules to provide the understanding a unity in its research) are described as principles a priori of the particular nature. In this way Kant makes the passage from rational physiology, which is grounded on the transcendental philosophical inquiry, to physics. Kant presents a system of a priori principles of determined objects, that in the *Critique of the Power Judgement* are seen only as rules for the understanding, such as the rule of finality (AA V, p. 397) In the *Opus postumum,* through the system a priori of nature in particular, the particular forms of nature might be anticipated, although problematically and without the necessity and universality which characterize categories. A central function is here given to space, which allows a new kind of schematism of physics, the problematic forms of which are in accordance with the table of categories. In this way physics succeed in coordinating the experience according to the greater possible unity through laws and forces.
Then the relation and difference between the schematism through time of the *Critique of Pure Reason* and this second one becomes more clear: while the former works through the collaboration of categories and the most fundamental form of intuitions of all objects (time) and has the purpose of providing the general conditions of all objects in general, the latter consists of a system of forces grounded on space.

or forces (as the physical ones: forces, organic force), are constituted and are directed towards the organisation of the particular objects of experience towards their greater unity.

The second problematic that I shall here consider, concerns the separation between judgement and reason. On the one hand, as Allison suggests, the distinction between reason and judgement seems clear: the former deals with the highest concepts, while the second aims to relate a particular case to a general rule. However, if we consider some passages of the "Transcendental Dialectic" and compare them with some of the definitions provided by Kant in the *Critique of the Power of Judgement*, the difference is not so easy to be justified. For instance, both faculties deal with the relation (subsumption) between the universal and the particular. On the one hand, reason is responsible for the "cognition from principles" which implies subsumption:

> "I would therefore call a "cognition from principles" that cognition in which I cognize the particular in the universal through concepts. Thus every syllogism is a form of derivation of a cognition from a principle, for the major premise always gives a concept such that everything subsumed under its condition can be cognized from it according to a principle." (KrV A300/B357)[368]

On the other, the Judgement, defined in the *Critique of Pure Reason* as "faculty of subsumption" is regarded in the *Critique of the Power of Judgement* as:

> "The power of judgment in general is the faculty for thinking of the particular as contained under the universal. If the universal (the rule,the principle, the law) is given, then the power of judgment, which subsumes the particular under it (even when, as a transcendental power of judgment, it provides the conditions a priori in accordance with which alone anything can be subsumed under that universal), is **determining**. If, however, only the particular is given, for which the universal is to be found, then the power of judgment is merely **reflecting**." (AA V, p.179)[369]

Moreover, both faculties have a sort of guiding task: they provide a rule towards the unity of the knowledge. Reason has in the "Transcendental Dialectic" a regulative use through its ideas towards the greater unity:

> "[…] the universal is assumed only **problematically**, and it is a mere idea, the particular being certain while the universality of the rule for this consequent is still a problem; then several particular cases, which are all certain, are tested by the rule, to see if they flow from it […] the hypothetical use of reason, on the basis of ideas as problematic

368. "Ich würde daher Erkenntnis aus Prinzipien diejenige nennen, da ich das Besonder im Allgemeinen durch Begriffe erkenne. So ist denn ein jeder Vernunftschluss eine Form der Ableitung einer Erkenntnis aus einem Prinzip. Denn der Obersatz gibt jederzeit einen Begriff, der da macht, dass alles, was unter der Bedingung desselben subsumiert wird, aus ihm nach einem Prinzip erkannt wird."

369. "[…] das Vermögen, das Besondere als enthalten unter dem Allgemeinen zu denken, Ist das Allgemeine (die Regel, das Prinzip, das Gesetz) gegeben, so ist die Urtheilskraft, welche das Besondere darunter subsumirt, […] bestimmend, ist aber nur das Besondere zu sie das Allgemeine finden soll, so ist die Urtheilskraft bloss reflectirend."

concepts, is not properly **constitutive** […] rather, this use of reason is only regulative, bringing unity into particular cognitions as far as possible and thereby **approximating** the rule to universality." (KrV A646-647/B674-675)[370]

In contrast judgement has to provide itself with a rule to its own use and not to the object (as the understanding does through its categories):

"It therefore has to provide a concept itself, through which no thing is actually cognized, but which only serves as a rule for it, but not as an objective rule to which it can conform its judgment, since for that yet another power of judgment would be required in order to be able to decide whether it is a case of the rule or not." (AA V, p.169)[371]

This principle of judgement is regarded as a subjective rule according to the unity, i.e. purposiveness:

"Now this principle can be nothing other than this: that since universal laws of nature have their ground in our understanding, which prescribes them to nature (although only in accordance with the uni- versal concept of it as nature), the particular empirical laws, in regard to that which is left undetermined in them by the former, must be considered in terms of the sort of unity they would have if an understanding (even if not ours) had likewise given them for the sake of our faculty of cognition, in order to make possible a system of experience in accordance with particular laws of nature. Not as if in this way such an understanding must really be assumed (for it is only the reflecting power of judgment for which this idea serves as a principle, for reflecting, not for determining); rather this faculty thereby gives a law only to itself, and not to nature." (AA V, p.180)[372]

As it emerges from these and other passages some doubts might be raises regarding the difference between the two faculties. However, it is important to stress that the quotations belong to different works, the aims of which are not identifiable: while the *Critique of Pure Reason* aims at understanding how objective knowledge and epistemic judgements are possible, *the Critique of the Power of Judgement* has a more

370. "[…] das Allgemeine wird nur problematisch angenommen, und ist eine blosse Idee, das Besondere ist gewiss, aber die Allgemeinheit der Regel zu dieser Folge ist noch ein Problem; so werden mehrere besondere Falle, die insgesamt gewiss sind, an der Regel versucht, ob sie daraus fliessen […] Der hypothetische Gebrauch der Vernunft aus zum Grunde gelegten Ideen, als problematischer Begriffe, ist eigentlich nicht konstitutiv […] Sondern er ist nur regulativ, um dadurch, so weit als es moglich ist, Einheit in die besonderen Erkenntnisse zu bringen, und die Regel dadurch der Allgemeinheit zu nahern."

371. "Sie soll also selbst einer Begriff angeben, durch den eigentlich kein Ding erkannt wird, sondern der nur ihr selbst zur Regel dient, aber nicht zu einer objectiven, der sie ihr Urtheil anpassen kann, weil dazu wiederum eine andere Urtheilskraft erforderlich sein wurde, um unterscheiden zu konnen, ob es der Fall der Regel sei oder nicht."

372. "Nun kann dieses Princip kein anders sein als: dass, da allgemeine Naturgesetze ihren Grund in unserem Verstande haben, der sie der Natur (obzwar nur nach dem allgemeinen Begriffe von ihr als Natur) vorschreibt, die besondern empirischen Gesetze in Ansehung dessen, was in ihnen durch jene unbestimmt gelassen ist, nach einer solchen Einheit betrachtet werden mussen, als ob gleichfalls ein Vestand (wenn nicht der unsrige) sie zum Behuf unserer Erkenntnissvermögen, um ein System der Erfahrung nach besonderen Naturgesetzen moglich zu machen, gegeben hatte."

specific task related to the possibility of a link between the realm of understanding and that of reason as well as the grounds of the aesthetic judgement.[373]Moreover, it should be investigated whether the notion of reason, which is considered in the two works, is the same or not. For instance, the *Critique of the Power of Judgement* opens with a definition of reason as the faculty of desire and not of principles and declares its aim, which is very different from that of the first *Critique*:

> "In just the same way **reason**, which contains constitutive principles a priori nowhere except strictly with regard to the **faculty of desire**, was directed to its territory in the critique of practical reason.
> Now whether the **power of judgment**, which in the order of our faculties of cognition constitutes an intermediary between understand- ing and reason, also has a priori principles for itself; whether these are constitutive or merely regulative (and thus do not prove the power of judgment to have its own domain), and whether the feeling of pleasure and displeasure, as the intermediary between the faculty of cognition and the faculty of desire, gives the rule a priori (just as the understand- ing prescribes a priori laws to the former, but reason to the latter): it is this with which the present critique of the power of judgment is concerned." (AA V, p.168)[374]

Besides the clarification of the role of space and the relation between judgement and reason, a third difficulty the difference between understanding and judgement, which deal both with categories, with the rules at the basis of the possibility of experience. One possibility consists of stressing the fact that understanding illustrates which rules are valid; while judgement is e a sort of attitude, a practice. As Allison suggests: categories are sort of validating rules, which deals with the normative demands, while schemata concerns the guarantee of the truth of a judgement.

However, Kant does not address explicitly the difference between validating conditions and truth-guarantees. Moreover, what notion of truth is here in question? Is it the result of a correspondence between representations and objects as such? Is it provided through a psychological-empirical investigation?

The difficulties that these expressions raise, suggest a more cautious position, which considers schemata as specific conditions of the validity of the synthesis of representation: while categories deal with objects in general, the former deal with objects of a possible sensible experience, which must be at least in time. Then, similarly to what I suggested in the paragraph concerning Dahlstrom's interpretation,

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373. Further suggestions on the role of Judgement in the two works are provided in Guyer 1990 and Rajiva 2006.

374. "Eben so is das Vernunft, welche nirgend als lediglich in Ansehung des Begehrungsvermögens constitutive Principien a priori enthalt, in der Kritik der praktischen Vernunft ihr Besitz angewiesen worden. Ob nun die Urtheilskraft, die in der Ordnung unserer Erkenntnissvermögen zwischen dem Verstande und der Vernunft ein Mittelglied ausmacht, auch fur sich Principien a priori habe; ob diese constitutiv, oder bloss regulativ sind (und also kein eigenes Gebiet beweisen), und ob sie dem Gefuhle der Lust und Unlust, als dem Mittelgliede zwischen dem Erkenntnissvermögen und Begehrungsvermögen, (eben so wie der Verstand dem ersteren, die Vernunft aber dem letzteren a priori Gesetze vorschreiben) a priori die Regel gebe: das ist es, womit sich gegenwartige Kritik der Urtheilskraft bescäftigt."

through the *syntesis speciosa* categories (general cases of conditions of validity) are restricted and realises, or "specified" thus becoming schemata.

Another problematic that is highlighted by Allison concerns the amount of definitions of schemata (it is not surprising that Kant himself declares that schematism is a *verborgene Kunst*, an art concealed in the depths of the human soul). Allison provides an analyses of these definitions but why are there so many definitions? There are at least two possibilities. On the one hand, if we agree with those critics who declare that schematism has no specific task and that it is only an unnecessary addition to the "Transcendental Deduction", there cannot be a complete and clear definition of schema simply because the notion in itself is artificial, it has no proper role or function and therefore, in a certain sense, it cannot have a definition, it is meaningless. On the other hand, the difficulty to find a proper definition can be explained by the complexity of this notion: an understanding of the function of schemata, as here shown, presupposes the understanding of other ones, such as understanding, reason, imaginations, forms of sensibility, pure and empirical and everything it is related to in the above mentioned definitions. From this viewpoint, the passage on schematism can be considered the core of the whole *Critique of Pure Reason*, since it shows how all these functions are implied in providing objective knowledge. But given this, a further question might be raised: is schematism so difficult to explain because it is philosophically hard to clarify, or because it does not (or not fully) belong to the aim and instruments of the philosophical discipline?

In some of the above mentioned definitions schemata are related to notions such as: product, art, which imply tools and knowledge that belong to fields different from the mere theoretical discipline, namely psychology. There is no surprise that Kant's notion of a schema would be reinterpreted and modified by psychologists, as I shall show in the following chapters.

Part II:
After Kant

1. The philosophical reception and criticism of Kant's account of schematism

After having considered the function and role of schematism in the *Critique of Pure Reason,* I will now turn to focus on major philosophical receptions of Kant'saccount.

The literature on the meanings of the notion of schema after Kant is broader than the one on the authors who precede him, but it is still incomplete. Most studies are more focused on the particular authors than on the influence played by Kant's schematism on their doctrines. In the *Historische Wörterbuch der Philosophie,*Herrmann (1992) presents an overview of the uses of the term 'schema' after Kant.Since its aim is not to analyse similarities and differences among authors, his overview is sometimes incomplete (for instance, there are neither references to Wittgenstein nor to Horkheimer). Gasperoni (2016), again, aims to stress the legacy of Kant's schematism in authors such as Maimon, Herder, Hegel and Plessner, while hints at the notion of schema in Bartlett, Wittgenstein and Barsalou are present in *Concepts and Categorization* (Hommen, Kann & Oswald 2016), focused on the problem of conceptualization from many viewpoints (history of philosophy, analytic philosophy, psychology, cognitive sciences and linguistics). Of course, there is a great amount of publications on Kant's general influence on his successors (for instance, on the relation between Kant and Herbart: Bona Meyer 1870; Pettoello 2000; on Kant and Schopenhauer: Kelly 1909; on Kant and Heidegger: De Blasi 2000, Weatherstorn 2002, Guyer 2011). However, apart from some exceptions (e.g., Schaper 1964), they are often general overviews and not texts exclusively focused on schematism.

In analogy to the first chapter of the part I, I will divide this chapter into three parts: the earliest receptions of schematism (Maimon, Herder, Humboldt); idealism and post-Kantianism (Fichte, Schelling, Hegel, Herbart, Beneke, Schleiermacher and Fries); the late nineteenth and early twentieth centuries (Dilthey, Nietzsche, Bergson, Merleau-Ponty, Husserl, Heidegger, Cassirer, Whitehead, Horkheimer, and Wittgenstein).My aim is not to provide an exhaustive overview of each of the authors considered, but only to provide evidence of the influential power of Kant's doctrine of schemata and to evaluate its legacy in philosophy (but, as we will see in later chapters, not only there). Interestingly enough, Kant's theory of schemata receives, on the one hand, criticisms from numerous influential philosophers after him while, on the other hand, several psychologists who recall and develop the notion of schema in their theories considered itto be an important doctrine. While philosophers loved to criticize Kant, psychologists loved to build on his views. As I shall show in these pages, the most important objection (presented by philosophers mostly focused on epistemology and logic) deals with the difficulties provided by

Kant's separation between understanding and sensibility.In contrast, the role of schema as mediating function is welcome with favour by thinkers who are interested in language and in the imaginative power.

1.1. The earliest receptions of Kant's doctrine of schematism

In this section, I will consider the reception of the term 'schema' soon after Kant's death. Solomon Maimon re-echoes Kant's terminology by using 'schema' in the sense of a mediating function between concepts and perception. Johann Gottfried Herder, again, uses the term into two senses: in a negative one, to indicate a sort of shadowing appearance of things and in a positive one, linked to grammar (*Sprachlehe).* Finally, I will present Alexander von Humboldt's definition of language, since, even though Humboldt does not explicitly refer to Kant's schematism, he regards language in a similar way as Kant does, namely as *medium* between thought and representations.

The first attempt to reconsider Kant's notion of schema is Maimon's. After his reading of the *Critique of Pure Reason*, he writes his *Versuch über die Transzendentalphilosophie* (1789), in which he regards the philosophy of Kant as an empirical dogmatism and a rational scepticism. According to Maimon,in Kant's philosophy

> "[…] the objects of our cognition are given a posteriori, while the forms a priori." (Maimon, 1789, p. 433, transl. L.S.)[375]

In difference to empiricism, according to which neither the formal nor the material principles of our cognition are a priori, and in contrast to a rational dogmatism (and empirical scepticism), which states that both forms and objects are a priori, cognition, in Kant's view, is a mixture of pure and a posteriori functions. In this perspective, a mediation between the two kinds of functions is needed, i.e. a schema. Therefore, the perception of an object is not immediate but rather, occurs mediately,

> "[…] through the mediation of a schema or a main feature." (Maimon 1789, p. 435, transl. L.S.)[376]

A little later, Herder uses the term 'schema' in a very different way than Kant does, since he is not interested in developing a transcendental inquiry in the conditions of possibility of cognition, but focuses on language and art, stressing the generative power of imagination. According to Herder, there is no radical separation between perception and cognition and therefore there is no need for:

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375. "[…] die Objekte unsrer Erkenntnis uns a priori gegeben, aber die Formen derselben in uns a priori sind."

376. "[…] vermittelst der Wahrnehmung eines Schema's oder Merkmals."

"[…] a fictitious middle term between two vanishing fictitious functions." (Herder 1799, p. 418, transl. L.S.)[377]

Schemata in Kant's sense are regarded as foggy, unclear forms (*Nebelformen* or *Nebelgestalt*)[378], sort of shadows of the thing in itself, which enable us to build images of the highest objects that are not within the limits of the possible knowledge through concepts. This kind of schematism, in its refashioned version different from Kant's schematism, can permit not only to build images, but also words and can be developed into an actual grammar[379] (*Sprachlehre*), which is able to provide a self-expression of the perceptions of the senses, united in a constitutive and original synaesthesiaand that are separated only by means of the philosophical analysis.

Like with Herder, Humboldt's main concern isalso with language.His description of it shares similarities with the notion of schema, even if Humboldt, in contrast to Herder, makes no direct reference to the notion of schema. However, in a letter to Karl Ferdinand Becker from 1827, language is defined as a medium, or better said, the "unique medium"(Humboldt 1981, V, p. 266)[380]between thought and image, subject and object. It is not a result, a static construction of the understanding, but rather a process.As he claims in his *Über die Verschiedenheit des menschlichen Sprachbaues*:

"It is not a work (*Ergon*) rather it is an activity (*Energeia*). Therefore, its actual definition can only be a genetic one."(Humboldt 1968, VII, I, pp. 45-46. transl. L.S.)[381]

1.2 Idealism and post-Kantianism

In this second section the uses and significances of the term 'schema' in some of the most important post-Kantian authors will be presented. Johann Gottlieb Fichte uses 'schema' in two main senses: as the way in which the Spirit limits itself and the process (called "free schematism") through which appearances are overcome. Later on, in Friedrich Wilhelm Joseph von Schelling's works the 'schema' occurs with fourth meanings: it alludes to time determination, sensible rules, a mediating function and language. Moreover, Georg Wilhelm Friedrich Hegel harshly criticises Kant by referring to schemata as abstract and artificial time determinations presented in Kant's rigid illustration of the principles of cognition. However, the section devoted to the theoretic spirit in his *Encyclopedia of the Spirit* shares important similarities with Kant's schematism chapter. Like Hegel, also Johann Friedrich Herbart rejects schematism by considering it a useless part in the *Critique of Pure Reason*, insofar

377. "[…] dritte Fiktion zwischen zwei versschwundenen Fiktionen."

378. Herder 1799, p. 117.

379. See Gasperoni 2017 (pp. 96-98) on the function of language in Herder's refashioned schematism.

380. "[…]einzige Vermittlerin."

381. "Sie selbst ist kein Werk (*Ergon*), sondern eine Thätigkeit (*Energeia*). Ihre wahre Definition kann daher nur eine genetische seyn."

as as there is no need of a medium between active and passive functions. Later on, although without directly referring to schematism, Friedrich Eduard Beneke criticises the introduction of a transcendental mediation function between pure concepts and intuition: in his view, philosophy has to be grounded on empirical psychological basis, consequently, there is no further need of a transcendental function like schema. In contrast, Friedrich Daniel Ernst Schleiermacher provides a more positive evaluation of Kant's doctrine and relates 'schema' to the acquisition of language, while Jakob Friedrich Fries connects it to the process through which images are built and to the activity of imagination. Lastly, I shall consider Arthur Schopenhauer's well-known criticism to Kant's a priori schemata.

Fichte uses the term 'schema' in different sense from Kant's one: it is not a method for the application of the pure concepts of the understanding to intuition;instead it is connected to the thought in itself, outside and beyond the forms of the senses and of the understanding. More specifically, 'schema' refers to the process of limitation of the absolute in itself:

"It is the essence of God outside itself." (Fichte 1845, 2, p. 696, transl. L.S.)[382]

Through the process of schematisation, the Spirit (*Das Wissen*) determines itself, thus producing the world of individualities in which we live. However, Fichte alludes also to another type of schematism: in a letter to Jacobi he describes it not only as a process that characterises the world of individualities and disguise in which we are born, but also as a free schematism, that permits to overcome the shadows of this world of appearances:

> "We are not naturally born in the world of truth, but in world of shadows and fog. In order to defeat this not free schematism, we are provided with the free faculty to schematise, through which we melt the schemata, that we without this (free schematism) cannot see, with others, that we know as such." (Fichte 1925, 2, p. 548, transl. L.S.)[383]

In Schelling 'schema' plays also a significant role and it is used with four senses: three of them are somehow related to Kant's description of schemata, while one owns a meaning autonomous from Kant and is related to language. Firstly, in the early work *The I as the Principle of Philosophy* (*Vom Ich als Prinzip der Philosophie*) 'schema' is strictly connected to time (similarly as Kant defined schema as a temporal function). Time in general (*Zeit überhaupt*) is namely defined as: "[…] the schema of the whole timelessness." (Schelling 1980, I/2, p. 158, transl. L.S.)[384]Secondly, in the *System of Transcendental Idealism* (*System des tranzendentalen Idealismus*) he recalls directly Kant's passages but changes the meaning of the notion of a schema, which, rather than a medium or a third thing, is presented as a sensible rule: "[…] the sensible rule

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382. "[Es ist] Gottes Seyn ausser seinem Seyn."

383. "Wir werden durch unsere natürliche Geburt keineswegen in eine Welt der Wahrheit, sondern in eine Schatten- und NebelWelt hineingeboren. Um diesen unfreien schematismus abzustreifen, erhielten wir das freie Vermögen zu schematisieren, damit wir die Schemen, die wir ohnedies nicht dafür ansehen, durch andere, die wir als solche erkennen, auflösen."

384. "[…] Schema der gänze Zeitlosigkeit-"

of the product of empirical objects." (Schelling 1856-61, I/3, p. 510, transl. L.S.)[385] Thirdly, 'schema' is referred to a process through which the unity between categories and intuitions can be established. In Schelling's view categories are separated from intuitions only through the transcendental abstraction and have to be connected once again to them through a transcendental schematism which operates through the judgement: "[…] (categories and intuitions) are once again connected in the judgement[386] (Schelling 1856-61, I/3, p. 516, transl. L.S.)" Lastly, Schelling uses the notion of schema also in a meaning independent from Kant's view, namely in reference to language, and defines schema as "[…] the whole mechanism of the language."[387](Schelling 1856-61, I/3, p. 509, transl. L.S.)

In contrast, Hegel's notion of schema originates from one of the most important accusation to Kant, namely formalism, according to which Kant's categories are considered void and static abstract concepts irreparably separated from experience. Hegel describes Kant's philosophy as a "[…] construction through lifeless schema" (Hegel 1968-, 7, p. 36, transl. L.S.)[388] and stresses, in his *Lectures on the History of Philosophy (Vorlesungen über die Geschichte der Philosophie)* , that schemata can mediate between understanding and sensibility only in a mechanic, artificial way:

> "Thinking, understanding, remains a particularity; sensibility also is a particularity. They are connected only in an external, superficial way, which is similar to the way in which a pin and a leg are linked through a rope." (Hegel 1969-, 20, p. 348, transl. L.S.)[389]

Besides, in his *Science of Logic (Wissenschaft der Logik)*, Hegel accuses Kant of developing a transcendental logic concerning faculties and principles that are abstract and arbitrary, the use of which causes the loss of the significance of the notion of truth:

> "But *reflective* understanding took possession of philosophy. We must know exactly what is meant by this expression which moreover is often used as a slogan; in general it stands for the understanding as abstracting, and hence as separating and remaining fixed in its separations. Directed against reason, it behaves as ordinary common sense and imposes its view that truth rests on sensuous reality, that thoughts are only thoughts, meaning that it is sense perception which first gives them filling and reality and that reason left to its own resources engenders only figments of the brain. In this self-renunciation on the part of reason, the Notion of truth is lost; it is limited to knowing only subjective truth, only phenomena, appearances, only something to which the nature of the object itself does not correspond: knowing has lapsed into opinion."[390] (Hegel 1969, 5, p. 38, transl. A. V. Miller)

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385. "[…] die sinnliche angeshaute Regel der Hervorbringung eines empirischen Gegenstandandes."
386. "[…] im Urteil wieder vereinigt […]"
387. "[…] der ganze Mechanismus der Sprache."
388. "[…] Constrction zum leblosen Schema[…]"
389. "Denken, Verstand bleibt ein Besonderes, Sinnlichkeit ein Besonderes, die auf äusserlich, oberflächiche Weise verbunden werden, wie ein Holz und Bein durch einen Strick."
390. "Aber der reflektierende Verstand bemächtigte sich der Philosophie. Es ist genau zu wissen, was dieser Ausdruck sagen will, der sonst vielfach als Schlagwort gebraucht wird; es ist überhaupt darunter der abstrahierende und damit trennende Verstand zu verstehen, der in seinen

In Hegel's view, if Kant would not have distinguished between empirical and intellectual intuition, if he had not separated understanding and sensibility (and consequently added schematism as a artificial way to reconnect them), then, he would have understood the actual sense of logic:

> "Logic is to be understood as the system of pure reason, as the realm of pure thought. This realm is truth as it is without veil and in its own absolute nature. It can therefore be said that this content is the exposition of God as he is in his eternal essence before the creation of nature and a finite mind." [391] (Hegel 1969-, 5, p. 44, transl. A. V. Miller)

In the Hegelian logic, therefore, there is a coincidence between the empirical, formal and transcendental levels, and logic is considered as a metaphysics, or doctrine of the *logos*.

Apart from the accusation to Kant's formalistic and abstract way to consider the schemata, the part dedicated to the theoretic spirit in the *Encyclopedia of the Spirit* (which is contained in the "Psychology", in the "Subjective Spirit", that is the first part of the *Phenomenology of the Spirit*), seems to share similarities with Kant's schematism. The "Theoretic Spirit" is developed in three moments that recalls the subject of the schematism, namely: intuition, representation and thought[392]. While the first refers to the moment in which impressions are organised in time and space, thus becoming objective, the second describes the moment in which the consciousness diversifies itself from intuitions; while the third is the final achievement of the unity of subject and object. In *§454*, describing the moment of representation (which is divided into remembering (*Erinnerung*), imagination (*Einbildungskraft*) and memory (*Gedächtnis*), Hegel refers to Kant's problem of the subsumption[393], that in Kant finds in schematism a solution.

Similarly to Hegel's standpoint, Herbart's rejection of Kant's notion of schema derives from its criticism to Kant's distinction among faculties, which causes the misleading problem of their connection, from which derives the schematism. He accuses Kant of having separated mythical faculties that cannot be autonomous from the faculty of representation. All distinctions among faculties (such as: desire,

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Trennungen beharrt. Gegen die Vernunft gelehrt, beträgt er sich als gemeiner Menschenverstand und macht seine Ansicht geltend, daß die Wahrheit auf sinnlicher Realität beruhe, daß die Gedanken nur Gedanken sein, in dem Sinne, daß erst die sinnliche Wahrnehmung ihnen Gehalt und Realität gebe, daß die Vernunft, insofern sie an und für sich bleibe, nur Hirnsgespienste erzeuge. In diesem Verzichtung der Vernunft auf sich selbst geht der Begriff der Wahrheit verloren; sie ist darauf eingeschränkt, nur subjektive Wahrheit, nur die Erscheinung zu erkennen, nur etwas, dem die Natur der Sache selbst nicht entspreche; das Wissen ist zur Meinung zurückgefallen."

391. "Die Logik ist so nach als das System der reinen Vernunft, als das Reich des reinen Gedankens zu fassen. Dieses Reich ist die Wahrheit, wie sie ohne Hülle an und für sich selbst ist. Man kann sich deswegen ausdrücken, daß dieser Inhalt die Darstellung Gottes ist, wie er in seinem ewigen Wesen vor der Erschaffung der Natur und eines endlichen Geistes ist."

392. Hegel refers to language as mediating function also in the *Phenomenology of Spirit* from 1803-04 (Appendix VIII). Cf. Hagemann 2017, pp. 123-133 .

393. Hegel 1830, p. 260.

imagination, sensibility) presuppose representation (*Vorstellungkraft*). Then, within the soul, the only distinctions that can be accepted regard their degree of clarity, which might increase or decrease in the consciousness. This perspective is probably a consequence of Herbart's rational psychology, according to which the soul is characterised by simplicity[394]: the soul, given its simplicity, is a pure activity of representation without content, that then cannot be object of a en empirical psychology. However, the Herbartian claim of the uselessness of a distinction among faculties seems to be unable to explain the distinctions presented in the experience. As Bona Meyer[395] suggests, representations might be at the basis of feelings and passions, but they are not sufficient to determine the reactions and the will of a subject. If on the one hand Herbart accuses Kant of proposing a myth of the faculties, claiming arbitrarily the existence of forms deprived of content and similar to void boxes[396]; on the other hand, Beneke's criticism is directed against a supposed 'lack' of coherence in Kant. According to Beneke, if cognition derives from experience, then philosophy has to be empirically and genetically grounded. On this purpose, the author suggests to correct Kant's theory through itself:

> "However, the form given a priori in our spirit, if there are any, cannot be known a priori, but only through experience: Kant himsellf underlines it, with reason, from the very first lines of the *Critique of Pure Reason*. […] therefore,according to the explicit declaration of this supporter of the the a priori, the knowledge that does not derive from experience cannot be known in a way that is not grounded in experience (Beneke 1832, p. 66, transl. L.S.)[397]

Therefore it is necessary to abandon the doctrine of the 'I think' and of the pure forms and come back to human reason, to the finite empirical consciousness, which can be regarded as a scientific topic proper of psychology. In such an empiricist account, no schema, i.e. no mediating function is needed.

To Friedrich Schleiermacher the notion of schema is also related to the constitution of concepts and language. In his *Dialektik*, the term 'schema', used in a strict sense, refers to the process of acquisition of language and knowledge, while in a wider sense as the language and its nature or identity (*Identität der Sprache*)[398]. Moreover it is referred to the activity of reason which produces abstract notion that enables us to divide the particular perceptions into general classes.[399] In this sense, 'schema'

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394. Herbart 1834, pp. 153 -155.
395. Bona Meyer 1870 (chapter III).
396. Pettoello 2000.
397. "Die allerdings in unserem Geiste a priori gegebenen Formen sind, wenn überhaupt, doch nicht wieder a priori, sondern nur durch Erfahrung zu erkennen: dies bemerkt KANT selber sehr richtig gleich in den ersten Worten seiner Kritik der reinen Vernunft. […] Also auch die nicht aus der Erfahrung stammende Erkenntnis kann, nach der ausdrücklichen Erklärung dieses entschiedenen Verfechters des A priori, selbst auf keine andere Weise von uns erkannt werden, als indem wir uns auf Erfahrungen stützen."
398. Schleiermacher 1814-15, p. 24.
399. Schleiermacher 1814-15, p. 145.

has the general function to help in making distinctions and determinations in the use and development of concepts and language, together with fixed set phrases or formulas: "[…] the concept is actually given only in the complete interception of formula and schema." (Schleiermacher 1814-15, p. 101, transl. L.S.)[400] Moreover, similarly to Fichte, he also relates the notion of schema to the absolute and all abstract and general notions: "Absolutes, highest unity, identity of ideal and real [are] only schemata."[401] (Schleiermacher 1814-15, p. 67, transl. L.S.)

Another philosopher who develops a usage of the notion of schema in relation to the the faculty of imagination and its process of image's construction is Jakob Friedrich Fries. Fries regards schemata as "[…] the actual origins of abstractions…"(-Fries 1807, p. 256, transl. L.S.)[402] and as representations of the intuition elaborated by the faculty of imagination. These representations: "[…] contain the undetermined drawing which floats among several images, that correspond to the determination of a general concept."(Fries 1807, p. 256, transl. L.S.)[403]

Now I shall focus on the well-known criticism of Kant's chapter on schematism[404] elaborated by Arthur Schopenhauer, who characterises this doctrine by considering it as a curiosity: "which is famous for its profound darkness, because nobody has yet to make sense of it"[405](Schopenhauer 1819, p. 552, transl. L.S.). Schopenhauer claims that Kant arbitrarily uses analogy to demonstrate that for each determination of the empirical knowledge there is a correspondent a priori: empirical concepts, which derive from perceptions, have empirical schemata as temporary representatives; categories are supposed to have also temporary representations (*a priori* schemata). But if in the first case it is possible to look back to experience to find the legitimacy of empirical concepts, in the second it is of no use to look back to experience, because categories do not derive from perceptions. Therefore, the analogy at the basis of the assumption that there are *a priori* schemata, is only the consequence of Kant's psychological need for architectonic and symmetry. To express this criticism, Schopenahauer compares Kant to someone who wants to measure the high of a tower by measuring its shadow instead of putting the measuring tape (the schema) on top of the tower itself:

> "For when he assumes schemata of the pure (empty) a priori conceptions of the understanding (categories) analogous to the empirical schemata (or representatives through the fancy of our actual conceptions), he overlooks the fact that the end of such schemata is here entirely wanting. For the end of the schemata in the case of empirical (real) thinking is entirely connected with the material content of such conceptions. For since

400. "Der Begriff ist eigentlich nur in der vollständigen Durchdringung von Formel und Schema."

401. "Absolutes, Hoechste Einheit, Identitaet des Ideal und Realen nur Schemata sind."

402. "[…] die wahre Quelle der Abstraktionen."

403. "[…] die eine unbestimmte Zeichnung schwebend zwischen vielen Bildern enthalten, welche der Bestimuung eines allgemeinen Begriffes entsprechen."

404. On Schopenhauer's reception of Kant see: Kelly 1909 (in particular chap.ter XI); Guyer 2011.

405. "Vom schematismus der reinen Verstandesbegriffe«, welches als höchst dunkel berühmt ist, weil kein Mensch je hat daraus klug werden können."

these conceptions are drawn from empirical perception, we assist and guide ourselves when engaged in abstract thinking by now and then casting a momentary glance back at the perception out of which the conceptions are framed, in order to assure ourselves that our thought has still real content. This, however, necessarily presupposes that the conceptions which occupy us are sprung from perception, and it is merely a glance back at their material content, a mere aid to our weakness. But in the case of a priori conceptions which as yet have no content at all, clearly this is necessarily omitted. For these conceptions are not sprung from perception, but come to it from within, in order to receive a content first from it. Thus they have as yet nothing on which they could look back. I speak fully upon this point, because it is just this that throws light upon the secret origin of Kant's philosophising, which accordingly consists in this, that Kant, after the happy discovery of the two forms of intuition or perception a priori, exerted himself, under the guidance of the analogy, to prove that for every determination of our empirical knowledge there is an a priori analogue, and this finally extended, in the schemata, even to a mere psychological fact." (Schopenhauer 1819, p. 552-553, transl. R. B. Haldane & J. Kemp)[406]

Schopenhauer, as many of the interpreters of Kant of the nineteenth century, fails in understanding the function of schemata. As Hegel, he regards categories as

406. "Denn indem er den empirischen Schematen (oder Repräsentanten unserer wirklichen Begriffe durch die Phantasie) analoge Schemata der reinen (*inhaltslosen*) Verstandesbegriffe a priori(Kategorien) annimmt, übersieht er, daß der Zweck solcher Schemata hier ganz wegfällt. Denn der Zweck der Schemata beim empirischen (wirklichen) Denken bezieht sich ganz allein auf den *materiellen Inhalt* solcher Begriffe: da nämlich diese aus der empirischen Anschauung abgezogen sind, helfen und orientiren wir uns dadurch, daß wir beim abstrakten Denken zwischendurch ein Mal auf die Anschauung, daraus die Begriffe entnommen sind, einen flüchtigen Rückblick werfen, uns zu versichern, daß unser Denken noch realen Gehalt habe. Dies setzt aber nothwendig voraus, daß die uns beschäftigenden Begriffe aus der Anschauung entsprungenseien, und ist ein bloßes Zurücksehn auf ihren materialen Inhalt, ja ein bloßes Hülfsmittel unserer Schwäche. Aber bei Begriffen a priori, als welche noch gar keinen Inhalt haben, fällt offenbar dergleichen nothwendig weg: denn diese sind nicht aus der Anschauung entsprungen, sondern kommen ihr von innen entgegen, um aus ihr einen Inhalt erst zu empfangen, haben also noch nichts, worauf sie zurücksehn könnten. Ich bin hiebei weitläuftig, weil gerade Dieses auf den geheimen Hergang des Kantischen Philosophirens Licht wirft, der demnach darin besteht, daß Kant, nach der glücklichen Entdeckung der beiden Anschauungsformen *a priori*, nunmehr, am Leitfaden der Analogie, für jede Bestimmung unserer empirischen Erkenntniß ein Analogen *a priori* darzuthun sich bestrebt, und Dies zuletzt, in den Schematen, sogar auf eine bloß psychologische Thatsache ausdehnt, wobei der anscheinende Tiefsinn und die Schwierigkeit der Darstellung gerade dienen, dem Leser zu verbergen, daß der Inhalt derselben eine ganz unerweisliche und bloß willkürliche Annahme bleibt: Der aber, welcher in den Sinn solcher Darstellung endlich eindringt, wird dann leicht verleitet, dies mühsam erlangte Verständniß für die Ueberzeugung von der Wahrheit der Sache zu halten. Hätte hingegen Kant, wie bei der Entdeckung der Anschauungen *a priori*, auch hier sich unbefangen und rein beobachtend verhalten; so müßte er gefunden haben, daß was zur reinen Anschauung des Raumes und der Zeit hinzukommt, wenn aus ihr eine empirische wird, einerseits die Empfindung und andererseits die Erkenntniß der Kausalität ist, welche die bloße Empfindung in objektive empirische Anschauung verwandelt, eben deshalb aber nicht erst aus dieser entlehnt und erlernt, sondern *a priori* vorhanden und eben die Form und Funktion des reinen Verstandes ist, aber auch seine einzige, jedoch eine so folgenreiche, daß alle unsere empirische Erkenntniß auf ihr beruht. – Wenn, wie oft gesagt worden, die Widerlegung eines Irrthums erst dadurch vollständig wird, daß man seine Entstehungsart psychologisch nachweist; so glaube ich Dieses im Obigen, in Hinsicht auf Kants Lehre von den Kategorien und ihren Schematen, geleistet zu haben."

abstract and artificial constructions and misunderstand their relation to intuitions. As Paul Guyer suggests:

"Schopenhauer seems to mistake Kant's conceptual distinction between intuition and concept for a phenomenological distinction, a claim that we are conscious first of the one and only subsequently of the other, that Kant does not make. […] In claiming that Kant thinks that the category of causality is applied to the perception of objects but not immediately involved in that perception, Schopenhauer seems to confuse the sequence of Kant's exposition with a phenomenological sequence that Kant does not have in mind." (Guyer 2011, p. 39)

1.3. From the late nineteenth to theearly twentieth century

The notion of schema in the late nineteenth and early twentieth centuries is used in a uncountable variety of meanings. I have here presented the most significant ones by considering: the influential role of these thinkers in the philosophical literature, the direct relation to Kant and the use of notions close to the function ascribed to schema by Kant.

As I shall present, Friedrich Nietzsche refers 'schema' mainly to the logical structure of the thinking, while in Henri Bergson's account, it alludes to a way to organise movements and action and in Maurice Merlau-Ponty's work 'schema' means the connection between body and the object of perception. Besides, Wilhelm Dilthey uses the notion into two meanings: in relation to the thought ("schematic thinking") and to behaviour ("schematic way of life"), while Edmund Husserl's notion of thing-schema is very close to Kant's form of the intuition, although the two perspectives are significantly different. An influential and well-known interpretation of schematism is given by Martin Heidegger, who stresses the relevance and necessity of the chapter in Kant's *Critique*. Another important interpretation is the one provided by Ernst Cassirer, who refashions the notion of schemata historically, as symbols in his symbolic inquiry on the human nature. Similarly to Nietzsche, Karl Jaspers uses the term in a logical sense, while Alfred North Whitehead often refers to "cosmological schema" (a kind of frame of the general state of the universe) and 'schemata' intended as concepts able to clarify and give unity to theories. Besides, another important, although neglected, interpretation is the one of Max Horkheimer and Theodor Adorno, who regard schematism as the way in which the dominion of reason is realised and embodies the technical mentality of the industrial society. Last, I shall consider how Ludwig Wittgenstein uses the notion of criteria to answer a problem similar to that of schematism, namely the application of a general rule to the particular case.

Among the most notorious thinkers of the late nineteenth century, the notion of schema can be found in Nietzsche and Bergson. Nietzsche uses 'schema' is used in

different meanings. In a first one, the term describes the human capacity to produce stable and general concepts, impossible for intuition:

> "What distinguishes men from animals depends on the faculty to dissolve metaphors of intuitions into schema or an image in a concept; with schemata it is possible something, that cannot occur under the first impressions of the intuitions…" (Nietzsche 1967, 3/2, p. 375, transl. L.S.)[407]

Similarly, the term refers to the logical way of thinking and is a sort of synonym for 'abstract':

> "Logic and Mechanic […] are actually only an art to schematise and abstract, an unification of the plurality […] for the aim of the understanding." (Nietzsche 1967, 8/1, p. 194, transl. L.S.)[408]

In another sense, 'schema' alludes to the ability to interpret, i.e. to think in a correct, good way: "the reasonable thinking is an interpretation through schema, that we can not throw away." (Nietzsche 1967, 8/1, p. 197, transl. L.S.)[409] Since this capacity belongs to the nature of man, it is considered as a part of morality, which is conversely seen as: "the only interpretative schema, in front of which man stands" (Nietzsche 1967, 8/2, p. 193, transl. L.S.)[410]

An example of an empirical elaboration of Kant's notion of schema is Bergson's, who had a significant influence on Piaget – one of the psychologists on whom I will focus in the last part. In his *Matière et mémoire* Bergson refers to a "[…] motor schema…"[411] (Bergson 1896, p. 121, transl. L.S.), intended as to a way to organise movements; in addition, he uses this notion also in a different context, namely a rhetorical or artistic one, as method to order rhythmically the structure of a proposition, putting into evidence its most important connotations: "[…] the schema underlines only the relevant boundaries." (Bergson 1896, p. 123, transl. L.S.)[412] In a similar way, Merleau-Ponty uses the notion of "[…] corporeal schema…" (*schema corporel*)[413] to refer to the unity of the senses as well as to their connection to their object of perception. In his view, as presented in *Phénoménologie de la perception*, the relation between language and thinking is very deep: words are not mere placeholder

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407. "Alles, was den Menschen gegen das Tier abhebt, hängt von dieser Fähigkeit ab, die anschaulichen Metaphern zu einem Schema zu verflüchtigen, also ein Bild in einen Begriff aufzulösen; im Bereich jener Schemata nämlich ist etwas möglich, was niemals unter den anschaulichen ersten Eindrücken gelingen möchte [...]"
408. "Logik und Mechanik […] eigentlich nur eine Schematisir- und Abkurzungskunst, eine Bewältigung der Vielheit […] zum Zweck der Verständigung."
409. "Das vernunftige Denken ist ein Interpretieren nach einem Schema, welches wir nicht abwerfen können."
410. "Das einzige Interpretationsschema, bei dem der Mensch sich aushält."
411. "Scheme moteur."
412. "(Le schema) marque seulement les contours saillants."
413. Merleau-Ponty 1945, p. 113.

for concepts, but rather they actually carry the sense of the thoughts.[414] Later on, Dilthey, uses the term 'schema' in a negative as well in a positive sense: in a first sense, the "schematic thinking" (Dilthey 1966, 19, p. 386, transl. L.S.)[415] identifies the attitude of those thinkers who try to understand theoretically a non theoretical field, thus making a sort of categorical mistake, while in a positive way, it indicates a perspective, a way of life typical of religious people or scholars: "[…] schema of the Christian view of the world…" (Dilthey 1966, 7, p. 337, transl. L.S.)[416] or "[…] schema of the humanities scientists…" (Dilthey 1966, 7, p. 372, transl. L.S.)[417]

Before moving to Heidegger and his famous interpretation of schematism, I will focus on his mentor Edmund Husserl, who studied under Brentano, Stumpf and was deeply influenced by Natorp and Paulsen. Unfortunately I cannot indulge in presenting the complex and controversial husserlian reading of Kant's transcendental philosophy, but just give a couple of hints[418] to it, in order to better understand Husserl's use of the notion of schema. His lectures of the years 1923-24 (published under the names *First Philosophy* or *Critical History of the Ideas*) contain the commemorative lecture given on the occasion of Kant's anniversary: "Kant and Idea of Transcendental Philosophy". According to Husserl, in Kant's philosophy and its Copernican revolution there are the seeds of phenomenology, which can be considered as a relative of Kant's transcendental philosophy for what concerns method, fundamental presuppositions and problems (it is not a case that Husserl defines his own method as transcendental, insofar as it deals with the conditions of experience)[419]. However, Kant fails in elaborating a solid transcendental inquiry, because he does not develop a radical method of inquiry that enables him to discover intentionality, i.e. the methodological device of *epochè* (transcendental reduction[420]), which consists in the suspension of beliefs in the existence of e world and its objects and features. Through this reduction, the attention is led to the constituting activities of consciousness, intended as intentional, as consciousness of something, or, better said, as a consciousness of essences[421]. Cognition, in this perspective, has always a validity: the subject has always an intentional object,that, once applied the eidetic reduction[422] through which the attention is driven from a multiplicity of particulars to an *a priori* essence, eidos are disclosed, in the common experience as well in the case of science. There is not a distinction between the knowledge of appearances and

414. Merleau-Ponty, 1945, p. 116; p. 239; p. 271. Interesting enough, Merleau-Pony refers to Herder in describing the man as "*sensorium commune*" (Merleau-Ponty 1945, p. 271), whose main characteristic is namely the corporeal schema as core of the unity of perceptions in human beings.

415. "[…] schematisches Denken […]"

416. "[…] Schema der chistlichen Weltansicht […]"

417. "[…] Schema der Geisteswissenschaftlen […]"

418. Cf. Kern 1964.

419. Husserl 1959, p. 230.

420. Husserl 1959, pp. 270-273.

421. Husserl 1977, p. 11.

422. Husserl 1977, pp. 10-20.

that of the objects of science, as Kant (in Husserl's view) claims: on the contrary, each kind of experience has an objective content of truth, called "noema". The noema is the sense of the perception as it is perceived (the tree as it s perceived), and persists although the physical thing which belongs to nature is destroyed (the tree *simpliciter*), its sense, its noema[423], which has no real physical properties, persists[424]. Correlated to the noema is the noesis, that is the intentional process, qualitatively determined (hoping, thinking, remembering etc.), directed to the intentional object[425]. To Husserl, Kant sees that cognition is constituted in the relation between subject and object, but fails[426] in analysing this relation, relying on a mythic psychological presupposition[427] (the apperception) that condemned his philosophy to a psychologism, in which only science has an objective validity. As already stressed, I gave these hints in order to better understand the importance of the presence of 'schema' in the work of Husserl, who, on the one hand, was perfectly conscious of using a term with such a fundamental role in Kant's philosophy, and, on the other, gave a particular (and sometimes misleading[428]) interpretation of Kant's perspective.

'Schema' occurs only once in Husserl, namely in *Ideen I*:

> "*The regional idea* of the physical thing, its identical X with its determining sense-content, posited as existing, *prescribes rules governing the multiplicities of appearances*. That means: there are no multiplicities whatever which accidentally come together, which already follows from the fact that, in themselves, purely essentially, they have a relationship to the physical thing, the determined physical thing. The idea of the region prescribes a quite determined, internal organization of their flows which, in conformity with essence and accessible to investigation, cohere with partial ideas universally designated in the regional idea of the physical thing as its components, It is shown, for example – as a concrete portion of this organization – that the unity of a mere res extensa is conceivable without the unity for which the idea of the res materialis is a norm: although no res materialis is conceivable which would not be a res extensa. It becomes apparent (always in eidetic phenomenological intuition) that each physical thing-appearance necessarily includes in itself a stratum which we call the *physical thing-schema*: it is the spatial shape merely filled with "sensuous" qualities – without any determinateness of "substantiality" and "causality" (*scl*. In inverted commas, understood as noematically modified)." (Husserl 1977, p. 314-15)[429]

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423. The noema should be differentiated from the object in itself, sort of x, which is not given to the subject. Cf. Costa 2007, pp. 153-162.
424. Husserl 1977, pp. 182-188.
425. Husserl 1977, pp. 193-201.
426. Pradelle 2015, p. 35.
427. Husserl 1959, p.235.
428. As I have stressed in the previous chapters and as I shall show later, I do not agree with the accusation of psychologism in reference to Kant.
429. "Die regionale Idee des Dinges, sein identisches X mit dem bestimmenden Sinnesgehalt, als seiend gesetzt – schreibt Mannigfaltigkeiten von Erscheinungen Regeln vor. Das sagt: es sind nicht überhaupt Mannigfaltigkeiten,, zufällig zusammenkommende, wie ja schon daraus hervorgeht, daß sie in sic selbst, rein wesenmäßig, Beziehung aif das Ding, das bestimmte Ding, haben. Die Idee der Region schreibt ganz bestimmte, bestimmt geordnete, in infinitum fortschreitende, als ideale Gesamtheit genommen fest abgeschlossene Erscheinungsreihen vor, eine

Apart form the difference in the terminology, the similarity between Husserl's account of thing-schema and Kant's description of space as form is evident: both are conditions of the unification of the multiplicity, both are presupposed and necessary to the possibility of having experience of appearances. However, Husserl aims at distancing himself from Kant, insofar as the act of noesis has an eidetic a priori[430] correlate. Consequently, in contrast to Kant, the universal 'forms' are given in the intentional acts of consciousness without mediations[431], i.e., schemata. The perspectives of the two authors are clearly very different, but the similarities in their topics and use of the notion of schema. However, this goes beyond the limits of the present study. require a deeper and broader inquiry.

Now I shall move to the well-known Heideggerian interpretation of schematism and evaluation of the role of temporality. Kant is regarded as:

> "The first and only person who has gone any stretch of the way towards investigating the dimension of temporality or has even let himself be drawn hither by the coercion of the phenomena themselves is Kant." (Heidegger 1927, transl. J. Macquarrie & E. Robinson, p. 23)[432]

In *Kant and the Problem of Metaphysics* (1929), the author tries to rethink[433] Kant's philosophy and particular interest is devoted to the transcendental schematism, the function of imagination and the activity of subsumption. As Shaper stresses:

> "Risking a summarized formulation, one might say that Heidegger's radical criticism of the Western philosophical tradition is based on his recognition that temporality is something which can be added onto an otherwise competed philosophical account of existence. This, I believe, was exactly what Kant was groping for when he first made time (and space) part of the human framework for experience, than, later in the first *Critique*, hinted at more than methodological importance of building the time factor into the experimental equipment: we are in time, as Heidegger would put it, and to ask what time as such is, is just as futile as to consider it under the aspect of time- neither a theory of time nor an untemporal account of the real will do: the only answer lies in

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bestimmte innere Organisation ihrer Verläufe, die wesensmäßig und erforschbar zuasmmenhängt mit den Partialideen, die in der regionalen Dingidee als ihre Komponenten allgemein gezeicnet sind. Es zeigt sich z. B. - als ein Stück dieser Organisation – daß die Einheit einer bloßen res extensa denkbar ist ohne die Einheit, welche die Idee der res materialis normiert: obschon keine res extensa denkbar ist ohne die Einheit, die nicht res extensa wäre. Es stellt sich nämlich voraus (immer in eidetisch-phänomenologischer Intuition), daß jede Dingerscheinung notwendig in sich eine Schiciht birgt, die wie das Dingschema nennen: es ist die bloß mit "sinnlichen" Qualitäten erfüllte Raumgestalt – ohne jede Bestimmtheit der "Substanzialität" und "Kausalität" (sc. In Anführungszeichen, noematisch modifiziert verstanden)."

430. Cf. Husserl 1977, pp. 5-6. In this passage Husserl explains that he prefers the term 'essence' to 'idea', because he wants to take distance from Kant's account of ideas.

431. Sini 2006, pp. 16 -17.

432. "Der Erste und Einzige, der sich eine Strecke untersuchenden Weges in der Richtung auf die Dimension der Temporalität bewegte, bzw. sich durch den Zwang der Phänomene selbst dahin drängen ließ, ist Kant."

433. On the Heideggerian interpretation of Kant see: Höffe 2003 (chapter 11); Schaper 1964; Köhler 1997; De Blasi 2000; Wheaterstorn 2002.

an analysis of human experience-as Kant would say; Heidegger would see it as the fundamental analysis of man's being-in-the-world, his *Geworfensein* into existence." (Schaper 1964, p. 282)

According to Heidegger the relevance of the chapter of schematism lies in the importance it attributes to imagination[434] and in the definition of schemata as mediating function between concept and intuition, spontaneity and receptivity. Through this mediation, a a sort of "sensibilisation of reason", which makes concepts sensible becomes possible:

"[…] if all knowledge is primarily intuition and if finite intuition is characterized by receptivity, then for an explication of transcendence that is completely valid the relation of the transcendental imagination to pure intuition and also that of pure understanding to pure intuition must be explicitly discussed. Such a task demands that the transcendental imagination be presented in its unifying function and that thereby the constitution of transcendence and its horizon be exhibited in its most intimate development, Kant undertakes the revelation of the essential ground of ontological knowledge in the section which adjoins the "Transcendental Deduction" and is entitled: The schematism of the Pure Concepts of the Understanding. This reference to the position occupied by the chapter on schematism within Kant's system and in the sequence of the stages of the laying of the foundation in itself reveals that these eleven pages of the Critique of Pure Reason form the heart of the whole work." (Heidegger 1973, p. 89, transl. J. S. Churchill)[435]

Unlike several philosophers, for instance Hegel, Heidegger ascribes great importance to Kant's codependency of receptive and active functions of cognition, and down-places the reference to schematism as to a subsumption, which might lead to interpret schemata in a wrong sense, namely as mechanical and abstract mediations. On the contrary, he supports the interpretation of schematism as a cooperation between activity of the understanding and the receptivity of sensibility through time. But in doing so he modifies[436] Kant's doctrine by stating that schemata (regarded as cognitive procedures or rules) have a sensible counterpart:

"The schema is to be distinguished from images, but nevertheless it is related to something like an image, i.e., the image-character belongs necessarily to the schema. It (the

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434. The value of Kant's description of imagination, to Heidegger, consists in its being situated at a meta-level, at .the roots of the sources of cognition (sensibility and understanding). Cf. Hepfer 2006, pp. 119-120.,

435. "Wenn jedoch alle Erkenntnis primär Anschauung ist und endliche Anschauung den Character des Hinnenhemns hat, dann muss fur eine vollgueltige Erhellung der Transzendenz ebenso ausdruecklich der Bezug des reinen Verstandes zu dieser eroertet werden. Eine solche Aufgabe fuehrt aber dazu, die transzendentale Einbildungskraft in ihrer einigenden Funktion und damit das Sichbilden der Transzendenz und ihres Hoizontes in senem innersten geschehen vorzufuehren.Die Freilegung des Wesensgrundes der ontologischen Erkenntnis als endlicher reiner Anschauung unternimmt Kant in dem an die transzendentale Deduktion sich anscliessenden Abschnitt, der ueberschrieben ist – Von dem Schematismus der reinen Verstandesbegriffe-."

436. Wheaterstorn 2002, pp. 166 - 176.

character of the image) has its own essence. It is neither just a simpler look ('image in the first sense) nor a likeness ('image' in the second sense). It will therefore be called the schema-image (*das Schema-Bild*)." (Heidegger 1973, p. 97, transl. J. S. Churchill)[437]

This distinction between schemata and schema-images is quite controversial: schemata, if contrasted to schema-image insofar as the latter are sensible, might be regarded as owning the same functions of categories (namely to be rule of cognition). If so, then Heidegger fails in understanding the account of Kant on schema as sensible and intellectual function.

However, he also claims that the greatest merit of Kant consists in the role he ascribes to time[438]: time is not only the condition of the experience but also of the activity of the subject, whose intellectual faculty (*logos*) is governed through time-connotations[439]. In this perspective, schemata show the intimate connection between the 'I' and time through the *synthesis speciosa*. Moreover, against the interpretation of the neokantians Natorp, Rickert and Cassirer, who (according to Heidegger) regard the *Critique of Pure Reason* as a theory of knowledge, he declares in *Kant and the Problem of the Metaphysic* that the value of Kant's *Critique* lies exclusively in its hints at the analysis of the ontological structure of subjectivity and its finiteness:

"The problem of the schematism of the pure concepts of the understanding is a question concerning the inmost essence of ontological knowledge. If Kant, in the chapter on schematism, poses the problem of the conceptuality of the fundamental concepts and resolves it with the help of the essential definition of these concepts as transcendental schemata, it is evident that the doctrine of the schematism of the pure concepts of the understanding is the decisive stage of the laying of the foundation of *metaphysica generalis.*" (Heidegger 1973, p. 111)[440]

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437. "Das Schema ist zwar vom Bilde zu unterscheiden, aber gleichwohl auf so etwas wie Ebild bezogen, h.h. Der Bildcharakter gehoert notwendig zum Schema, Er hat sein eigenes Wesen. Er ist weder nur ein chlichter Anblick (-Bild- in der ersten Bedeutung) noch ein Abbild (-Bild- in der zweiter Bedeutung). Er sei daher das Schema-Bild genannt."

438. Heidegger 1927, pp. 23 – 24. On Heidegger's analytic of existence and Kant, see Hirano 2017, pp. 205-17.

439. An example of another phenomenological interpretation of Kant's schemata is that of Costa, who regards schemata as temporal shapes or figures (*Zeitgestalten*) that are the modalities in which: "the system - reason opens itself to the environment-.experience"("il sistema-ragione si apre al suo ambiente-esperienza" Costa 1995, p. 158, trans. L.S.). In his view, which echoes not only Heidegger, but also Husserl, schemata are the conditions of the possibility of the intention of fulfilment (*Erfüllungsintention*) of categories. (Costa 1995, p. 159) and schemata represent the compresence of subject and object, or the being-in-the-world- of reason (Costa 1995, p. 179).

440. "Das Problem des Schematismus der reinen Verstandesbegriffe ist die Frage nach dem innersten Wesen der ontologischen Erkenntnis. So springt in die Augen: wenn Kant im Schematismuskapitel das Problem der Begrifflichkeit der Urbegrigge stellt und es mit Hilfe der Wesentbestimmung dieser Begriffe als transzendentaler Scchemata loest, dann ist die Lehre vom Scheamtismus der reinen Verstandesbegriffe das entscheidende Stadium der Grundlegung der Metaphysika generalis."

Insofar as it is limited, human reason depends on sensibility and through Kant's schematism sensibility and understanding might be dissolved into their common source, the transcendental imagination, which is grounded on time. Moreover, in *Being and Time* Heidegger discusses the "Temporal Problem of the Transcendence of the World" and uses the notion of horizonal schemata, intended as the meaningfulness of the world through the *Dasein* in time. As he puts it:

> "[…] the existential-temporal condition for the possibility of the world lies in the fact that temporality, as an ecstatic unity, has something like a horizon. Ecstases are not simply raptures in which one gets carried away. Rather, there belongs to each ecstasis a 'whither' to which one is carried away. This "whither" of the ecstases we call the horizonalschema." (Heidegger 1927, p. 365)[441]

In Hedegger's interpretation, Kant's schemata are a at the basis of the ontological knowledge: it is only through them that categories acquire an objective significance and the pure thought can be presented intuitively in the pure form of time. Therefore, transcendental imagination, insofar as it is the faculty of the pure synthesis, can be regarded as the capacity to project, in the sense that it discloses the horizon of the comprehension of the being to the finite reason. Heidegger sees in Kant's threefold synthesis (pre-cognition, apprehension and reproduction), i.e., in the triple functions of the imagination the three Ekstases of the time-connotation of the being: Kant's imagination, namely, can be distinguished into: *Abbildung* (*facultas formandi*), which is responsible of the representation of images in the present; *Nachbildung* (*facultas immaginandi*), responsible for the reproduction of images of the past and the *Vorbildung* (*facultas praevidendi*), which permits to preform images in the future.[442] Then, since Kant's schemata are products of the transcendental imagination and are at the basis of the possibility of knowledge, they arecomparable to the horizonal schemata that disclose the three stages of Ektases.

A very different account of schematism is the one of Cassirer, who refashions the mediating function of Kant's schematism through symbolic forms, that constitute the core concepts of his view of human nature:

> "No longer in a merely physical universe, man lives in a symbolic universe. Language, myth, art, and religion are parts of this universe.[…] Physical reality seems to recede in proportion as man's symbolic activity advances. […] He has so developed himself in linguistic forms, in artistic images, in mythical symbols or religious rites that he cannot see or know anything without the interposition of this artificial medium." (Cassirer 1944, p. 24)"

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441. "Die existenzialzeitliche Bedingung der Möglichkeit der Welt liegt darin, daß die Zeitlichkeit als ekstatische Einheit so etwas wie einen Horizont hat. Die Ekstasen sind nicht einfach Entrückungen zu… Vielmehr gehört zur Ekstase ein »Wohin« der Entrückung. Dieses Wohin der Ekstase nennen wir das horizontale Schema."

442. Köhler 1997, p. 28.

According to Cassirer the main characteristic of humankind is the functional ability to symbolise, namely, to organise his variety of practices, internal life and projects in a whole. As the schema in Kant is a process through which the multiplicity of intuitions can be synthesised through the *synthesis speciosa* according to a general rule of unity, so symbolic forms permit to unify practices, cognitions and human activities in general:

> "The philosophy of the symbolic forms starts from the presupposition that, if there is any definition of the nature or essence of man, this definition can only be understood as a functional one, not a substantial one. We cannot define the man by any inherent principle which constitutes his metaphysical essence-nor can we define him by any inborn faculty or instinct that may be ascertained by empirical observation. Man's outstanding characteristic, his distinguishing mark, is not his metaphysical or physical nature-but his work. It is this work, it is the system of human activities, which defines and determines the circle of humanity." (Cassirer, 1944, p. 68)

Later on, the notion of schematism can be found in Jaspers, who on the one side recalls the Nietzscheian meaning of logical schema, while on the other he refers to "formal schemata"(*formalen Schemas*;Jaspers 1932, p. 2) to allude to the most general conceivable concepts.

Another interesting use of the term is Whitehead's, who refers to 'schema' in his holistic cosmology:

> "Cosmology is the effort to frame a schema of the general character of the present stage of the universe. The cosmological schema should present the genus, for which the special schemata of the sciences are the species. The task of Cosmology is twofold. It restrains the aberrations of the mere undisciplined imagination. A special schema should either fit in with the general cosmology, or should by its conformity to fact present reasons why the cosmology should be modified, in the case of such misfit, the more probable result is some modification of the cosmology and some modification of the schema in questions." (Whitehead 1929, p. 61)

Moreover, Whitehead refers also to "schemata of the thinking" regarded as sort of concepts able to clarify and provide unity to theories and systems:

> "Millions had seen apples fall from trees, but Newton had in his mind the mathematical schema of dynamic relations: millions had seen lamps swinging in temples and churches, but Galileo had in his mind his vaguer anticipation of this same mathematical schema." (Whitehead 1929, p. 58)

Another important (and, so far, almost neglected[443]) legacy of Kant's schematism can be found in Theodor Adorno' and Max Horkheimer's doctrines[444]. It is not surprising that Horkheimer recalls Kant's schematism chapter, given that he

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443. So far, there are no papers on this topic.

444. Cf. Abromeit 2011.

devoted his dissertation to the teleological antinomy of the *Critique of Judgement* and his *Habilitationsschrift* to the relation of practical and theoretical reason focusing on the question concerning the possibility of realising rational ends in nature. In the *Dialektik der Aufklärung* 'schema' (or 'schematism) occurs almost 40 times, and the *Excurs II* opens with the reference to Kant's schematism as condition of his account of rationality:

> "Reason is "a faculty of deducing the particular from the universal." According to Kant, the homogeneity of the general and the particular is guaranteed by the "schematism of pure understanding," by which he means the unconscious activity of the intellectual mechanism which structures perception in accordance with the understanding. The intelligibility which subjective judgment discovers in any matter is imprinted on that matter by the intellect as an objective quality before it enters the ego. Without such a schematism in short, without the intellectual element in perception no impression would conform to the corresponding concept, no category to the particular example; thought, not to speak of the system toward which everything is directed, would be devoid of unity. To establish this unity is the conscious task of science. If"all empirical laws [are] only special determinations of the pure laws of understanding," research must always ensure that the principles are properly linked to the factual judgments." This harmony of nature with our cognitive faculty is presupposed a priori by the Judgment." It is the "guiding thread" of organized experience." (Horkheimer & Adorno 1947, p. 64, transl. E. Jephcott)[445]

Schematism, according to this account, is the condition of the subsumption of the particular under the universal: through schemata the conformity to the unity is realised. In this way, which characterises Enlightenment, reason and its systematicity govern experience and practises, in which no violation can be allowed. The individual, the single has to conform with the whole. In this sense, schematism represents the way in which the dominion of reason is realised and embodies the technical mentality of the industrial society.[446] As Horkheimer puts it:

> "A thinking which fails to maintain agreement between system and perception does not merely violate isolated visual impressions; it conflicts with real praxis. Nor only does

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445. "Die Vernunft ist »ein Vermögen das Besondere aus dem Allgemeinen abzuleiten«. Die Homogeneität des Allgemeinen und Besonderen wird nach Kant durch den »Sche- matismus des reinen Verstandes« garantiert. So heißt das unhe- wußte Wirken des intellektuellen Mechanismus, der die Wahr- nehmung schon dem Verstand entsprechend strukturiert. Der Verstand prägt die Verständlichkeit der Sache, die das subjektive Urteil an ihr findet, ihr als objektive Qualität schon auf, ehe sie ins Ich noch eintritt. Ohne solchen Schematismus, kurz ohne Intellektualität der Wahrnehmung, paßte kein Eindruck zum Begriff, keine Kategorie zum Exemplar, es herrschte nicht einmal die Ein- heit des Denkens, geschweige des Systems, auf die doch alles abzielt. Diese herzustellen ist die bewußte Aufgabe der Wissenschaft. Wenn» alle empirischen Gesetze nur besondere Bestimmungen der reinen Gesetze des Verstandes« sind, muß die Forschung stets darauf achten, daß die Prinzipien mit den Tatsachenurteilen richtig verbunden bleiben. »Diese Zusammenstimmung der Natur zu unserem Erkenntnisvermögen wird von der Urteilskraft a priori vorausgesetzt.« Sie ist der »Leitfaden« für die organisierte Erfahrung."

446. Kang 1985, p.176.

> the expected event fail to occur but the unexpected happens: the bridge collapses, the crop fails, the medicine causes illness. The spark which most conclusively indicates a lack of systematic thinking, a violation of logic, is not a fleeting perception but sudden death. The system which enlightenment aims for is the form of knowledge which most ably deals with the facts, most effectively assists the subject in mastering nature. The system's principles are those of self-preservation. Immaturity amounts to the inability to survive. The bourgeois in the successive forms of the slave-owner, the free entrepreneur, and the administrator is the logical subject of enlightenment. The difficulties within this concept of reason, arising from the fact that its subjects, the bearers of one and the same reason, are in real opposition to each other, are concealed in the Western Enlightenment behind the apparent clarity of its judgments." (Horkheimer & Adorno 1947, pp. 64-65, transl. E. Jephcott)[447]

In the discrepancy between the ideality of the conformity to the unity and the fact that in the praxis society is constituted by individuals, it is possible to see a reminiscence of Horkheimer's interest in questions concerning the realisation of universal practical ideas in nature.

The last philosophical influence of Kant's schematism that I shall here consider is the one of Wittgenstein. He contrasts subjectivism by proposing a pragmatic view to explain mental attitudes, that are explained through the reference to common practices, established in a community: "Describing my state of mind (my fear of something) is something I do in a particular context (Just as it takes a particular context to make a certain action into an experiment.)" (Wittgenstein 1990, p. 360, transl. L.S.)[448] Unlike subjectivists, who regard concepts as causes of the behaviour, pragmatists consider concepts as customs: rules of inference and categorization of events, that are abstracted from the social practices and uses[449]. The practices that regard a certain class of objects are at the basis of the attribution of concepts: in our

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447. "Denken, das System und Anschauung nicht in Einklang hält, verstößt gegen mehr als ge- gen isolierte Gesichtseindrücke, es kommt mit der realen Praxis in Konflikt. Nicht allein bleibt das erwartete Ereignis aus, sondern das unerwartete geschieht: die Brücke stürzt, die Saat verkümmert, die Medizin macht krank. Der Funke, der am prägnantesten den Mangel an systematischem Denken, den Verstoß gegen die Logik anzeigt, ist keine flüchtige Wahrnehmung, sondern der plötzliche Tod.Das System, das der Aufklärung im Sinne liegt, ist die Gestalt der Erkenntnis, die mit den Tatsachen am besten fertig wird, das Subjekt am wirksamsten bei der Naturbeherrschung unterstützt. Seine Prinzipien sind die der Selbsterhaltung. Unmündigkeit erweist sich als das Unvermögen, sich selbst zu erhalten. Der Bürger in den sukzessiven Gestalten des Sklavenhalters, freien Unternehmers, Administrators, ist das logische Subjekt der Aufklärung. Die Schwierigkeiten im Begriff der Vernunft, die daraus hervorgehen, daß ihre Subjekte, die Träger ein und derselben Vernunft, in realen Gegensätzen stehen, sind in der westlichen Aufklärung hinter der scheinbaren Klarheit ihrer Urteile versteckt."

448. "Meinen Seelenzustand (der Furcht etwa) beschreiben, das tue ich in einem bestimmten Zusammenhang (Wie eine Bestimmte Handlung nur in einem bestimmten Zusammenhang ein Experiment ist.)"

449. More specifically, the attribution of concepts is holistic, indeterminate and characterised by normativity. It is holistic because an object which is ascribed a particular concept must be capable of being ascribed some of the concept's implications. It is indeterminate because no attribution of a concept is necessary or sufficient to determine a behaviour. It is ruled by normativity because the ascription of a concept must be coherent in order to maximize the rationality of the actions (Cf. Hommen & Oswald 2016, pp. 95-122).

grammar (the description of a kind of objects in our common language or habits) an object has to respect some costumes (rules) to be called 'table': "Grammar tells what kind of object anything is (Theology as grammar.)" (Wittgenstein 1990, p. 256, transl. L.S.)[450] Conversely, to possess concepts means to treat objects in accordance to the costumes. But here Wittgenstein has to introduce a new function, criteria, that are somehow comparable to Kant's schemata. Similarly to schemata, criteria tell when a particular rule (concept) has to be applied to an object or not. Therefore, criteria are not logical nor empirical rules;instead, they are pragmatic functions for relating concepts and things. Here we can see the similarity between schemata and criteria: both are rules, abilities (not privately arbitrarily determined, but shared in a context), for the application of a concept[451]:

> "Whether or not Kant thinks that concepts are the causes of, rather than identical with, certain capacities, his actual working use of concept is, except when he is explaining analyticity, rather thoroughly Wittgensteinian. For him, as for Wittgenstein, the interest of concepts lies in the abilities with which they are somehow associated." (Bennett 1966, p. 54)

Nevertheless, it is important to stress that schematism in Kant is not a figurative construction but rather a cognitive procedure to determine an intuition according to a concept. If it were a way to construct an image, this image would not provide in itself the criteria to ascribe a concept to a thing.

As shortly presented, Kant is accused by many philosophers of adding schematism as an obscure, unnecessary passage in the *Critique of Pure Reason*. Hegel refers to schemata as artificial time determinations and both Herbart and Beneke refuses the need for a mediation between concepts and senses, while Schopenhauer criticises Kant's method. In contrast, positive uses of the term 'schema' in the sense of mediating function are those of Maimon, Schellling and Merlau-Ponty; whereas the term is often used in relation to the productive activity of imagination (Fries), to logic (Nietzsche, Jaspers) and to concept's production and language (Herder, Humboldt, Schelling, Hegel, Schleiermacher). Besides, Cassirer develops a philosophy of the symbolic forms in which he develops, as it were, historical schemata to provide unity to all aspects of human life, similarly to Whitehead's cosmological schema (a frame of the general state of the universe) and general schema that give unity to theories.

But probably the most interesting ways to refashion the notion are those of Husserl, Heidegger, Horkheimer and Wittgenstein. The two perspectives are interesting for different reasons: The first, namely, is very close to Kant's account of space, while the second represents maybe the best enthusiastic reception of the notion of temporality in Kant, but, as already stressed, it is also an misleading interpretation of Kant's thought. Horkheimer, takes schematism as representation of the industrial

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450. "Welche Art von Gegenstand etwas ist, sagt die Grammatik. (Theologie als Grammatik.)"

451. Cf. Forgione 2005.

mentaliy, core of his critical accusations, while Wittgenstein, although does not make explicit references to Kant's text, provides an original and modern elaboration of the core problem of schematism, namely: how general rules can be applied to actual, particular cases.

After having provided this overview, I shall stress that the value of schematism as procedure of the imagination, which links intuition and understanding is stressed by psychologists concerned with the problem of the constitution of the mental world and faculties. Many psychological theorists were inspired by Kant: in their works dealing with cognition and imaging, they found in the notion of schema a useful way to explain the development of the functions and psychological processes implied in practical and cognitive activity. But are the philosophical and the psychological critics dealing with the same notion of schema as Kant does? Are they using notions such as concepts, intuition and function in the same way? What is Kant's view on psychology? Can it be somehow related to philosophy and, if so, how?In order to answer these questions and before focusing on the influence of the doctrine of schemata on some psychologists taken as the most representatives examples (Piaget, Bartlett and Barsalou), I aim at presenting Kant's evaluation of psychology in its difference from philosophy.

2. Kant's distinction between philosophy and psychology

As maintained by Dessoir, between the eighteenth and the nineteenth centuries, the study of the mind saw the exaggerative increment of faculties: thinkers of these years referred not only to an understanding at the basis of the cognitive activity, and a will, at the basis of desire and actions, but to thousands of capacities and faculties[452]. Kant himself might be accused of making reference to an excessive variety of faculties, whose functions are sometimes difficult to evaluate as it is difficultto figure out whether they are based on philosophical,anthropological, or psychological considerations. In order to shed light on this question, I aim to stress that Kant makes a fundamental distinction between philosophy and psychology, and consequently between their approach to faculties.

The literature on Kant and psychology is quite rich. Theyoften deal with the role ascribed by Kant to psychology, faculties and their distinctions (e.g.Dessoir 1902, Ameriks 1982,Takeda 1969, Kitcher 1990, Kaiser-El- Safti 2001, Sturm 2009). Related to this, some works on Kant's idea of philosophy include relevant reflections on its relations to psychology and other sciences as well(Cassirer 1919; Morrison 1989, Watkins 2001, Hoenegger 2004, Ameriks 2006).

According to Kant, philosophy, as it will be stressed in 2.1, is a system of rational knowledge through concepts and has to be distinguished fundamentally into two parts, namely the metaphysics of nature and the metaphysics of morals. Consequently, there are different domains in which particular faculties are legislative. Interestingly enough, the notion of schema is quite central here: each domain has systematicity as a constraint, in the sense that their content has to be unified according to general rules (see Sturm, 2009, ch. 3). If so, schema assumes an important function not only in relation to Kant's inquiry on experience and knowledge, but also in his general account of science and philosophy: without schemata, without the application of pure rules to experience, no science would be possible at all(KrV A833/B861).

In Kant's view, psychology (2.2) – at least as it is in his times – can only be regarded as a mere doctrine and not as an actual science with proper a priori principles (AA IV, p. 471). In the *Critique of Pure Reason*, Kant rejects the possibility of a rational psychology, because it would be based only on fallacious reasoning (paralogisms). However, psychology can be developed as a empirical discipline which inquires the subject as phenomenon of the innner experience (KrV A848/B876). In his works, Kant moves from a psychology of temperaments to a psychology of faculties, as I shall here present. Then I will try to answer the contested question concerning the

452. Dessoir 1902, p. 385.

impossibility of psychology to become a natural science "properly so called", as well as to focus on the possible reasons why Kant does not simply discard it, as an incorrect or useless inquiry.

2.1. Philosophy as system of concepts

In order to understand Kant's view of philosophy, I will concentrate on passages of the *Critique of Pure Reason*, the *Critique of the Power of Judgement* and the *Metaphysical Foundations of Natural Science*. The purpose is to show that, apart from minor differences, Kant has a precise and coherent view of philosophy, at least during the critical period. Once provided an adequate understanding of his account of philosophy, it will be possible to considerhis views on psychology and its relation to philosophy.

As Kant declares in the first introduction to the *Critique of the Power of Judgement*, philosophy is a system of the rational knowledge through concepts and it can be distinguished into "formal" philosophy and "real" philosophy.[453]The former deals with abstract form, namely the rules of the thinking (general logic), while the latter concerns objects of the thinking insofar as they can be conceptualized. In addition, "real" philosophy can be distinguished into theoretical (philosophy of nature) and practical (philosophy of morals): theoretical philosophy focuses on the natural world of objects and their determinations (therefore it can contain empirical principles), while practical philosophy deals with the world of freedom, namely the world in which the laws regard only the form of action and not its contents. From these separations it derives that systematic philosophical knowledge depends on distinctions among the fields on the basis of a rule. Thus, the first step of each investigation consists in the correct distinction of objects according to different faculties: each theory must have clear rules that connect the kinds of objects to their appropriate context of validity. In this way, as Kant stresses in the second introduction to the *Critique of the Power of Judgement*, field (*Feld*), territory *(Boden*) and domain *(Gebiet)*[454]have to be distinguished. The first concerns the relation of concepts to objects without considering the possibility of their knowledge;is it therefore unrestricted. The second indicates that part of the field in which knowledge is possible (the phenomena); the third, finally, refers to the part of the territory in which concepts of the understanding or of reason are legislative.It is divided into the domain of nature, which regards the understanding and its relation to objects in intuition,and the domain of freedom, which concerns reason and its noumenal objects. However, since reason is a unique faculty, it must be possible to conceive of an underlying unitybetween these two domains(which Kant ultimately provides establishes by means of the power of judgement's principle of purposiveness). If such unity could not be conceived, there

453. AA X, p. 9.

454. AA V, p.174.

would be a contradiction within reason itself.[455] The thought of this unity is possible only through the reference to the faculty of judgement, which permits us to think about the link between particular and universal:

> "It is therefore to be suspected at least provisionally that the power of judgment likewise contains an a priori principle for itself. […] it will likewise effect a transition from the pure faculty of cognition, i.e., from the domain of the concepts of nature, to the domain of the concept of freedom, just as in its logical use it makes possible the transition from understanding to reason.."(AA V, pp. 177-179)[456]

The faculty of judgement assumes an essential role in the system: it connects different fields,used to answerquestions such as: how can universals and particulars be connected? How can a general rule be applied to a particular case? Reason and understanding are not sufficient to solve the problem of the relation between particular and general, nature and freedom. Therefore, a faculty dealing with the limits between heterogeneities (*Grenzen*)[457] and which is able to focus on a wider position above the particular field to which reason or understanding are legislative, is required.[458] In this view, philosophy has the aim to put limits and make links through what Kant calls "architectonics"[459], defined in the *Critique of Pure Reason* as the "art" of building the "systems" of complex wholes, especially wholes of knowledge (KrV A832/B860):

> "Under the government of reason our cognitions cannot at all constitute a rhapsody but must constitute a system, in which alone they can support and advance its essential ends. I understand by a system, however, the unity of the manifold cognitions under one idea. This is the rational concept of the form of a whole, insofar as through this domain of the manifold as well as the position of the parts with respect to each other is determined *a priori*." (KrV A832/B860)[460]

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455. As I have already stressed in the previous chapter, the separation between the two domains raised criticisms of his successors (Hegel *in primis*).

456. "Es ist also wenigstens vorläufig zu vermuthen, daß die Urtheilskraft eben so wohl für sich ein Prinzip a priori enthalte und […] eben so wohl einen Übergang vom reinen Erkenntnißvermögen, d. i. vom Gebiete der Naturbegriffe, zum Gebiete des Freiheitsbegriffs bewirken werde, als sie im logischen Gebrauche den Übergang vom Verstande zur Vernunft möglich macht."

457. According to Kant, there is a distinction between *Schranken* and *Grenzen*: while the first deal with the knowledge of homogeneous things, the others deal with the knowledge of the heterogeneity, or the entire in its various aspects. (Cf. AA IV, pp. 350-356)

458. As Kant states in the Reflexion 1592: If we aim at the understanding of something in nature, we have not to go beyond it in our explanation. DifferentlyIn contrast to this, if we aim at the understanding of nature as a whole, we have to go beyond its limits. (sSee Hohenegger 2004).

459. Kant uses 'architectonic' in three senses: the first concerns reason insofar as it unites and orders the principles of cognition of the pure reason (KrV B37; KrV A474/B502); the second refers to the architectonic of schences, namely the method through which the limits among sciences are determined (KrV A835-847/B863-875; AA XXI, p. 179; ; the third deals with the architectonic unity or those (moral) principles according to which sciences are systematically ordered (KrV A839/B867-A840/B868).

460. "Unter der Regierung der Vernunft dürfen unsere Erkenntnisse überhaupt keine Rhapsodie, sondern sie müssen ein System ausmachen, in welchem sie allein die wesentlichen Zwecke derselben unterstützen und befördern können. Ich verstehe aber unter einem Systeme die

Systems of knowledge, as presented by Kant in "The Architectonic of Pure Reason" (KrV A832/B861-A851/B879) is then similar to an organism, in which the parts are organised in a whole through a rule or a common idea. Only through this idea it is possible to organise a system, thus constituting a science. But what does this rule consist in? In the case of philosophy, this rule consists in the practical ends. It is in this sense when Kant claims in his *Logik*that architectonic is:

"[…] a system in accordance with ideas, in which the sciences are considered in regard to their kinship and systematic connection in a whole of cognition that interests humanity." (AA IX, p. 48)[461]

Therefore, it is the priority of the practical interests of reason, what makes philosophy a sort of meta-science, able to organise systematically all the other particular sciences. For the other sciences, it is necessary only to be systematic:[462]

"I understand by a system, however, the unity of the manifold cognitions under one idea. This is the rational concept of the form of a whole, insofar as through this the domain of the manifold as well as the position of the parts with respect to each other is determined *a priori*. The scientific rational concept thus contains the end and the form of the whole that is congruent with it. The unity of the end, to which all parts are related and in the idea of which they are also related to each other, allows the absence of any part to be noticed in our knowledge of the rest, and there can be no contingent addition or undetermined magnitude of perfection that does not have its boundaries determined *a priori.* The whole is therefore articulated (*articulatio*) and not heaped together (*coacervatio*); it can, to be sure, grow internally (*per intus susceptionem*) but not externally (*per appositionem*), like an animal body, whose growth does not add a limb but rather makes each limb stronger and fitter for its end without any alteration of proportion." (KrV A832-3/ B860-1)[463]

Einheit der mannigfaltigen Erkenntnisse unter einer Idee. Diese ist der Vernunftbegriff von der Form eines Ganzen, sofern durch denselben der Umfang des Mannigfaltigen sowohl, als die Stelle der Teile unter einander, a priori bestimmt wird."

461. "[…] die ein System nach Ideen ist, in welchem die Wissenschaften in Ansehung ihrer Verwandtschaft und systematischen Verbindung in einem Ganzen der die Menschheit interes- sirenden Erkenntniß betrachtet werden."

462. As Gabriele Gava points out (Gava 2014), two notions of architectonic (and then of ideas that give systematicity to sciences) have to be distinguished: a strong and a weak one. The first is proper of philosophy in a cosmological sense and consists in the development of a system of cognitions relating them to the essential ends, namely the moral ones (KrV A8407/B868). The second concerns sciences insofar as their cognitions are organised in a coherent system according to a regulative idea (KrV A832/B860; AA IV, p. 648).

463. "Ich verstehe aber unter einem Systeme die Einheit der mannigfaltigen Erkenntnisse unter einer Idee. Diese ist der Vernunftbegriff von der Form eines Ganzen, so fern durch denselben der Umfang des Mannigfaltigen sowohl, als die Stelle der Theile untereinander a priori bestimmt wird. Der scientifische Vernunftbegriff enthält also den Zweck und die Form des Ganzen, das mit demselben congruirt. Die Einheit des Zwecks, worauf sich alle Theile und in der Idee desselben auch unter einander beziehen, macht, daß ein jeder Theil bei der Kenntniß der übrigen vermißt werden kann, und keine zufällige Hinzusetzung, oder unbestimmte Größe der Vollkommenheit, die nicht ihrea priori bestimmte Grenzen habe, stattfindet. Das Ganze ist also gegliedert (*articulatio*) und nicht gehäuft (*coacervatio*); es kann zwar innerlich (*per intussusceptionem*), aber nicht äußerlich (*per appositionem*) wachsen, wie ein thierischer Körper, dessen

However, the idea which gives unity to sciences, is not a schema yet: it constitutes a guide to knowledge to which it is necessary to add a content.In other words, the general rule has to be applied to sensibility. Kant underlines that this general guiding rule must have an originindependent from experience, otherwise it would be a basis for the development of technical, rhapsodic cognitions, and not sciences:

> "A schema that is not outlined in accordance with an idea, i.e. from the chief end of reason, but empirically, in accordance with aims occurring contingently (whose number one cannot know in advance) yields **technical** unity, but that which arises only in consequence of an idea (where reason provides the ends a priori and does not await them empirically) grounds **architectonic** unity. What we call science, whose schema contains the outline (monogramma) and the division of the whole into members in conformity with the idea, i.e. *a priori*, cannot arise technically, from the similarity of the manifold or the contingent use of cognition *in concreto* for all sorts of arbitrary external ends, but arises architectonically, for the sake of its affinity and its derivation from a single supreme and inner end, which first makes possible the whole; such science must be distinguished from all others with certainty and in accordance with principles." (KrV A833/B861)[464]

Since reason concerns the pure as well as the empirical field, there are two kinds of architectonic: one of pure reason, and another one of empirical reason. Cognitions based on pure reason are rational and belong to philosophy, which is distinguished into pure and empirical insofar as its principles are pure or empirical.

Another important point of Kant's is that philosophy, if it aims to become a system, has be preceded by a critic:

> "Now the philosophy of pure reason is either **propaedeutic** (preparation), which investigates the faculty of reason in regard to all pure a priori cognition, and is called **critique**, or, second, the system of pure reason (science), the whole (true as well as apparent) philosophical cognition from pure reason in systematic interconnection, and is called **metaphysics."** (KrV A841/B869)[465]

Wachsthum kein Glied hinzusetzt, sondern ohne Veränderung der Proportion ein jedes zu seinen Zwecken stärker und tüchtiger macht."

464. "Das Schema, welches nicht nach einer Idee, d. i. aus dem Hauptzwecke der Vernunft, sondern empirisch, nach zufällig sich darbietenden Absichten (deren Menge man nicht voraus wissen kann), entworfen wird, giebt technische, dasjenige aber, was nur zu Folge einerIdee entspringt (wo die Vernunft die Zwecke a priori aufgiebt und nicht empirischerwartet), gründet architektonische Einheit. Nicht technisch wegen der Ähnlichkeit des Mannigfaltigen, oder des zufälligen Gebrauchsder Erkenntniß *in concreto* zu allerlei beliebigen äußeren Zwecken, sondernarchitektonisch um der Verwandtschaft willen und der Ableitung von einem einigen obersten und inneren Zwecke, der das ganze allererst möglichmacht, kann dasjenige entspringen, was wir Wissenschaft nennen,dessen Schema den Umriß (*monogramma*) und die Eintheilung des Ganzen in Glieder der Idee gemäß, d. i. a priori, enthalten und dieses vonallen anderen sicher und nach Principien unterscheiden muß."

465. "Die Philosophie der reinen Vernunft ist nun entweder Propädeutik (Vorübung), welche das Vermögen der Vernunft in Ansehung aller reinen Erkenntnis a priori untersucht, und heißt Kritik, oder zweitens das System der reinen Vernunft (Wissenschaft), die ganze (wahre sowohl als scheinbare) philosophische Erkenntnis aus reiner Vernunft im systematischen Zusammenhange, und heißt Metaphysik."

This metaphysics in a broad sense, intended not as the inquiry on transcendent objects, but as the investigation containing a priori cognitions, is constituted[466] by a metaphysics of morals (which deals with the a priori principles of actions) and a metaphysics of nature (that regards the a priori theoretical cognition of all thing). This latter, called metaphysics in a narrow sense[467], consists of transcendental philosophy, which concerns reason and the understanding in a systems of concepts related to objects in general, and a physiology, which regards the given objects (nature). In other words, transcendental philosophy concerns the conditions of possibility of objects in general (without considering their specific kind or nature), while physiology deals with the object of the particular immanent nature (physics and, if the case, psychology) or with the transcendent objects that are not under the conditions of possibility of experience (cosmology and theology). Now, the metaphysics of nature, insofar as it concerns only a priori principles, is called rational physiology[468] (or psychology, if it deals with the object of inner sense). Such a rational physiology does not constitute a knowledge a priori of the particular objects of nature, but rather a knowledge a priori of the general conditions of their very possibility:

> "[…] we take from experience nothing more than what is necessary to **give** ourselves an object, partly of outer and partly of inner sense. The former is accomplished through the mere concept of matter (impenetrable lifeless extension), the latter through the concept of a thinking being (in the empirically inner representation "I think"). Otherwise, we must in the entire metaphysics of these objects abstain entirely from any empirical principles that might add any sort of experience beyond the concept in order to judge something about these objects." (KrV A848/B876)[469]

This rational[470] physiology is developed in the *Metaphysical Foundations of Natural Science*.Since there are two kinds of senses, the external and the inner one, there are

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466. KrV A841/B869.

467. KrV A842/B870.

468. KrV 846/874.

469. "Wir nehmen aus der Erfahrung nichts weiter, als was nötig ist, uns ein Objekt, teils des äußeren, teils des inneren Sinnes zu geben. Jenes geschieht durch den bloßen Begriff Materie (undurchdringliche leblose Ausdehnung), dieses durch den Begriff eines denkenden Wesens (in der empirischen inneren Vorstellung: Ich denke). Übrigens müßten wir in der ganzen Metaphysik dieser Gegenstände, uns aller empirischen Prinzipien gänzlich enthalten, die über den Begriff noch irgendeine Erfahrung hinzusetzen möchten, um etwas über diese Gegenstände daraus zu urteilen."

470. By stating that sciences have a rational part, Kant does not claim that they are determined a priori in each of their particular aspects. He only states that they are a priori grounded, i.e. that their fields of possibility is limited to a domain, within which scientists apply guiding-procedural rules to develop their investigations. In this sense, the apriori principles at the basis of the constitution of sciences differ from the regulative principles that guide the research, but both are needed in sciences. To give an example (taken from Wartenberg 1979): in chess, there are constitutive rules that define the nature of the pieces by their possible moves (for instance, establishing that the King can move only to a contiguous unoccupied field), and procedural ones that express advice for winning the game (such as the white and black must alternate their moves).

two basic doctrines (*Lehre[n]*, AA IV, p. 467) of nature: one concerning the objects of the external sense (bodies), and another one of the objects of inner sense (the soul). Each doctrine is a system only if it is ordered according to empirical or rational principles: if the principles are empirical, the theory is a "historical"doctrine of nature, which deals with the observable facts, described and exposed systematically. If, in contrast, the principles are a priori, the doctrine of nature is a "natural science". The a priori principles must carry with them an assumption of lawlike necessity, which the very concept of "nature" demands:

> "As the word nature itself carries with it the conception of laws, and this again the conception of the *necessity*of all the determinations of a thing appertaining to its existence, it is easily seen why natural science must deduce the legitimacy of its designation only from a *pure*part of it, [a part] namely, which contains the principles à prioriof all remaining natural explanations, and why only by virtue of this portion it is properly science, in such wise, that, according to the demands of the reason, all natural knowledge must at last turn on natural science and there find its conclusion. This is because the above necessity of law inseparably attaches to the conception of nature, and hence must be thoroughly comprehended;" (AA VI, pp. 468-369)[471]

As Kant claims, it is a need of reason to develop each doctrine of nature into a science "properly so called" (AA IV, p. 468): nature is possible only through universal principles and considered as such it consists in a system of pure laws. A natural science in this demanding sense presupposes a metaphysic of nature, namely the reference (and not, as in the case of mathematics, the construction) to pure concepts that are at the basis of the possibility of nature. This metaphysics has a transcendental part, which focuses on the laws of possibility of nature in general, and a particular science, which concerns the application of the transcendental principles to the objects of sensibility and that constitutes a physics and psychology.

Now, in Kant's view, these particular sciences are ultimately possible only thorough mathematics:

> "[…] but I maintain that in every special natural doctrine only so much science *proper* is to be met with as mathematics." (AA IV, p. 470)[472]

Since concepts allows only the possibility of thinking an object (which means that our judgments are "problematic" only, see KrV, A74/B100), the a priori intuition of the concept (i.e.: its mathematical construction) is needed in order to cognize the

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471. "Da das Wort Natur schon den Begriff von Gesetzen bei sich führt, dieser aber den Begriff der Notwendigkeit aller Bestimmungen eines Dinges, die zu seinem Dasein gehören, bei sich führt, so sieht man leicht, warum Naturwissenschaft die Rechtmäßigkeit dieser Benennung nur von einem reinen Teil derselben, der nämlich die Prinzipien a priori aller übrigen Naturerklärungen enthält, ableiten müsse und nur kraft dieses Teils eigentliche Wissenschaft sei, imgleichen daß, nach Forderungen der Vernunft, jede Naturlehre zuletzt auf Naturwissenschaft hinausgehen und darin sich endigen müsse, weil jene Notwendigkeit der Gesetze dem Begriffe der Natur unzertrennlich anhängt und daher durchaus eingesehen will."

472. "Ich behaupte, aber, daß in jeder besonderen Naturlehre nur so viel eigentliche Wissenschaft angetroffen werden könne, als darin Mathematik anzutreffen ist."

real possibility of an object existing in nature. Now, this clear distinction between the metaphysics of nature in general and the particular sciences is important to avoid the errors derived from an incorrect use of the concepts, i.e. outside their legitimate fields, and permits to elaborate a coherent and effective system of the sciences, based on pure concepts and laws grounded in the metaphysical system. In this view, general and specific metaphysics are correlated: general metaphysics grounds the special metaphysics of the bodies, whereas the special metaphysics contributes to the completion of general metaphysics by giving "sense and meaning"to its pure concepts, i.e. by providing "examples (concrete cases)" (AA IV, p. 478).

According to this account, a special metaphysics of bodily nature is possible because mathematics is applicable to objects extended in space. In contrast, psychology seems to be impossible as a "proper" natural science[473]:

> "But still farther even than chemistry must empirical psychology be removed from the rank of what may be termed a natural science proper; firstly, because mathematics is inapplicable to the phenomena of the internal sense and its laws, unless indeed we consider merely the *law of permanence* in the flow of its internal changes; but this would be an extension of cognition, bearing much the same relation to that procured by the mathematics of corporeal knowledge, as the doctrine of the properties of the straight line does to the whole of geometry; for the pure internal intuition in which psychical phenomena are constructed is time, which has only one dimension." (AA IV, p. 471)[474]

2.2 Psychology: a doctrine of inner sense

After the *Critique of Pure Reason*,a rational scientific psychology has become a spurious enterprise. But before the *Critique*, namely between the Dissertation from 1770 and the first edition of the *Critique*, Kant makes references to the elaboration of a rational psychology, in which he inquires the soul, focusing in particular to its origin and destination or tasks. The model of this elaboration is Wolff, who distinguishes between empirical and rational psychology: the first deals with psychological contents and procedures based on experience, while the second concerns the essence

473. The specifications "proper" and "natural" are crucial: One misses the point when one reads Kant as making the vague claim that psychology cannot be scientific. Furthermore it should be emphasized that Kant developed these restrictions only before the *Metaphysical Foundations of Nature Science*, and did not maintain them before 1786. Nor did he stick to them firmly afterwards. See Sturm 2001; Sturm 2009, ch. 4.

474. "Noch weiter aber, als selbst Chemie, muß empirische Seelenlehre jederzeit von dem Range einer eigentlich so zu nennenden Naturwissenschaft entfernt bleiben, erstlich weil Mathematik auf die Phänomene des inneren Sinnes und ihre Gesetze nicht anwendbar ist, man müßte denn allein das Gesetz der Stetigkeit in dem Abflusse der inneren Veränderungen desselben in Anschlag bringe wollen, welches aber eine Erweiterung der Erkenntnis sein würde, wie die Lehre von den Eigenschaften der gerade Linie zur ganzen Geometrie. Denn die reine innere Anschauung, in welcher die Seelen-Erscheinungen konstruiert werden sollen, ist die Zeit, die nur eine Dimension hat."

of the soul. Although this division might evoke the separation between inferior knowledge (sensible) and superior (rational), his account is actually more complex. Wolff stresses that empirical psychology uses observation and has to find laws of the activity of the consciousness, whose first a priori principles are in turn for rational psychology to discover. But these principles have only the aim to justify the results of the empirical psychology, which constitutes the starting point as well as the end of the metaphysical research – thus he argues in in his *German Metaphysics, in §727*at the beginning of the chapter dedicated to the soul.[475]

This correlation between the two kinds of psychology persists in Kant's sections on psychology within his *Lectures of Metaphysics*, where Kant alludes to the soul as a concept which derives from experience but cannot be investigated empirically, but only through pure reason. This metaphysical knowledge of the soul aims at a systematic analysis of the features of the allegedly permanent, incorporeal 'I' that is the bearer of the changing representations given through the internal sense. The soul's main characteristics[476] are: permanence, simplicity, individuality and spontaneity.

However, against the background of transcendental philosophy, rational psychology cannot demonstrate its claims, as shown in the long chapter on the "Paralogisms of pure reason".[477] In these passages, Kant ascribes to reason a natural tendency to be uncritical, because it makes use of concepts and inferences patterns without previous scrutinizing them. This tendency drives reason to "illusions", namely to produce inferences in which ideas are mistakenly viewed as genuine concepts of objects. More specifically, rational psychology is based on a fallacious reasoning, that forget that the proposition 'I think' does not refer to a thinking, immaterial substance, but a function, a general condition of the possibility of the unity of experience. It is not an object of experience that could be described through the features of immateriality, incorruptibility and personality (as psychologists used to do). The main argument of rational psychology is this paralogism:

> "What cannot be thought otherwise as subject does not exist otherwise than as subject, and is therefore substance. Now a thinking being, considered merely as such, cannot be thought otherwise than as subject. therefore it also exists only as such a thing, i.e., as substance." (KrV B410-411)[478]

Rational psychology cannot become a sciencepresenting genuine knowledge-claims. However, the possibility of an empirical psychology remains open, if it is considered as a doctrine (and not a "proper natural science") which inquires the subject as phenomenon of internal experience. As I will show, empirical psychology is excluded from the realm of natural science,

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475. Wolff 1752, p. 453.

476. Kant 1889, pp. 8-9.

477. KrV A338-405 /B396-432.

478. "Was nicht anders als Subjekt gedacht werden kann, existiert auch nicht anders als Subjekt, und ist also Substanz. Nun kann ein denkendes Wesen, bloß als ein solches betrachtet, nicht anders als Subjekt gedacht werden. Also existiert es auch als ein solches, d. i. als Substanz."

insofar as it is not and cannot be grounded on mathematics. With no a priori foundation, psychology can only become a doctrine, developed through empirical descriptions, and provided with a mere empirical certainty.[479] I shall give a short overview of Kant's development of an empirical psychology. I do not aim to provide a detailed analysis of the text, but only stress how Kant's thinking changes through time, thus demonstrating the interest that he had for this doctrine from the pre-critical phase and the difficulties of developing a systematic doctrine on the empirical 'I'.

In the *Observations on the Feeling of the Beautiful and Sublime (Beobachtungen über das Gefühl des Schönen und Erhabenen*, 1764)[480], Kant characterises the human being by referring to a moral feeling that lies in his heart and that is differed into three forms: feeling of beauty and of the dignity of human being, goodness of the heart,[481] and feeling of the honour. The prevalence of one form on the others is analogous to the relations among the distinct humours of the organism, which determine three different kinds of temperament[482] (melancholic, passionate, choleric and phlegmatic). Kant refers to this Hippocratic temperaments's divisions not as actual explanation of psychic life according to qualities of the blood, but as a guide in the classification of the observations before delving in a more detailed and justified explanation.

In the same year, in *Essay on the Maladies of the Head (Versuch über die Krankheiten des Kopfes)* Kant's temperamental psychology leaves the place for the psychology of the faculties. Kant elaborates a nosology[483] on the basis of the relation among the diseases observed in the social community[484] and the three main faculties (*Verstand, Urteilskraft* and *Vernunft)*. I report here how they have been schematised by Oscar Meo.[485] This classification is important insofar as it might be regarded as an attempt to interpret Kant's empirical psychology in the light of current deseases's classifications. In other words, Meo is trying to schematise Kant's doctrine by applying categories used in the modern scientific psychology. Of course Kant would deny the legitimacy of this attempt, but I would like to focus on it, to underline how current ways to classify diseases might find in Kant a precursor.

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479. Cf. Satura 1971, pp. 25-38.
480. AA II, pp. 205-256.
481. AA II, pp. 216-218.
482. AA II, pp. 221-224.
483. AA II, pp. 260-263.
484. Interestingly enough, Kant finds a relation between the dieseases and the social environment (AA II, pp.268-269)
485. Meo 1982, pp. 31-33.

NOSOLOGICAL CATEGORY	DESCRIPTION
1. Slight disorders	
1.1. Intellectual deficit	
1.1.1. Obtuseness (*Stumpfer Kopf*)	Loss of intelligence (*Witz*)
1.1.2. Stupidity (*Dummköpfigkeit*)	Loss of understanding (*Verstand*)
1.1.3 Simplicity (*Einfalt*)	Loss of Judgement (*Urteilskraft*)
1.2. Disorder with a passionate correlate	
1.2.1. Foolishness (*Torheit)*	Chained reason
1.2.2. Tomfoolery (*Narrheit*)	Distortion of the reason
2. Severe disorders	
2.1. Idiocy (*Blödsinnigkeit*)	Disability of memory, reason or sensations
2.2. Disturbed mind (*gestortes Gemüt)*	
2.2.1. Cognitive-perceptual disorders	
2.2.1.1. Perceptual alteration (*Verruckung)*	Distortion of the concepts of experience
2.2.1.2. Fantasy (*Phantasterei*)	Chimera (Fantasy) joint with real sensations
2.2.2. Intellectual disorders	
2.2.2.1 Insanity (*Wahnsinn)*	Disorder of the Judgement
2.2.2.2 Madness (*Wahnwitz)*	Disorder of reason
2.2.2.3 Lunacy (*Aberwits*)	Disorder of reason and lack of attention towards the judgements of experience
2.2.3 Psicomotoric and affective disorders	
2.2.3.1 Insane behaviour (*Unsinningkei*t)	Mental disorder and insensibility to sensations
2.2.3.2 Frenzy (*Raserei*)	Insane behaviour and fury
2.2.3.3 Despair (*Verzweiflung*)	Absence of hope and meaning in life
2.2.3.4 Rage (*Tobsucht*)	Violence and disequilibrium
2.2.3.5 Craziness (*Tollheit*)	Insane behaviour and excitement

For instance, the disorders concerning perception are explained by reference to the great strength of the chimerical representations of the faculty of *Einbildung* over external representations. Again, among the intellectual disorders there is delirium, in which reason judges in a "excessive" way, beyond its domain of judgement (for instance, when the subject pretends to comprehend the meaning of prophecy). Kant's aetiology, although it is far from clear and free from criticism, is interesting because it stresses that pathological causes are external to the soul: they can be organic or

social (which are given by the lack of harmony among the subject and society) but the subject is not insane by nature, there is not natural disturb inside reason itself.

The last step towards a psychology of faculties[486] can be found in Kant's works after the *Critique of pure reason*, in particular in the *Anthropologie in pragmatischer Hinsicht* (1798). In this work, the diseases of the use of the faculties are distinguished into disorders of the understanding (form and content);of judgement, that in *Wahnwitz* makes analogies that switch the concepts by subsuming them under general but inappropriate concepts, and in which similarities among predicates are considered sufficient to identify the subjects; and finally, of reason (*vesania*) which claims to go beyond the limits of the possible experience, trying to establish a order in which the external representations are not the most dominant.

The disorders can be summarised as following[487]:

KANTIAN CLASSIFICATION	**DESCRIPTION**
1. Chimera or ipocondry (*Grillenkrankenheit*) Characteristics: the patient is aware that his thoughts are not coherent Symptoms: Imagination of disorders; changes in behaviour; tendency to suicide	Hypochondry: depression, delirium
2. Mental disequilibrium (*Gemütsstörung, Manie*)	
2.1 Features: trains of thought which follow a subjective rule in discordance with the objective laws of experience	
2.2 Classifications:	
2.2.1. Insane behaviour (*Unsinnigkeit – amentia)*. Tendency to be verbose and incapacity to coordinate the representations	Disorders of the form of the thinking. Dissociations of the thoughts, verbose person
2.2.2. Insanity (*Wahnsinn – dementia*). Representations and perceptions are exchanged	Disorders of the content of thinking. Incorrect interpretations of facts and delirium of persecution
2.2.3. Madness (*Wahnwitz – insania*). Disorder of the Judgement. The patient makes associations of incoherent states and ideas	Formal disturbations of thinking. Dissociation of the order of thinking and flight into ideas.
2.2.4. Lunacy (*Aberwitz – vesania*). Disorder of reason, alienation of the subject who pretends to go beyond the guide of experience	Disorders in the content of thinking. Megalomania and mystical delirium
2.2.5. Particular variation of the mental disequilibrium: rage (*rabies*) caused by material causes	Psychomotor disorders

486. As Kant himself stresses, by naming the paragraph devoted to the mental diseases: "Von den Schwächen und Krankheiten der Seele in Ansehung ihres Erkenntnißvermögens". (AA VII, p. 202)

487. Meo 1982, pp. 72-73.

Kant's empirical psychology determines three kinds of capacities which summarize more particular functions: the faculty of knowledge, the feelings of pleasure and pain, the faculty of desire. Moreover, the functions of knowledge[488] can be distinguished into superior (active) and inferior faculties (passive). The first ones (understanding, reason and judgement), considered as transcendental faculties, are studied in the *Critique*. Differently from these active functions, the internal and the external senses are passive, inferior faculties, whose value is nonetheless defended[489] by Kant, insofar as they provide the empirical content to the understanding and are only improperly addressed to as source of error. Another fundamental inferior faculty is imagination, divided into reproductive[490] (memory) and productive[491] (fantasy, inventive faculty). The addition of the feelings of pleasure and pain to the function of knowledge evokes the three faculties (*Verstand, Urteilskraf*t and *Vernunft*) and the three *Critiques*. However, this duplication of the faculties has not to be misunderstood: philosophy and psychology are not reducible to one another: the first, with its general laws justifies the other and its empirical and particular laws. But the relation between the two is complex: there are some questions that are not exhaustively explained by philosophy nor by psychology. Moreover, there are some claims that have been interpreted (see Bona Mayer 1870) as psychological presuppositions of the transcendental philosophical system: such as the discursiveness of the understanding,or the irreducibility of it to sensibility.

But in order to better understand what is science and what not,it is important to consider the case of psychology in more detail. According to the *Metaphysical Foundations of Natural Science*, science seems to be defined by the possibility of a discipline to be quantified[492] and therefore psychology would be possible as science only if it would be developed into a psicometry. The possibility to develop a mathematical psychology was a topic of the debate already in Kant's time.[493] For instance, Malebranche states[494] that the mental is not measurable, because it is characterized by qualities without extension and that therefore cannot be clear as the physical-external qualities. Against this, Wolff, who invented the term 'psychometria'[495], states that this discipline concerns the mathematical laws of the soul.His disciple Baumgarten admits[496] that certain qualities can be quantified in terms of degrees. Moreover, Wolff's student Johann Gottlob Krüger[497] aims to show the possibility to measure

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488. AA VII, p.25.
489. AA VII, pp. 30-34.
490. AA VII, pp. 92-97.
491. AA VII, pp. 64-92.
492. AA VI, p. 470.
493. For the following claims and examples from the eighteenth-century debate, see Sturm 2006, Surm 2009, chap. IV4.
494. Malebranche 1963, p.93.
495. Wolff 1732, *§522*.
496. Baumgarten 1739, *§249*.
497. Krüger 1756.

sensations (characterized as non-extended qualities) according to a proportionality with external stimuli. Tetens[498] himself speaks of measurements of sensations of touch and vision. But aside from these interesting attempts at mental measurements, the most important theoretical problem concerns their value for the possibility of turning empirical psychology into a proper natural science. As already seen, Kant takes up this theme in his *Metaphysische Anfangsgründe der Naturwissenschaft*.[499] However, his position is not as negative as, for instance, Malebranche's, who considers the internal states to be so obscure that they are not mathematically cognizable at all. In Kant's view, there is some ground for quantifying the mind (namely the "intensity" or "degree" of perceptions, judgments, or volitions), but this does not provide much ground. Kant himself refers to the possibility to measure complex states relying on their elements:

> "The preceding two principles, which I named the mathematical ones in consideration of the fact that they justified applying mathematics to appearances, pertained to appearances with regard to their mere possibility, and taught how both their intuition and the real in their perception could be generated in accordance with rules of a mathematical synthesis, hence how in both cases numerical magnitudes and, with them, the determination of the appearance as magnitude, could be used. E.g., I would be able to compose and determine *a priori*, i.e., construct the degree of the sensation of sunlight out of about 200,000 illuminations from the moon. Thus we can call the former principles constitutive." (KrV A178-179/B221)[500]

Therefore, the problem lies not in the possibility to apply measurement to the inner states, but rather in that one tries to do so without using external observation or external stimuli. How can it be mental measurement be possible by *primarily* or even *exclusively* relying on the problematic method of introspection? Such a method cannot be valid,since it inevitably changes the state of its object, and does not present any stable phenomenon. As Sturm has argued about the development of Kant's views:

> "After the early 1780s, he increasingly rejected introspectionism. Introspection delivers, at best, hints; it does not provide an actual justification of empirical claims about the human mind. Instead, we should use the procedure of observing the public actions of human beings, interpreting them in the light of a comprehensive psychological conceptual framework of perceptions, beliefs, feelings, desires, and so on. Then one can reapply the resulting knowledge to oneself and correct one's own introspections." (Sturm 2006, p. 372)

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498. Tetens 1777, p. 41.

499. AA IV, p. 471.

500. "Die vorigen zwei Grundsätze, welche ich die mathematische nannte, in Betracht dessen, daß sie die Matheamatik auf Erscheinungen anzuwenden berechtigten, gingen auf Erscheinungen ihrer bloßen Möglichkeit nach, und lehrten, wie sie sowohl ihrer Anschauung, als dem Realen ihrer Wahrnehmung nach, nach Regeln einer mathematischer Synthesis erzeugt werden könnten; daher sowohl bei der einen, als bei der andern die Zahlgrößen, und, mit ihnen, die Bestimmung der Erscheinung als Größe, gebraucht werden können. So werde ich z. B. den Grad der Empfindungen des Sonnenlichts aus etwa 200000 Erleuchtungen durch den Mond zusammensetzen und a priori bestimmt geben, d. i. konstitutive nennen."

If the only access to internal states were by means of introspection, then internal states could not be studied scientificallay. In the *Metaphysical Foundations*, Kant writes:

> "But not even as a systematic art of analysis, or experimental doctrine, can it ever approach chemistry, because in it the manifold of internal observation is only separated in thought, but cannot be kept separate and be connected again at pleasure; still less is another thinking subject amenable to investigations of this kind, and even the observation itself, alters and distorts the state of the object observed."(AA IV, p. 471)[501]

But even if the impossibility of psychology as a proper natural science derives from the lack of an adequate method, some room is left, at least in principle, for hope:

> "Kant himself has the conceptual space for different ideas and standards of science, with one minimum requirement being that the elements of the conception of any discipline (assumptions about method, subject matter, etc…) must be spelled out and made coherent with one another. Moreover, he admits that the conceptions of specific disciplines may be unclear at the beginning, and that ongoing research can, and should, help us to refine them (A 834/B 862). Instead of either assuming a fixed criterion for the status of a science or assuming that no such criterion exists, he preached and practised a stepwise procedure for the improvement of the sciences." (Sturm 2006, p. 374)

In the *Critique of Pure Reason*, :It is Kant himself, who seems to encourage the improvement of the procedure of psychology, by saying that it is too important to be left aside:

> "It comes in where the proper (empirical) doctrine of nature must be put, namely on the side of **applied** philosophy, for which pure philosophy contains the a priori principles, which must therefore be combined but never confused with the former. Empirical philosophy must thus be entirely banned from metaphysics, and is already excluded by the idea of it. Nevertheless, in accord with the customary scholastic usage one must still concede it a little place (although only as an episode) in metaphysics, and indeed from economic motives, since it is not yet rich enough to comprise a subject on its own and yet it is too important for one to expel it entirely or attach it somewhere else where it may well have even less affinity than in metaphysics. It is thus merely a long accepted foreigner, to whom one grants refuge for a while until it can establish its own domicile in a complete anthropology (the pendand to the empirical doctrine of nature)." (KrV A849/B877)[502]

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501. "Aber auch nicht einmal als systematische Zergliederungskunst, oder Experimentallehre, kann sie der Cheymie jemals nahe kommen, weil sich in ihr das Mannigfaltige der inneren Beobachtung nur durch bloße Gedankenteilung von einander absondern, nicht aber abgesondert aufbehalten und beliebig widerum verknüpfen, noch weniger aber ein anderes denkendes Subjekt sich unseren Versuchen der Absicht angemessen von uns unterwerfen läßt, und selbst die Beobachtung an sich schon den Zustand des beobachteten Gegenstandes alteriert und verstellt."

502. "Sie kommt dahin, wo die eigentliche (empirische) Naturlehre hingestellt werden muß, nämlich auf die Seite der angewandten Philosophie, zu welcher die reine Philosophie die Prinzipien a priori enthält, die also mit jener zwar verbunden, aber nicht vermischt werden muß. Also muß empirische Psychologie aus der Metaphysik gänzlich verbannet sein, und ist

Psychology is regarded as a guest in the large house of metaphysics: why is Kant so tolerant? Why does he not simply deny the value of psychology? Psychology seems to be "too important" (*zu wichtig*) to be ignored and excluded entirely from the realm of possible knowledge. Perhaps Kant hopes that in the future it would be possible to develop psychology into a science of the inner sense in the same way as physics has been developed as science of the outer sense: since it has been possible to have a science of the outer sense, why it would not be possible, at least in principle, to develop a scientific approach to the inner sense? It seems that psychology stays in the background as an ideal,which cannot be realised. But in principle, there is nothing against the hope that such ideal of psychology - as a proper science intended- cannot find its proper schema, its proper method.Another option is that he wished to replace the empirical psychologies of his own times by his novel framework, developed in his annual course on "pragmatic anthropology" – in agreement with the last quotation (for a close analysis of this option, see Sturm 2009). In the following chapter, I shall present an interpretation of Kant, according to which the *Critique* contains, or can be read as a work of transcendental psychology. I thus use Patricia Kitcher's guiding thread:

> "My aim is only to begin the rehabilitation of the dark, psychological side of Kant's work, so that it is available for contemporary research." (Kitcher 1990, p. 29)

2.3 A transcendental psychology?

So far, I have emphasized how philosophy is a kind of meta-discipline, which aims at distinguishing objects and the faculties through we know them, or can make other kinds of claims about them, in a correct way, providing each particular domain with its proper conditions of possibility. In Kant's view, philosophy does so in a schematic way, in the sense that it does not limit itself to follow an ideal rule, nor it constructs something (as mathematics do) but it applies a general rule to a content. In analysing particular fields of knowledge, Kant claims that there is a difference between science and non-science. In this context,as I have already stressed, psychology has a contro-versial role: on the one hand it lacks in the methodological requirements needed to become a proper natural science but, on the other hand, Kant stresses repeatedly its importance. How could reading him as a transcendental psychologist help?

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schon durch die Idee derselben davon gänzlich ausgeschlossen. Gleichwohl wird man ihr nach dem Schulgebrauch doch noch immer (obzwar nur als Episode) ein Plätzchen darin verstatten müssen, und zwar aus ökonomischen Bewegursachen, weil sie noch nicht so reich ist, daß sie allein ein Studium ausmachen, und doch zu wichtig, als daß man sie ganz ausstoßen, oder anderwärts anheften sollte, wo sie noch weniger Verwandtschaft als in der Metaphysik antreffen dürfte. Es ist bloß ein so lange aufgenommener Fremdling, dem man auf einige Zeit einen Aufenthalt vergönnt, bis er in einer ausführlichen Anthropologie (dem Pendant zu der empirischen Naturlehre) seine eigene Behausung wird beziehen können."

Gary Hatfield points out:

> "The central arguments of the *Critique* exhibit, then, at least four seemingly psychological features: (1) the division of the mind into cognitive faculties (inner and outer sense, imagination, understanding, judgement, and reason); (2) the positing of apparently innate mental structures, such as the forms of intuition or the categories; (3) the appeal to mental activities such as synthesis in explaining the conditions on the possibility of experience, and hence in "deducing" the validity of the categories; and (4) the apparent appeal to introspection in establishing eh existence of the synthesizing activity of apperception, and in making other distinctions, such as that between empirical and pure cognition." (Hatfield 1992, p. 212)

Similarly, Kitcher states:

> "Although his conclusions encompass many issues, the central argumentative project of the Critique is the examination of cognitive faculties – sensibility, understanding, imagination, and reason – to determine which aspects of our knowledge derive from them, rather than from objects. […] I argue that transcendental psychology analyzes cognitive tasks to determine the general) specifications for a mind capable of performing those tasks. That is how Kant is going to show that certain aspects of our knowledge are grounded in our faculties: by showing that any faculty that can perform the task at all must meet certain specifications and that the knowledge produced by a faculty with those specifications will always include certain elements. Thus, highly abstract descriptions of faculties are essential to his project." (Kitcher 1990, pp. 13-14)

By interpreting Kant's *Critique* as a transcendental psychology, Kitcher situates herself in contrast to Peter Strawson, who, in *The Bounds of Sense*(1966) aims at criticising several claims of the *Critique* (for instance: the doctrine of faculties, and transcendental idealism), while at the same time stressing the importance of the "Transcendental Deduction" and of the critical project of Kant. From this, the title of his book derives:

> "In two ways [Kant] draws the bounds of sense, and in a third he traverses them. He argues, on the one hand, that a certain minimal structure is essential to any conception of experience which we can make truly intelligible to ourselves; on the other, that the attempt to extend beyond the limits of experience the use of structural concepts, or of any other concepts, leads only to claims empty of meaning . . . [But Kant] seeks to draw the bounds of sense from a point outside them, a point which, if they are rightly drawn, cannot exist." (Strawson 1966, p. 11 - 12)

Strawson makes a distinction between two sides of the *Critique*, which have to be separated: one deals with our cognitive constitution,while the other is a purely"analytical" argument. Thus, Kant is described as claiming that there is a fundamental distinction to be drawn between general concepts and their particular instances in experience, and that he expresses this duality in a psychological idiom by referring to various cognitive faculties. But one can leave this language aside and try to interpret the analytical structure of the *Critique*. As Strawson says, invoking other dualisms in Kant:

> "Thus the doctrine that we can have knowledge only of things as objects of possible experience, and not of thing as they are in themselves, has a certain ambiguity; and we may be tempted, at times, by its subtler or ironical sense, which Kant himself seems, at times, almost to endorse. Again, we may be tempted to interpret the whole model of mind-made Nature as simply a device for presenting an analytical or conceptual inquiry in a form readily grasped by the picture-loving imagination, All such interpretations would, however, involve reading into much of the *Critique* a tone of at least half-conscious irony quite foreign to its character;" (Strawson 1966, p. 22)

That is to say, Kant was wrong: his doctrines are sometimes incoherent, and the psychological language is of no help. However, the conceptual core of the *Critique*can and should be saved[503]: Strawson regards the "Transcendental Deduction" (although in a corrected version) as the fundamental doctrine included in the *Critique*, because its notion of the self as unity of experiences requires the assumptions of things outside of consciousness, thus refuting idealism and scepticism.

Now, according to Kitcher, Strawson's account is misleading by disregarding the core of Kant's inquiry, namely its "dark side" (Kitcher 1990, p. 3), which concerns the cognitive faculties[504] and can give important contributions in developing psychological theories of cognition:

> "If transcendental psychology aims to determine what our faculties bring to cognition, then any lasting results will be significant contributions to cognitive science, Kant was not an interdisciplinary cognitive scientist, He was totally uninterested in the embodiments of cognitive processing […] His sole objective was to determine what our cognitive powers had to be like for them to be capable of producing knowledge." (Kitcher 1990, p. 28)

Strawson aims at elaborating a study of an ideal self and in doing so, (similarly to what Kemp Smith does) he fails in the mistake to assume that cognition has at its grounds in an unknown self outside time. In contrast, According to Kitcher the transcendental psychology has as its main topic the "thinking self" (Kitcher 1990, p. 22) and is in many aspect quite close to an empirical psychology, even if its description of the self is more abstract and merely functional. Moreover, it assumes the existence of faculties relying on experience, which also tells to senses what they have to take from the environment. Of course, such a transcendental psychology is empirical. But,in Kitcher's view, there is no other option. Kant is overconfident about his method and the results of his epistemic analyses:

> "Granted that we have experience, that is, granted broadly shared assumptions about our cognitive capacities, Kant maintains that his conclusions about necessary and universal features of cognition are certain. Even allowing these substantial assumptions, however, certainty seems beyond his reach." (Kitcher 1990, p.24)

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503. Strawson 1966, pp. 96 – 108.

504. Kitcher is not the first to assert that Kant's *Critique* is based on psychological assumptions. Before her, Bona-Mayer alludes to psychological grounds of the three *Critque*s (cf. Bona-Mayer 1870, chap. III).

There is no reasonable absolute guarantee that a method and the particular analysis done are infallible, moreover, presuppositions are always implied. Consequently, Kant is doing a sort of empirical psychology, in the sense that he is interested in conditions at the basis of particular tasks of cognition. Although he does not focus on the actual physical process of cognition, still, his inquiry might be regarded as a psychological-empirical one, like those of Allen Newell and Herbert Simon.[505] In addition, it is Kant himself who underlines the relation between empirical and transcendental psychology, namely, the commonality of their subject matter. For instance, space might be both object of empirical (I see that an object is situated in the space) as well as transcendental knowledge (space is one of the conditions of possibility of objects of experience). The difference concerns only the relation of the object to the kind of knowledge.[506]Finally, Kitcher points out that empirical psychology might be regarded as the application of transcendental psychology: the latter provides the general description of the rules and structures at the basis of cognition, while the former is its particular subjective specification. But why does not Kitcher refer to such a transcendental inquiry as to a *logic*? She declares that 'transcendental psychology' has to be preferred to 'transcendental logic' because she aims at distancing from the Anglo-American analytic interpretations[507] of Kant. Analytical interpreters such as Strawson regard the *Critique*'s aim as the investigation on logic, in the sense of the conditions of objective knowledge and regards a psychological interpretation as incorrect - but that is only because they have misunderstood the validity of a transcendental psychology.

To Kitcher, an analytical interpretation is completely misleading: it is Kant himself who rejects the notion of analytic truth, insofar as no empirical or a priori concepts can be defined analytically. Kitcher revokes Quine's *Two Dogmas of Empiricism* (1951) by stating that if philosophy has general formal logic as its model, then its results uses analytical definitions, that are, not possible because analytic truth is only a convention. It is Kant himself who stresses[508] that concepts a priori cannot be defined: each translation would not be adequate, but only a betrayal of the original meaning. As Quine claims in *Ontological Relativity*:

> "It is meaningless to ask whether, in general, our terms "rabbit", "rabbit part", "number", etc., really refer to some ingeniously permuted denotations. It is meaningless to ask this absolutely; we can meaningfully ask it only relative to some background language." (Quine 1969, p. 48)

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505. Newell & Simon 1997.

506. KrV A56/B80

507. However, Bennett and Strawson, but also non-psychological interpreters such as Allison, Guyer or. Kemp Smith recognise the presence of the psychological aspects in Kant's account. In these accounts, the process of cognition is regarded as unconscious; on the contrary, Paton, regards it as conscious and as logical, rather than psychological (although this interpretation causes the difficulty of understanding the relation between logic and consciousness).

508. KrV, A728/B756.

As a consequence, epistemology in its conceptual sense[509], namely as clarification of concepts, is not possible, since each clarification is a translation and no perfect translation is possible.

In this perspective, the old demands must be put aside in order to "settle for psychology" (Quine 1969, p. 75). Epistemologists are compelled to abandon their pretences to provide a foundation for the sciences based on rational speculation only, and concentrate on the description of the actual process of knowledge: if the only possible evidence is given by immediate sensations, then epistemology has to focus on them and on the process through which believes generate from sensible inputs. In this perspective, then, the study of knowledge becomes a chapter of natural science, a psychological description of human mental action, considered as a physical process of inputs and outputs:

> "Epistemology, or something like it, simply falls into place as a chapter of psychology and hence of natural science. It studies a natural phenomenon, viz., a physical human subject. This human subject is accorded a certain experimentally controlled input-certain patterns of irradiation in assorted frequencies, for instance- and in the fullness dimensional external world and its history. The relation between the meager input and the torrential output is a relation that we are prompted to study." (Quine 1969, p. 83)

To conclude, Kitcher has provided a fruitful and important contribution to Kant scholarship. However, I believe that she does not address enough aspects of the *Critique* that do not find an explanation in her account. First, she claims that transcendental psychology has to focus on our cognitive faculties and their tasks. However, as I have already stressed in the chapter on Kant's notion of philosophy, Kitcher's definition is not sufficient. Kant ascribes a meta-function to philosophy, insofar as it deals with the conditions of possibility of experience in general, and focuses on the conditions of the particular sciences, giving them rules and fields of legitimate inquiry. Kitcher seems to disregard the scientific task of Kant, which consists in his question concerning the objectivity of knowledge. As Strawson[510] points out, the task of the *Critique of Pure Reason* is to focus on the question of objectivity:

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509. Also its doctrinal side (concerning foundations and truth) is not successful: foundation is given by evidence, but the only evidence that we have derives by immediate sensations, then, no general claim can be grounded: "The Humean predicament remained unalterated." (Quine 1969, p. 74)

510. A position similar to Strawson is that of Satura, who repeatedly stresses that according to Kant there is a clear distinction between the approach of a "psychology of knowledge" - "*dem Erkenntnispsychologischen"* and that of a "critique of knowledge" - "*dem Erkenntnikritischen"*- (Satura 1971, p. 164). This separation is given not only by the difference concerning their methods, but also their objects of inquiry: on the one hand, the empirical consciousness with its faculties and, on the other hand, the pure consciousness with its the transcendental faculties. This breach, according to Satura, is coherent with the idea that there is a sort of duplication of faculties (empirical and transcendental) in Kant's texts (Satura 1971, p. 164). However, differently from Strawson, Satura is somehow ambiguous in the last passage of his book Kants *Erkenntnispsychologie*. Here he alludes to a "presupposed psychology of knowledge" - "*vorausgesetzte Erkenntnispsychologie*" - (Satura 1971, pp. 166-167) concerning some of the carachteristics Kant ascribes to faculties, for instance: the discursive and active nature of understanding as well as the passivity of sensibility.

> "[…] experience must include awareness of objects which are distinguishable from experiences of them in the sense that judgments about these objects are judgments about what is the case irrespective of the actual occurrence of particular subjective experiences of them (thesis of objectivity)." (Strawson 1966, p. 24).

Kant, in this perspective, is not merely interested in the inquiry on faculties (although intended in a transcendental-psychological sense, and not empirical) but also, and perhaps more,in the conditions of objectivity. Besides, Kitcher refers to Quine in her refutation of the analytical method in interpreting Kant. I shall also refer to Quine, to stress that a research on the conditions of knowledge is compatible with an objective (although not absolute) inquiry on foundations:

> "How then can there be no sense in saying what the objects of a theory are? My answer is simply that we cannot require theories to be fully interpreted, except in a relative sense, if anything is to count as a theory. In specifying a theory we must indeed fully specify, in our words, what sentences are to comprise the theory, and what things are to be taken as values of the variables, and what things are to be taken as satisfying the predicate letters; insofar we do fully interpret the theory, relative to our words and relative to our overall home theory which lies behind them. But this fixes the objects of the described theory only relative to those of the home theory; and these can, at will, be questioned in turn." (Quine 1969, p. 51)

Kitcher seems to stress only the destructive points of Quine, letting aside the more constructive side of his thinking, namely his ontological relativism: although a perfect and adequate translation is not possible, inside a system of reference it is still possible to distinguish what is true and what is not:

> " […] it would be forever impossible to know of one of these translations that it was the right one, and the other wrong. Still, if the museum myth were true, there would be a right and wrong of the matter; it is just that we would never know, not having access to the museum." (Quine 1969, pp. 29–30)

Quine's passage seems quite close to Kant's claim that the reference to things in themselves is of no sense at all: they are only thought of no-thing.[511] But still, it does not determine that in epistemology the only possibility are relativism and scepticism, rather, that once defined the limits of possibility of our theory, true statements inside our system of reference can be given.

Second, Kitcher completely disregards that Kant ascribes to philosophy broader aims than the development of an inquiry on cognitive faculties. Of course, the question concerning human cognition has an important role in the *Critique*, but still, reducing the value of this work only to this doctrine (and interpreting it exclusively in a psychological, although transcendental sense) seems to me to reduce and misregard the intentions of Kant, whose main concern regards the practical ends of reason[512].

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511. KrV B307-308.

512. KrV BXXXVIII; KrV A 804-805/B832-833.

After elucidating the differences between Kant's account and a transcendental psychological interpretation, I want to confront the theory of schemata in Kant with similar accounts actually developed in psychology in order to understand if and (if the case) which are the points of distinctions among them. In the following chapter, I will give an overview on schema theories (3.1) and then focus on the accounts on schemata of Piaget (3.2), Bartlett (3.3) and Barsalou (3.4).

3. Kant's notion of a schema on twentieth-century psychology

Among the literature on Kant and psychological studies and cognitive sciences, there is no entire monograph devoted exclusively to schematism, rather there are general works on Kant and functionalism (Sellars 1970; Dennett 1978, Meerbote 1989, Powell 1990) or on Kant and the cognitive sciences (Marshall 1995; Clapin 1999). In his *Kant and Cognitive Science* Andrew Brook regards Kant as precursor of cognitive sciences:

> "Unlike the [philosophical] tradition but like contemporary cognitive science, he simply took it for granted that we have knowledge: a priori knowledge about conceptual structures and perceptual knowledge of the world of space and time." (Brook 2007, p. 136)

And Sandra P. Marshall points out:

> "The term schema has a long and rich background. Both the word and the concept it reflects are prominent in the writinggs of the ancient Greek philosophers, It permeates the philosophy of Immanuel Kant, It guided the research of many early psychologists, And now it has a place in cognitive science. As one might expect, schema has not carried exactely the same connotations over this long period of usage, although there are important continuities." (Marshall 1995, p.3)

However, with the exclusion of the introductory chapter of Marshall, these works are mainly interested in interpreting Kant as a precursor of cognitive scientists, rather at analysing historically the influence of Kant on particular authors. In the following sections I will give a general introduction on contemporary schema theories (3.1), and then focus on three authors who elaborate psychological theories comparable, at least in some aspects, to Kant's schematism, namely Bartlett (3.2), Piaget (3.3) and Barsalou (3.4).

3.1 Schema theories

The notion of a schema plays an important role in most of the modern researches dealing with memory, language and perception[513]. Schemata are generally regarded as models or structures of cognition, used to provide rule and order to new input and information. In this way they contribute to make perception an active process, no longer regarded as a mere static reproduction of data, but rather as determination

513. See Bartlett 1932, Arbib/Conkil/Hill 1987.

of the information received, stored, and modified through schemata. The function of schemata implies pre-representation, expectation, and might be interpreted as individually as well as phylogenetically determined[514].

Or, as Marshall puts it:

> "Similar experiences come together under the broad umbrella called a schema. The schema is the means by which similar experiences are assimilated and aggregated in such a way to be quickly and easily remembered. It is a mechanism in human memory that allows for the storage, synthesis, generalization, and retrieval of similar experiences, in short, it is an essential ingredient of learning and remembering. A distinctive feature of a schema is that when one piece of information associated with it is retrieved from memory, other pieces of information connected to the same schema are also activated and available for mental processing. A second important feature is that many different kinds of knowledge are linked through the schema, including conceptual information, discriminating features, planning mechanisms, and procedural skills. A well-formed schema will have all of these." (Marshall 1995, p. VII)

It is important to underline a first important difference between Kant's notion of a schema and theories on schemata developed by modern psychologists. On the one hand, there is no doubt that Kant's inquiry on knowledge is not empirical and that his schemata are not empirical representations but rather methods to specify the conditions of possibility of knowledge (i.e. categories, which are a priori). On the other, among psychologists, the question as to whether the fundamental structures of knowledge might be empirically explained is still open to debate[515].

Beyond the classical example of the traditional opposition between empiricists and rationalists (the first, such as Hume, state that concepts derives from impressions, while the second, such as Leibniz, advocate pure rational concepts not derivable from experience), in the 20th century the debate was furthered thanks to scientific and psychological studies on the concepts acquisition[516]. Moreover, linguistics has given an important contribution: for instance, Noam Chomsky, who elaborates a nativist view of a universal grammar, according to which certain innate principles are shared by all subjects.

Besides, it is remarkable how the study of concepts has become more and more a core of intersection of various disciplines: not only philosophy and psychology, but also linguistics, neuroscience and artificial intelligence. The ability of categorizing the world is of great interests for those who study the way in which the subject interacts and acquires information: the act of conceptualization allows us not only to simplify the world, by sorting and decreasing the quantity of perceptual information, but also to classify information through the act of conceptualization. This leads to several questions dealing with the nature of concepts, that might be regarded by ontology as objective, subjective or pragmatic. Objectivists (such as Platonists, Frege,

514. Leiber 1996.

515. On the debate between Chomsky and Piaget see Piattelli Palmarini 1980.

516. See Margolis 1998..

Chisholms) consider concepts as abstract entities independent of the minds of the subject. According to subjectivists, however, concepts depend on the human mind. Mentalists (such as Fodor, and Margolis) generally demonstrate the possibility of intersubjective communication by advocating to a theory of types under which particular and individual concepts might be grouped. Finally, pragmatism situates itself as a middle way between objectivism and subjectivism and interprets concepts practical methods, as capacities of the subject to behave in one way or another (for instance, by making inferences, or distinguishing between classes of objects and so on).

Among the manifold authors that more or less have directly inherited Kant's doctrine of schemata, I will focus on three authors: Bartlett, Piaget and Barsalou. Their theories differ deeply from one another. For this reason they might be considered as some of the best examples to understand how Kant's doctrine of schemata might be put to the extreme, leading to purely empirical or functional-cognitive positions, different from Kant's tasks.

3.2 Frederic Bartlett

> "The study of schemas remained for a long period of time in the purview of philosophy, only gradually penetrating into the work of a few psychologists. The schema was largely ignored by early psychologists (especially American psychologists), who focused most of their attention on physiological and behavioural issues. It re-emerged in the work of two outstanding scholars, the British psychologist Frederic Bartlett and the Swiss biologists and genetic epistemologist Jean Piaget. Bartlett focused his attention on how individuals remember and what they remember. Piaget studied, among other things, the development of scientific reasoning. The schema is a cornerstone of both men's theories, although in considerably different ways." (Marshall 1995, p. 9)

As Marshall points out, the first psychologist who refashions the Kantian notion of schema is Sir Frederic Bartlett[517]. In the first section of the chapter that I devote to him, I will underline how Bartlett can be regarded as a pioneer of applied psychology, since he wanted to adapt the experimental method to the study of perception and in particular memory. In 3.2.2. I shall present his experimental psychology as based on a systematic method to explore human reactions (similar to the studies of Fechner, Helmotz and Stumpf). The topic of the experiments (3.3.3.) are perceptions, remembering and imaging, and constitute cognition, which has a constructive character, because past experiences influence the reactions of the subject. In 3.3.4, I will concentrate on his tests, prevalently based on verbal reports with no reference to quantified measurements (differently from Ebbinghaus). For instance, Bartlett tests the memories of subjects listening to a fictitious story (the "War of Ghosts") and focuses on how their memory of it change over time. According to him, memory is

517. On the influences leading to Bartlett's schema theory see Brewer 2000, pp. 75 – 78.

constructed: traces of past experienced are involved in the organisation of experiences and produce typical reactions. In remembering (3.3.5), a significant role is played by the constructions of the psychological material and reactions into organised schematic settings related to each other. Since each part of the schematic setting is linked to the others, the parts of the setting go beyond themselves in a sort of "'effort after meaning"(3.3.6), intended as an arrangement of material as well as an arrangement of reactions.

3.2.1 A pioneer of applied psychology

Francis Bartlett (1886 – 1969), is considered one of the most influential British scientists, who contributed in developing experimental psychology. He studied at St. John's College in Cambridge and in 1922 he became director of the university's psychology laboratory. In 1931 he became the first professor of experimental psychology and was a member of several scientific committees, such as the Medical Research Council.

One of Bartlett's greatest concerns was the development of a new approach to psychology. He wanted to propose an experimental psychology adapted to the study of memory, more precisely, to the act of remembering, which included not only memory, but also reconstruction and personal experience. His work *Remembering* is mostly devoted to his schema theory:

> "Schema refers to an active organization of past reactions, or of past experiences, which must always be supposed to be operating in any well-adapted organic response. […] All incoming impulses of a certain kind, or mode, go together to build up an active, organized setting: visual, auditory, various types of cutaneous impulses and the like, at a relatively low level: all the experiences connected by a common interest: in sport, in literature, history, art, science, philosophy and so on. There is not slightest reason, however, to suppose that each set of incoming impulses, each new group of experiences persists as an isolated member of some passive patchwork. They have to be regarded as constituents of living, momentary settings belonging to the organism […] and not as a number of individual events somehow strung together and stored within the organism" (Bartlett 1932, p. 201).

To further explore the inquiry of memory and schemata, he develops a particular experimental method.

3.2.2 Experimental method

Bartlett aims to develop an experimental psychology based on a systematic method to explore human reactions. If experimentation in psychology is at least as old as Aristotle, a systematic method was developed only many ages later. Bartlett advocated Fechner, Helmotz and Hering, as well as Stumpf, Wundt and Ebbinghaus[518] as main exponents of a refined experimental psychology. Besides the German researchers, Galton is referred to as:

518. However, Bartlett criticises Ebbinghaus's view of human beings as passively reacting to stimuli and stresses that a simple stimulus does not necessarily lead to a simple response. (Wagoner 2013, p.3)

> "[…] father of the experimental psychology in England. […] he was convinced as anybody could be that, whenever possible, science must deal with quantities, and at the same time his thoroughly humanistic outlook impressed upon him that in all psychological experiments there must be a mass of conditions imperfectly controlled, and incapable of being varied one at a time." (Bartlett 1932, p. 7)

Quantity and measure become the essential features of a scientific psychology, which must go together with the care in observing the conditions of the reactions that are subdued in the study. It is namely the multiplicity of conditions that causes this difficulty within experimental psychology: on the one hand there are the internal conditions of the subject and on the other there are the conditions of his environment. Both can vary and not always in the same way: stability of the internal condition might be consistent with variability of the external ones and *vice versa*.

As a consequence, the greatest care should be taken with this problem. As Bartlett states:

> "[…] the only type of problem that experimentalist can tackle is the problem of conditions. […] very often indeed the psychologist has to accept the verbal report of his subject as material on which to build his hypotheses. Such reports may contain terms like: 'percept', 'image', 'idea', 'memory', 'thought'; and almost at once a tendency to discuss the status of all of these in some completed structure of knowledge. […] it asks, for example: "what is the nature of the image? How, itself appearing as object, is it related to a so-called external object? Can the meaning which it carries be accepted as having objective justification?". But the experimentalist must confine himself to asking: "under what conditions does that kind of response which we call imaging occur, and what are the functions of the image in relation to the particular mode of reaction which is being studied?" in thus restricting himself, he is casting, or should cast, no reflection upon the other problems set by the epistemologist." (Bartlett 1932, p. 11)

This statement is of great importance, because it clearly determines the relation and difference between a psychological and a philosophical epistemological focus: while the former has to deal with the conditions under which a subjective response (image, perception, idea…) occur, the epistemologist deals with the nature of this response, questioning what it is.

3.3.3 The topics of experiments

Bartlett underlines how the psychological observation deals not only with perceptions but also with recall. When an observer reports something, he fills the gaps of his perceptions by adding something he has experienced before or something he thinks is adequate and suitable to the situation. But this supplementation of the lack of perceptual data must be distinguished from the actual remembering, which is given from an aware decision of the subject. As a consequence, perception, remembering and imaging must be differentiated as three main topics of the experimental psychology:

> "[…] the first is the direct response to some cluster, or combination, of sensory stimuli immediately presented. The second is a way of making use of such combinations of stimuli, though the observer knows well that they are not now present to any of his

special senses, and also that they were at one time so present. In the third, the material dealt with – what is imagined- is regarded as more fluid: its details may be drawn from many different sources, may be changed in various ways as regards their characteristics, may be re-combined so as to form structures which do not correspond with anything that has ever been present, in a concrete, sensory fashion, to the observer." (Bartlett 1932, p. 14).

Bartlett derives a particular view of the relation between human being and world from his study focused on these three topics (remembering, imaging, perception) and on the internal and external conditions. On the one hand the human being can live and master the world insofar as he increases and develops his senses and his way of response to confront in the most suitable way to the situation; on the other hand, he is in a certain way restricted and limited from the schematic organisation of his reaction as he shows in his inquire on remembering.

3.2.4 Remembering

The book, published in 1932, is based on Bartlett's dissertation and experiments started in 1913. In contrast toEbbinghaus'scientific study of memory, he lacks in measurement of the memory and his tests are mostly based on verbal reports under relaxed conditions. Through his experiments, Bartlett shows how cognition in all his functions (perception, remembering and thinking) has a constructive character, since past experiences influence the new ones.

A well-known example of the constructive character of remembering, is given by the "War of Ghosts". Bartlett reads aloud a supernatural story twice, with an interval of 15 minutes. In a next step, Bartlett tests the memories of his listeners, focusing on how the memory of the people changes over time (this method is called repeated reproduction, as it involves the audience repeatedly reproduce the story).Through this experiment he finds out that people remember less as time passes, and that the stories become simple and shorter. Moreover, the audience has the tendency to rationalize the story by reinterpreting it adding elements to explain the uncommon and unnatural parts of the story. Bartlett calls this attitude "effort after meaning". Besides, he names the general form the audience uses to remember experience a schema. For instance, science fiction stories usually involve heroes, enemies etc.

A second method used by Bartlett is that of serial reproduction: a first person is told "The War of Ghosts", and recalls it after a time; this recall is read to a second person. This second person recalls it and his recollections are then read to a third one, and so on. Through this technique, Bartlett finds out that the changes in recall are greater than in repeated reproduction: if each person is comparable to a ring of a chain, when one fails, it is impossible to correct the false memory. This inquiry has important applications to questions regarding the way in which information passes from a culture to another and from a generation to another.

3.3.5. Schematic settings

According to Bartlett, the most important questions on recall regard the ways in which past experiences are used. A general explanation might be to address to some traces of the event that are stored up in the mind or in the organism and that might be later re-excited by immediate stimuli. Traces are individual and specific, but since they are all stored in a single person, they are associated one to another and form a sort of organised model, which is subdued to change. Bartlett refers to the studies of Head:

> "The sensory cortex is the storehouse of past impressions. They may rise into consciousness as images, but more often, as in the case of spacial impressions, remain outside central consciousness. Here they form organised models of ourselves which may be called schemata, such schemata modify the impressions produced by oncoming sensory impulses in such a way that the final sensations of position or of locality rise into consciousness charged with a relation to something that has gone before." (Head 1920, p. 607)

Commenting the text, Bartlett reveals dislike for the word 'storehouse' and its relation to 'schema': the notion of storehouse might be in contrast with the fact that schemata are living functions, affected by experience; moreover, 'schema' has been too widely used and might lead to misunderstandings: for instance, it might be regarded as a static and fragmentary form of arrangement, which does not reflect the developing and active nature of schemata in Bartlett's view. Besides, Head relates schema to a process which implies conscious and unconscious structures:

> "Place the patient's affected arm in front of him on the bed, allowing him to see the position in which it lies; close his eyes, and in most cases he will see a mental picture of his hand. Then change its position while his eyes remain closed and he will continue to see a picture of the hand in its old position. Moreover, if localization is not affected, he will name correctly the spot stimulated but will refer it to the position in which he visualizes the hand. The visual image of the limb remains intact, although the power of appreciating changes in position is abolished. […] By means of perpetual alterations in position we are always building up a postural model of ourselves which constantly changes. Every new posture of movement is recorded on this plastic schema and the activity of the cortex brings every fresh group of sensations evoked by altered posture into relation with it. Immediate postural recognition follows as soon as the recognition is complete." (Head 1920, pp. 605–606)

Head works with brain-damaged patients who are unable to register postural changes. He claims that mental images of our body movements are stored in the cortex and remained intact even when the ability to coordinate movements is lost. The revised record of the body position is the schema, which is an unconscious function, that might come to consciousness and then lead to further actions.

> On the contrary, to Bartlett schema is not a storehouse that works in a process that separates unconscious and conscious[519]. As he puts it:

519. Wagoner 2013, p. 6.

> "[…] all incoming impulses of a certain kind, or mode, go together to build up an active, organised setting: visual, auditory, various types of cutaneous impulses and the like, at a relatively low level; all the experiences connected by a common interest: in sport, in literature, history, art, science, philosophy and so on, on a higher level. There is not the slightest reason, however, to suppose that each set of incoming impulses, each new group of experiences persists as an isolated member of some passive patchwork. They have to be regarded as constituents of living, momentary settings belonging to the organism." (Bartlett 1932, p. 201)

Then, remembering is not a new production, nor a perfect ideal repetition of the past, which operates in its schematic form in such a way that the less dated events have a predominant influence. As Head suggests, schemata are build up in a chronological way: when a series of movements a, b, c, out postural model at c is dependent from the chronological series a, b,c. By repeating the same order of events, the schema becomes more and more constant, thus producing a rote memory, or, in other words, an attitude towards the environment which is found to be adequate by the organism. On this purpose, it has to be presupposed that the organism has a way to be dominantly determined by the more adequate attitude towards the environment, breaking the chronological order, according to which the immediate preceding reactions are the most predominant. Besides the schematic influence of the past, remembering has a constructive character. The thesis that memory is a perfect literal recall of past events is an idealistic simplification. As the example of the "War of ghosts" shows, remembering is closest to construction than to reproduction. However, it is not imaging, which is a free building of events and experiences, but rather a construction based on a schematic pattern[520]. Therefore, there are reasons to consider Bartlett's account on memory in a functionalist perspective:

> "In contrast to the trace theory, which treats memory as an isolated mental faculty, Bartlett starts with a whole organism actively involved with its environment. The mind is taken "out of the head" and situated in the ongoing transactions between a person and his or her environment. From this perspective, remembering is considered as a situated activity, bringing together multiple different processes, to act in the world. Mind and memory are here not separate entities or substances but sets of processes contributing to environmental adaptation." (Wagoner 2013, p. 3)

In order to expose a systematic theory of remembering, Bartlett takes the example of an organism with high mental functions and few correlated series of movements and sensible way of connection to the environment. In such a organism habits are easily formed: since its movements and sensory capacities are limited, the repetition of the same reactions organised chronologically and schematically takes place with predominance. Nevertheless, insofar as special sense avenues increase, there is an

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520. In his work of 1923, *Psychology and Primitive Culture,* Bartlett often uses the expressions 'cultural pattern' to describe social and folkloric conventions, that are flexible and at the same time relatively stable as schemata are. The former might be regarded as functions for the groups, while schemata for the individuals. (Wagoner 2013, p.7)

increase in variety and amount of reaction, which is important in the development of means of communication and social life, in which schemata of an individual are checked and facilitated by those of the others. Because of this growth in complexity, it becomes necessary that the stimulus enable the subject to go immediately to the setting of past responses relevant to the situation. To do that, it is necessary that the organism has the capacity to be conscious of its schemata, to turn round them. The function of a schema, therefore, is to make an adaptive reaction possible. In Bartlett's words:

> "[…] it is, therefore, producing an orientation of the organism towards whatever it is directed to at the moment, but that orientation must be dominated by the immediately preceding reaction of experiences. To break away from this the 'schema' must become, not merely something that works the organism, but something with which the organism can work. […] the organism discovers how to turn round upon its own 'schemata', or, in other words, it becomes conscious. It may be that what then emerges is an attitude towards the massed effects of a series of past reactions. Remembering is a constructive justification of this attitude." (Bartlett 1932, p. 208)

Moreover, remembering implies something more than the mere chronological recapitulation of incidents: it is often related to incidents remote in time and therefore it is need to have a method to individualize the mass of past reactions organised in schemata.

The traces of past events involved in the act of remembering are not all neutral and equal, but carry with them a particular interest of the subject; for this, Bartlett states that a particular active function of images is at work in the act of remembering. As example of this, the author describes the case of a woman who participated to the experiment of the "War of the Ghosts" in 1917 and that met Bartlett two years later: she was surprised to see him and she muttered two names of the story but could not remember more. However, soon after, she was able to build a story which was close to the original one, although with some inventions. This example demonstrates how remembering can imply a an active attitude, in which the past event is reconstructed on the basis of images or words, that are related to the mass of the past experience. In this way, images and words can pick particular contents out of the mass schematically stored. In a similar way the conditioned reflex works: such as the dog which is usually fed after a auditory stimulus and which starts to produce saliva when it hears the sound. Events, therefore, can be organised together by persistent interests, thus influencing the reactions long after their original stimulus.

For what concerns the way of producing schemata, Bartlett agrees with the thesis of Head: schemata follow the special senses of one organism, which touches, sees, smells a material which is organised through different schemata and subjected to changes and elaborations:

> "Moreover, because there is this notable overlap of material dealt with by different schemata, the latter themselves are normally interconnected, organised together and display, just as do the appetites, instinctive tendencies, interests and ideals which build

them up, an order of predominance among themselves. This order of predominance of tendencies, in so fat as it is innate, is precisely what the psychologist means by "temperament" [---] If this view is correct, memory is personal, not because of some intangible and hypotetical persisting self, which receives and maintains innumerable traces, re-stimulating them whenever it needs; but because the mechanism of adult human memory demands an organisation of schemata depending upon an interplay of appetites, instincts, interests and ideals peculiar to any subject." (Bartlett 1932, pp. .212 - 213)

3.2.6 Meaning

According to Bartlett, in remembering (as well as perceiving and recognising) a significant role is played by the construction of the psychological material and reactions into organised and schematic setting, in which each part is related to some other. Therefore, these settings are meaningful insofar as each part leads on to some other, that is to say, the significance of each part goes beyond it in a sort of "effort after meaning":

"Hence it is legitimate to say that all the cognitive process which have been considered, from perceiving to thinking, are ways in which some fundamental 'effort after meaning' seeks expression. Speaking very broadly, such effort is simply the attempt to connect something that is given with something other than itself." (Bartlett 1932, p.227)

But what is Bartlett's understanding of 'meaning'?

He summarizes the psychological views into two possibilities: 1) meaning as arrangement of reactions, 2) meaning as arrangement of material and successively provides explanation of the arising of real and apparent meanings.

The author refers to Watson as best example of the supporters of the first theory. Watson assumes that the action is the meaning: "We watch what an animal or human being is doing. He means what he does. It is foolish to ask him while he is acting what he is doing. His action is the meaning." (Watson 1920 p. 103) But this view has to be taken partially, because it is not able to explain some facts that demonstrate exactly the opposite, namely that our action do not fit with what we actually mean to do:

"An inefficient skater, for example, has ruefully contemplated a sprawling and disorderly figure which he has cut on the ice, and has remarked sorrowfully: 'But that is not what I meant'. If one reaction means those that follow it, how many of those that follow it does it mean?" (Bartlett 1932, p. 228).

Another example is the action of little children, which changes in such a haphazard way, to seem not to be meant by its previous action. Therefore, it is reasonable to say that meaning arises only partially as result of the organisation of reactions and not that meaning and action are one and the same. A different position is the one supported by Edward Bradford Thitchener, who emphasizes that meaning depends on the arrangement of psychological material. more specifically, he states that no sensation, when considered alone, has a meaning: each sensation assume a meaning if it is taken as selected part of a whole process or context:

> "One mental process is the meaning of another mental process if it is the other's context. And context, in this sense, is simply the mental process which accrues to the given process through the situation in which the organism finds itself" (Titchener 1910, pp. 367-8).

At the beginning the situation is mere external and physical: the organism is confronted to a situation in which it assumes a particular bodily attitude which arouses sensations that give a psychological meaning to the process on which the subject is focused. In the case of adult human being, the situation is not only physical but may be internal: it is not only given by stimuli but also by ideas and images. Titchener's view is regarded as too simple by Bartlett: only in a very primitive mental life, which lives in one and only straight line, context is the sufficient explanation for meaning. For instance, if after having written these lines, we see the flames of a candle, are we allowed to say that the sensations of colour and temperature provided by the fire are the meaning of the sensations of black and white of a writing? Both groups of sensations of the fire and of the writing belong to a same context but it would be too much to state that they belong to a same situation giving them meaning. To inquire what a situation is, Bartlett underlines that it cannot be adequately described by reactions or by an arrangement of sensations, images and ideas. He gives the example of Sonia Kovalevsky[521]. As a young girl Sonia saw mathematical designs on the walls of her nursery. After looking at them for hours, the formulas fastened in her memory and when years later she took lessons of mathematics she could understand and remember very quickly and easily the problems. Only then, after the lessons of her teacher, she was actually able to understand the real meaning of the formulas stored in her memory. This example shows that no situation can be regarded as only a sum of psychological material, rather, an interest in organising the material is always implied:

> "In the instance just described, there is in operation a specialised curiosity for mathematical relations. This organised the sensory material which was given through the visual reactions to the lines and figures on the wall-paper. The other characters of the room did not belong to the same 'situation'. […] The active character of the tendency is as important as the static character of the arrangement of material. Thus in the limiting case we could have material identically arranged, so far as any of the associative relations involved are concerned, and yet no confusion need arise, because the underlying active, organising tendencies are different." (Bartlett 1932, p. 231)

Therefore, the physiological material is involved in the constitution of meaning, which , however, is not justified only through it. To determine the meaning several conditions are necessary: a chronological order in arranging the elements (which are differentiated: some are individual, others are shared and some are dominant over the others). Moreover, an interest in guiding the arrangement of the material is required to integrate and combine the complexity of the mass of acquired material

521. Cf. von Cassel 1895, pp. 232 - 233.

and this process might change the chronological order in favour of the fitness of some material to other. For instance, a skilful orator can start his speech and then takes a break, holding the interest of his listeners, and only in the end he comes in with the fitting material they were waiting for.

After having determined the main features involved in the constitution of meaning, Bartlett tries to explain psychologically the common distinction between real and apparent meaning. The author distinguishes four possibility to define 'real meaning'. The first one is the conventional sense: "for 'real' meaning may be substituted 'conventional' meaning. Meaning arises out of the organisation of psychological material by reaction tendencies." (Bartlett 1932, p. 235)

When reaction tendencies are repeated and established in a society, they started to be expressed in its members, thus becoming a social habit, which changes from group to group (for instance the notion of magic assumes a different significance according to the society in which it is used). The second meaning of 'real' is rational: 'real meaning', in this sense, consists in a sort of logical significance, given by the abstraction of the active character (all affective reactions). There is a similarity between this case and the precedent one, because they are both valid in reference to a group of people; they both are produced by an effort to have a uniform notion of real meaning in relation to a particular society. The third possibility is to understand 'real meaning' as the meaning arising from the dominant characteristics of a situation. If these characteristics are the more common in a group, this case identifies with the first one; if these tendencies are the cognitive reactions, it is identifiable with the second case. The last possibility considered by Bartlett is to define 'real meaning' as 'fit meaning', in the sense that one or more tendencies matches other and this match can be intuited (or seen, apprehended etc..). For instance, if this fourth case and the second are the same, the fittingness of the tendencies may be regarded as logical formulae.

According to the author none of these possibilities must be preferred to the others, thus leaving opens space to several questions on meaning, which is regarded as a legitimate topic of psychology:

> "[…] so long as we remain within the field of psychology, general problems of meaning are always to be found. What I have agreed to call 'reactive significance' may be present on a purely physiological level, but as soon as ever the reacting subject, or organism, becomes aware of the material with which his reactions deal, there is meaning. […] in recall the reactions to the immediate stimuli are treated as having their 'fitting' termination in the reconstruction of 'schemata' and organised settings and materials of earlier date." (Bartlett 1932, p. 237)

Since this mechanism may be influenced by social factors, Bartlett alludes at the necessity of a further inquire from a social psychological point of view, thus paving the way for further sociological studies[522].

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522. Bartlett's inquiry on memory in its social dimension is closed to the studies of his contemporary

3.2.7 Conclusion

In his treatise Bartlett claims that schemata containing sort of summaries of familiar situations are the constitutive functions of memory. Consequently, those elements that do not fit these schemata are adapted to fit these schemata, thus leading Bartlett to develop a theory of remembering alternative to the trace theory (supported by Plato, Berkeley, Hume and Mill), according to which memory is merely a wax tablet on which experiences leave an imprint. Therefore, Bartlett (as well as Piaget will) attributes to schemata an active general structures through which experiences are stored and recalled. Then, as I will show in more detail in the case of Piaget, the first main difference between Kant's view and Bartlett's account is that in the latter schemata have not the function of the Kantian transcendental ones: they are not mediating function of the application of pure concepts to experience, but are objects of a psychological inquiry on the cognitive faculties, without interest in the objectivity of epistemic judgements. Second, Bartlett's account concern the case of memory and not of cognition in general; third, Bartlett do not present a table of different schemata, but rather use the term in a general sense, without discriminating particular kinds of such general patterns. Fourth, Bartlett is elaborating an experimental inquiry that implies empirical research, which has tasks and methods deeply distinct from Kant's standpoint. However, it is interesting that Bartlett focus on a topic of philosophical interest (as I have already stressed alluding to the trace theory) and uses, although without directly referring to Kant, the philosophical term 'schema', thus suggesting that he was familiar to the *Critique of Pure Reason*.[523]

> "It should be obvious that both Piaget and Bartlett have departed substantially from the a priori schemas set forth by Kant and Plato. The a priori structures are ahistorical. That is, their development does not depend upon past experiences of the individual. In contrast, both Piaget and Bartlett define schemas as products of interactions with the environment in which similarities in the experiences are generalized and retained in memory, in the thinking of Piaget and Bartlett, an individual is actively seeking to understand the environment. […] Together, Bartlett's and Piaget's ideas provide the skeleton of schema theory. It begins to be understandable but does not yet have sufficient substance. Several recent researchers have sought that substance by performing more detailed empirical investigations about the nature of a schema and by developing sophisticated computer models that simulate schema instantiation." (Marshall 1995, pp. 15 – 16)

I do not intend to investigate in detail the schema theories developed in the last 40 years, but only conentrate on a n example of them, namely Barsalou's perceptual

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Maurice Halwachs on collective memory (*Mémoire collective*, 1950). On this topic see Green 2007, pp. 82 - 87.

523. Nevertheless,Bartlett (and his mentor James Ward) was familiar with the Kantian terminology, as demonstrated by his text *Valuation and Existence*, contained in *Proceeding of the Aristotelian Society* 17 (1917), pp. 117 - 138 (Kann 2017, pp.108). Moreover Bartlett quotes Oswald Külpe, author of *Immanuel Kant: Darstellung unf Würdigung* from 1906, inhis work *Thinking* (Bartlett 1958, pp. 128-9; 154-5).

symbol system. Before considering Barsalou, I just want to point out that Minsky himself regards Bartlett as a model to develop his frame theory. In *A Framework for Representing Knowledge* from 1975, he claims that data structures called frames can be used to represent knowledge in memory, stressing that the origins of this thought can be found in Bartlett's study on remembering[524] (which is directly quoted four times):

> "I do not claim that the ideas proposed here are enough for a complete theory, but only that the frame-system scheme may help explain a number of phenomena of human intelligence. The basic frame idea itself is not particularly original–it is in the tradition of the "schema" of Bartlett and the "paradigms" of Kuhn {1970}; the idea of a frame-system is probably more novel. Winograd (1974) discusses the recent trend, in theories of Artificial Intelligence, toward frame-like ideas." (Minsky 1974, p. 3)

> "Very little was learned about such matters in the main traditions of behavioral or of perceptual psychology; but the speculations of some earlier psychologists, particularly of Bartlett (1932), have surely found their way into this essay." (Minsky 1974, p. 6)

Before considering the case of Barsalou, I shall move to Piaget's interpretation of schema.

3.3 Jean Piaget's interpretation of Kant's notion of schema

In the first section I will introduce Piaget as an intellectual with an interest in empirical studies as well as philosophical authors such as Bergson, which will lead him to found the "Centre of genetic epistemology", involving intellectuals from different areas. According to Piaget the subject in his physical and mental aspects is involved in a process of continuous organisation of himself and his works. If so, to inquire the subject, different branches (from logic to biology) have to be considered. In section 3.2.2 I will focus on the philosophical influences on Piaget, that include not only Bergson's creative evolution, but also Kant's view of the tasks of philosophy (the determination of the conditions of cognition and the coordination of values and different fields of human sciences). Then, in 3.2.3. The Piagetian notion of schema will be considered. The author does not explicit referred it to the *Critique of Pure Reason* and uses it to address functions developed by human beings insofar as intelligent, in order to assimilate and adapt to the environment. They are structures used to organise pattern of behaviour developed through assimilation and accommodation, from the first simple structure of the infancy to more refined ones,for instance, the schema of a object(3.2.4), which refers to the way in which the child organise his behaviour insofar as it recognizes that something resists its action (the object) and is endowed

524. On the influence of Bartlett on the development of cognitive sciences see the article of William F. Brewer (*Bartlett's Concept of the Schema and its Impact on Theories of Knoweledge Representation in Contemporary Cognitive Psychology*) in Saito 2000, pp. 69-89.

with permanence. (consequently he acts as if there is a difference between himself and the external world). In 3.2.5. Piaget's thinking will be contrasted to empiricism and apriorism. He opposes the first because empiricism states an absolute and too strong notion of experience (as if everything could be reducible to sensible states), he contrasts the second, because a strict and rigid apriorism is not able to provide explanations of the changes and developments which occur in the subjects. Therefore, Piaget's view of the noton of schema is dynamic and combines mutability and invariant constrains. In 3.2.6. I shall focus on the relation between Piaget and Kant. There are similarity in their terminology (concepts, schemata, forms, intuition…) but Kant differentiates them in a clear and determined way. Moreover, although they seem to deal with same questions concerning the relation between sensibility and cognition, their interests and approaches are very different. Piaget is interested in the notion of schema (for instance of the object) in order to find a solution to the question on when and how human beings start to behave considering a distinction between themselves and external permanent things. In contrast, Kant is interested in the necessary conditions of possibility of objective experience – this is his transcendental focus on the problem.

3.3.1 An interest in both theoretical and empirical studies

Jean Piaget shows a precocious deep philosophical interest[525] as well as a particular disposition towards scientific observation. He was very impressed by the writings of Bergson, as well as Kohler, Wertheimer and the psychoanalysts.

In 1918 he graduated from the University of Neuchatel, on the suggestion of the director of the museum of natural sciences, with a thesis on mollusks (a topic of great interest during his youth) and then he moved to the Sorbonne, where he started to collaborate with Thèodore Simon, whose research focused on the measurement of intelligence in children. However Piaget, dissatisfied by a mere quantification of the reaction of children, wanted to question the reason why children provide a particular answer to their tests and for this reason he developed a new method of inquiry, namely the "clinical talk". This method parts from the psychoanalysis (which focuses on mental content) as well from behaviouristic approaches (interested only in the response of the subject and not in the internal mental process) and consists of a mixture of speech and observation: he observes the child while asking him precise questions or manipulating the objects used in the test. For instance, Piaget put some sticks on a table and later he changed their position and asked the child if their quantity had changed. This way of interacting while conducting tests on cognition was a novelty in his field and if on the one hand he paved the way for further psychological studies concerning the process of development of cognition, on the other he was sometimes not so careful in making his conclusion and in avoiding influencing the children's response, for instance, by using different formulations of the problem he presented.

As an example of this: Piaget demonstrated his thesis on the egocentrism of children through an example, which, if formulated in a different way, does not support

525. Vidal 1994.

his thesis. In the test, a child sees a geographic model of mountains in different sizes and colours out on a table. The researcher then puts out a doll around the table, in a different position from the child, who is asked to describe what the doll is supposed to see. The majority of children (till 8 years old) confuse the doll's point of view with theirs, thus leading Piaget to support his thesis of egocentrism of children, who are incapable of distinguishing their own viewpoints from other possible perspectives. But Martin Hughes' modified example does not support this thesis: Hughes substitutes the doll in the original example with a policeman looking for the child, who, in the majority of cases, is perfectly able to provide the correct answer. In this context, the situation which confronts the child is has a precise meaning and the child has to act according to his intention to achieve a clear task (escape).

But although his tests were limited, Piaget's attempt to investigate cognition in an experimental way created the possibility of a common collaborative work of researchers from different fields.

After his collaboration with Simon, Piaget taught psychology, sociology and philosophy at the universities of Neauchatel, Lausanne, Geneva and Paris Sorbonne and finally in 1956 he founded the "Centre of Genetic Epistemology", which united researchers from several branches (linguistic, biology, philosophy, physics and mathematics). In the centre, Piaget and his fellows focus on epistemology, intended as the inquiry on the relation between a subject who acts and thinks and the objects of his experience. This kind of epistemology is called genetic since it regards cognition as a genetic process: to understand an object implies a mental or physical act of the subject, (as, for instance, when a child approaches a new object he knows it insofar as he manipulates the object). This is an empirical approach to epistemology because Piaget aims to solve its questions through an empirically demonstrated answer. However, this investigation of the physical fundamental principles of the psychological structures does not lead to support of a reductionist mechanism or a behaviorism stating that the subject is a product of the environment. Moreover, Piaget does not propose a rude Platonism of eternal and innate structures but rather he focuses on the idea that the subject in his physical and mental aspects is involved in a process of continuous structuration of himself and his world. This is a process of adaptation and development, as demonstrated through Piaget's inquiry on the development of cognition in children, which plays a fundamental role in developing his conception of schema.

According to his *Biology and Knowledge* from 1967, there are four stages of development of the cognitive functions, which are regarded as a development of the organic regulations:

1) Sensory assimilation (from birth till approximately two years old)
2) Development of language and internalization of actions (between two and seven years old)
3) Actual operative thought emerges (between seven and twelve years old)
4) Adolescence (between twelve and fourteen old)

As a result, cognition is seen as a process of assimilation of the data of experience to schemata or of redefinition of schemata through new data.

3.2.2 A "philosophical shock"

As already stressed, Piaget does not approach the notion of schema moved by a mere philosophical interest: at the time when Piaget is studying under Brunschvicg, he is deeply focused on the development of a particular vision of the theme of life. However, this interest did not derive from his academic philosophical studies, but from the synthesis of both his scientific and philosophical attitudes: in particular, from his concern with the study of children and his early interests in the history of natural science (with a particular interest in mollusk taxonomy, mimicry, as well as Lamarckism) and from his philosophical reading of Bergson's metaphysics, discovered in July- August 1912 thanks to his godfather Samuel Cornut.

Piaget himself reports on the impact of Bergson's thought:

> "He (Cornut) found me too specialized and wanted to teach me philosophy. Between the gatherings of mollusks he would teach me the "creative evolution" of Bergson. (It was only afterwards that he sent me that work as souvenir.) It was the first time that I heard philosophy discussed by anyone not a theologian; the shock was terrific, I must admit. First of all, it was an emotional shock. I recall one evening of profound revelation, the identification of God with life itself was an idea that stirred me almost to ecstasy because it now enabled me to see biology in biology the explanation of all things and of the mind itself. In the second place, it was an intellectual shock. The problem of knowing (properly called the epistemological problem) suddenly appeared to me in an entirely new perspective and as an absorbing topic of study. It made me decide to consecrate my life to the biological explanation of knowledge." (Piaget 1952, p. 240)

Beyond Bergson, Kant certainly deeply influences the thought of Piaget, whose works are abundant in references. Quotations regard three main themes: apriorism, method and aims of philosophy. For instance, he opens his *Psychologie et epistemologie* referring to Kant's view of the task of philosophy, which is an inquiry into the possibility of knowledge whose actuality does not need to be proved:

> "The classic theories of cognition have already posed the question – How is cognition possible?-, which has quickly been differentiated in a plurality of problems, concerning nature and the preliminary conditions of logical-mathematical cognition, of the experimental cognition of physical type etc.. But the common postulate of these diverse traditional epistemologies is that cognition is an event and not a process." (Piaget 1970, p. 7, transl. L.S.)[526]

526. "Les théories classiques de la connaissance ce sont d'abord posé la question <Comment la connaissance est-elle possible?>, qui s'est vite différénciée en une pluralité de problèmes, pourtant sur la nature et les conditions préalables de la connaissance logico-mathématique, de la connaissance expérimentale de type physique, etc. Mais le postulat commun des diverses épistémologies traditionelles est que la connaissance est un fait et non pas un processus."

Moreover, in *Sagesse et illusion de la philosophie* (1965), Piaget opposes the precritical notion of philosophy against the critical one, in which philosophy is no longer regarded as an omni-comprehensive kind of knowledge, but rather holds the primary task of coordinating values and determining the limits of the knowledge's possibility:

> "A second way characterises Kant's critique: the purely philosophical knowledge consists, on one hand in determining the limits of knowledge as a whole and, on the other, in providing a theory of the scientific knowledge; the establishment of those limits leaves the domain open to a coordination of the values."(Piaget 1965, p. 9, transl. L.S.)[527]

In addition to the above mentioned examples, all the Piagetian works dealing with the problem of knowledge and the development of intelligence[528] are rich in hints about the notion of schema, thus underlining Piaget's interest in Kant's doctrine of schematism and the importance of examining his reception and interpretation of it in depth. As demonstrated by Kant's references in Piaget's works, the influence of the German philosopher is undeniable but the fact that Piaget does not directly and literally quote Kant's texts suggests that, on the one hand, he purposely relies on his ideas, and yet, on the other, he uses Kant as a source of inspiration rather than as a direct and actual interlocutor. Once again, it is important to stress that Piaget's main concern is the inquiry on life, primarily regarded as a biological process, and it is from this standpoint that he develops an inquiry into the process of knowledge, which leads him to originally reinterpret Kant's notion of schema.

3.3.3 Piaget's notion of schema

According to Piaget's view, schemata can be generally considered as functions (such as: space, time, object, causation) developed by human beings, insofar as they are intelligent beings, in order to assimilate and adapt to the environment:

> "Intelligence is an adaptation […] In fact, life is a continuous creation of increasingly complex forms and a progressive balance between these forms and the environment. To affirm that intelligence is a particular case of the biological adaptation, is therefore to suppose that it is essentially an organization and that its function is to structure the universe in the same way that the organism structures its direct environment. […] the organism adapts, materially constructing new forms to insert them in those of the universe, at the same time the intelligence prolongs this creation, mentally constructing structures that can be applied to those of the environment. In a sense and at the beginning of the mental evolution, the intellectual adaptation is more restricted than the biological adaptation, but in prolonging it, the intellectual overtakes the biological infinitely."(Piaget 1936, pp. 10 – 11, transl. L.S.)[529]

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527. "Une seconde maniére caractérise la critique kantienne: la connaissance proprement philosophique consiste, d'une part à déterminer les limites de toute connaissance et, d'autre part, à fournir une théorie de la connaissance scientifique, l'établissement de telles limites laissant le champ libre à la coordination de valeurs"

528. Cfr. *Sagesse et illusion de la philosophie, La psychologie de l'enfant, La naissance de l'intelligence, La construtión du réel, Logic and Psychology, La répresentation de l'espace chez l'enfant*.

529. "L'intelligence est une adaptation. […] En effet, la vie est une création continue de formes de

Adaptation and organisation are the key concepts Piaget uses to describe the process of life in all its aspects, from the development of the basic function of a living being (breathing, eating, reproduction) to the more specific and complex ones (such as the cognitive process).

In particular, adaptation can be defined as the balance between assimilation and accommodation, i.e., between the way in which the intelligence incorporates the new data provided by experience and the pressure of the milieu into its schemata. This concept is inseparable from the notion of organisation: they are complementary processes belonging to one and the same movement, which is called organisation, when considered from an internal point of view, and adaptation when considered from an external one. In this perspective each function, each schema, is part of an organic totality, a system of mutual relations among all the elements implied in the organisation of perceptions and motor as well as mental actions:

> "Each act of intelligence presupposes a system of mutual implications and of connected meanings. The relations between this organization and the adaptation are then the same as those of the organic domain: the principal categories – which intelligence uses to adapt to the external world - space and time, causality and substance, classification and number, etc… - each corresponds to an aspect of reality, as the organs of the body are each relative to a particular feature of the environment, but, aside from their adaptation to things, they are mutually implicated to the point that it is impossible to logically isolate them. The agreement of thought to things and the agreement of thought with itself expresses the double functional invariant of adaptation and organization. Yet these two aspects of the thought structure thought itself and it is in organizing itself that thought structures things." [530] (Piaget 1936, p. 14, transl. L.S.)

To summarize, Piaget regards schemata as structures to represent the world in its complexity and varieties of objects, events and relations. It is the mental framework developed and used from childhood which perceives and interacts with the

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plus en plus complexes et une mise en équilibre progressive entre ces formes et le milieu. Dire que l'intelligence est un cas particulier de l'adaptation biologique, c'est donc supposer qu'elle est essentiellement une organisation et que sa fonction est de structurer l'univers comme l'organisme structure le milieu immédiat. […] L'organisme s'adapte en construisant matériellement des formes nouvelles pour les insérer dans celles de l'univers, tandis que l'intelligence prolonge une telle création en construisant mentalement des structures susceptibles de s'appliquer à celles de milieu. En un sens et au début de l'évolution mentale, l'adaptation intellectuelle est donc plus restreinte que l'adaptation biologique, mais en prolongeant celle-ci, celle-là la déborde infiniment."

530. "Tout acte d'intelligence suppose un système d'implications mutuelles et de significations solidaires. Les relations entre cette organisation et l'adaptation sont donc les mêmes que sur le plan organique: les principales -catégories- dont use l'intelligence pour s'adapter au monde extérieur - l'espace et le temps, la causalité et la substance, la classification et le nombre, etc. - correspondent chacun à un aspect de la réalité, comme les organes du corps sont relatifs chacun à un caractère spécial du milieu, mais, outre leur adaptation aux choses, elles sont impliquées les unes dans les autres au point qu'il est impossible de les isoler logiquement. L' <accord de la pensée avec les choses> et l'<accord de la pensée avec elle-même> expriment ce double invariant fonctionnel de l'adaptation et de l'organisation. Or ces deux aspects de la pensée s'organise elle-même et c'est en s'organisant elle-même qu'elle structure les choses."

environments. This does not imply that each subject reacts and interprets the environment in the same way, because each one develops their own schemata in different ways and at different ages, even if a general pattern of evolution of basic schemata is shared. More in detail, Piaget divides schemata into three main groups: sensomotor or behavioural schemata, symbolic and operational schemata (Piaget 1953).

The first ones are structures useful in organising patterns of behaviour that are used to react to objects and events and represent experiences. The second are similar to internal images used to represent some aspects of our experiences symbolically; while the third kind of schemata constitute the whole mental activity of organising our thought and its objects. As already shown, schemata develop through a process of assimilation and accommodation, thus explaining the reason why the first structures developed in infancy tend to become more precise and detailed. Schemata are constantly in the process of being modified or changed by new experiences through which the subject develops their own understanding and interpretations of events using this knowledge to solve problems. From a biological-neurological viewpoint, the mind is constantly working to rebuild itself and enhances understanding as it receives new information. Later on, in *Biology and Knowledge* (1967), reflecting on the new research on RNA, Piaget suggested a possible physical embodiment for his abstract schema entities. However, he did not offer any firm conclusions, and confessed that this was beyond his area of expertise.

3.3.4 An example of a schema: The object

As already stressed, the more complex the organism is, the more it needs specific schemata. Among these, the one which is particularly interesting in the study of the development of cognition is the schema of object, since it can be regarded as the condition of the development of an independent mental activity, although still rooted in sensibility.

According to Piaget an object can be defined as something endowed with permanence. But how is this permanence to be considered?

Piaget's position stands against both the extremes of empiricism and innatism, as he states:

> "This permanence of the object does not correspond to anything innate: during the first months of existence the primitive universe is a universe without objects, formed by perceptual pictures that appear and disappear." (Piaget 1970, p. 25, transl. L.S.)[531]

The schema of object is neither innate nor exclusively derived from experience, as if it were something absolutely external to the subject. It is rather constructed little by little through six stages that correspond to the developmental stages of intelligence in the child. Interesting enouh, Piaget provides a novel account of infancy:

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531. "Cette permanence de l'objet ne correspond à rien d'inné: l'univers primitif est, pendant les premiers mois de l'existence, un univers sans objets, formé de tableaux perceptifs qui apparaissent et disparaissent."

> "Piaget's view offers a strong contrast to this conception of the newborn as a predominantly helpless and inactive creature, for he characterizes the newborn as active and as an initiator of behavior. The infant quickly learns to distinguish among various features of the immediate environment and to modify his behavior in accordance with their demands, in fact his activity reveals the origins of intelligence." (Ginsburg & Opper 2016, p. 40)

Piaget summarizes the phases of the intellectual development as follows: 1) and 2) reflexes and primary habits; 3) secondary and circular reactions; 4) adaptation of already-known paths to new situations; 5) consideration of the object as something individual and permanent (between 12–18 months); 6), representation of absent objects and their dislocations (between 16–18 months). [532]During the first and the second stage (that begins from the second week) the child starts to distinguish, among the variety of impressions he receives from the environment, some groups (*tableaux*) that are more stable than others. For instance, from the second week, the child is able to find and distinguish the mother's breast in the environment and from the fourth week onwards it can react with a smile to the sound of its parents' voices. However, these observations demonstrate only that some of the child's reactions (called primary circular reactions) can be considered as more stable. Yet, they do not prove that the child at this stage approaches the object as something subsistent in itself, but only that he recognizes his reaction in front of it. This recognition, far from being a deductive mental process, can be described as a sort of habit or familiarity with a certain situation, in presence of which the child reacts in a same way:

> "In the general cases, […] recognition does not require any evocation of mental image. In order to start the recognition it is sufficient that the entire previously adopted attitude with respect to the thing is provoked once again and that nothing in the new perception opposes this schema. The impression of satisfaction and of familiarity of the recognition only derives from the essential fact of the continuity of this schema: that which is recognized from the subject is his own reaction before the recognition of the object as such." (Piaget 1970 p. 11, transl. L.S.)[533]

The stability of this child's reactions leads then to the third stage of the development of the schema of object, in which Piaget describes the object as endowed with a greater degree of persistence. This characteristic, however, is actually not attributed to the object in itself but it rather refers to the acts of accommodation of the child, according to whom everything that is required for its action is treated as self-consistent. For this reason, objects are defined as permanent not because they

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532. See Piaget 1950.

533. "Dans les cas élémentaires […] la récognition ne nécessite aucune évocation d'image mentale. Il suffit, pour qu'il y ait début de récognition, que l'attitude adoptée précédemment à l'égard de la chose se trouve à nouveau déclenchée et que rien, dans la nouvelle perception, ne contrecarre ce schème. L'impression de satisfaction et de familiarité propre à la reconnaissance ne saurait ainsi provenir que de ce fait essentiel de la continuité d'un schème: ce que reconnaît le sujet, c'est sa propre réaction avant que ce soit l'objet comme tel."

are recognized as something consistent in themselves, with a proper location independent from the child's actions, but, on the contrary, because their permanence is required exactly by the action. Sure enough a movement practically presupposes the permanence of the objects towards which the act is directed. As a consequence of this view, the very first step in the development of the schema of objective permanence is not rooted in reflective thought but in empirical and practical activity: things are not something in themselves, but they are rather something for *the child*, something at the child's disposal. Actually, from the child's viewpoint, there is no difference between his action and the objects involved; there is neither object nor proper self, but only a unique movement, a unique effort to preserve the action:

> "In effect, the child ignores, at this stage, the mechanism of its own actions and does not disassociate them from things themselves: it knows only the total and indistinguishable- we have named it the schema of assimilation- encompassing a unique act given from the external perception as well as the internal impressions of an affective, kinaesthetic nature. Etc…"(Piaget 1970, p.41, transl. L.S.)[534]

A further step comes in the fourth stage, in which Piaget considers the case of a child looking for objects that have disappeared from his focal view. In his experiment, Piaget shifts a clock from position A to C and considers the behaviour of the child looking for it:

> "This time I hide my watch in A, then in C, without using position B again. Lucienne easily finds the clock in A, but she does not try to find it in C, despite the reiterated experiences: as soon as she sees the watch disappear in C, it is in A that she goes to look for it."(Piaget 1970, p. 53, transl. L.S.)[535]

Piaget explains the reason why Lucienne looks for the object in the position A (where it was first perceived), even though she saw the clock disappearing in C, referring to the child's inability to objectify, together with her incapacity for spatial localization. From the child's viewpoint, an object in this stage is in fact a *medium* between something at her action's disposal and something consistent in itself.

Unlike during the third phase, the children's actions at this stage are not aimed solely at accommodating movements (for instance, turning the face to follow the object's movement), but rather directed towards actively looking for a disappeared object, even though it is sought only in its original position, i.e., in the position where it was first seen or where it was previously perceived to be (A). This process is taken a step further in the fifth stage, when children start looking for the object in

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534. "En effet, l'enfant ignore, à ce stade, le mécanisme de ses propres actions et ne les dissocie donc pas des choses elles-mêmes: il n'en connaît que le schème total et indifférencié - nous l'avons appelé le schème d'assimilation - englobant en un acte unique données de la perception extérieure ainsi que les impressions internes de nature affective, kinesthésique, etc…"

535. "Je cache cette fois ma montre en A, puis en C, sans plus faire usage de la position B. Lucienne trouve bien la montre en A, mais elle n'essaie pas une seule fois de la chercher en C, malgré des expériences réitérées: lorsqu'elle voit la montre disparaître en C, c'est d'emblée en A qu'elle va la chercher."

its last visible location. This stage is characterized by the child's increasing capacity to consider the successive dislocations of an object. When the object is repeatedly moved from A to B and then to C, the children prove to be capable of looking for the object in C, if they do not find it in A first. However, this ability does not provide any evidence to consider that the children are making a deduction in order to find the object; their movements can be easily explained as the result of a mere empirical *apprentissage* (empirical habitus). Hence the object, although considered as something permanent in its visible dislocations, is still dependent on the visible-phenomenal context and on a dynamic and practical process. In fact, if the object is hidden from the children's sight (or is subject to a succession of visible dislocations too complex to be remembered), the children will not be able to continue their search. To solve the difficulties given by the invisible dislocation of a desired object, the children need to develop a new method, called representation, which leads to the sixth stage. In this phase, the children can look for the object even if they have not seen where it has been moved to. The children are now able to imagine the different dislocations in their mind and can look for the object on the basis of his mental representations:

> "Jacqueline sits facing three object-screens, A, B and C, aligned at an equal distance from each other (a beret, a tissue, and her jacket). I hide a small pencil in my hand, whilst saying 'hey, look, a pencil', I show her my closed hand, and put it on A, then on B, then on C (whilst leaving the pencil on C); at each stage I show my closed hand once again, while repeating 'hey, the pencil'. Jacqueline then straight away looks for the pencil in C; she finds it and laughs.
>
> I repeat the same experiment nine times, constantly taking the following precautions: 1) I show the child my closed hand every time I withdraw it from under one of the three object-screens, in particular after having withdrawn it from the third. 2) I change the order of each experiment: I start by putting my hand under the object-screen under which the child found the pencil in the previous test. For example, the first test is carried out conforming to the order A, B, C, the second test will follow the order C, A B (the pencil is in B), the third, B, C, A, etc. 3) Every time, I change the position of the object-screen: the beret is sometimes on the left, sometimes on the right, etc. 4) Every time, the pencil is left under the last screen, beneath which I pass my hand.
>
> Jacqueline sits facing three object-screens, A, B and C , aligned at an equal distance from each other (a beret, a tissue, and her jacket). I hide a small pencil in my hand, whilst saying 'hey, look, a pencil', I show her my closed hand, and put it on A, then on B, then on C (whilst leaving the pencil on C); at each stage I show my closed hand once again, while repeating 'hey, the pencil'. Jacqueline then straight away looks for the pencil in C, she finds it and laughs.
>
> I repeat the same experiment nine times, constantly taking the following precautions: 1) I show the child my closed hand every time I withdraw it from under one of the three object-screens, in particular after having withdrawn it from the third. 2) I change the order of each experiment: I start by putting my hand under the object-screen under which the child found the pencil in the previous test. For example, the first test is carried out conforming to the order A, B, C, the second test will follow the order C, A B (the pencil is in B), the third, B, C, A, etc. 3) Every time, I change the position of the

object-screen: the beret is sometimes on the left, sometimes on the right, etc. 4) Every time, the pencil is left under the last screen, beneath which I pass my hand.

Yet, during the first eight experiments, Jacqueline always looked for and found the pencil under the last object-screen beneath which I slipped my hand. During the ninth test, she looks for it under the last object-screen and during the tenth, she begins, without hesitation, to search under the last object-screen. Moreover, she had a characteristic hesitation during the sixth experiment; she touched the tissue first (under which the pencil had been hidden the time before), but without turning it over, and then she spontaneously moved to the beret, as if she was mentally correcting her mistake. Her attention and interest were active, with the exception of tests 8 and 9 (tired). Effort was regained in 10.

A 1; 7 (24), the next day, I repeat the experiment under the same conditions. Jacqueline continues to only turn over the last screen. She hesitates and repeatedly touches the second to last screen, without turning it over, then she touches the last (finally turning it over), as if it has been a reflection and mental combination. Throughout test no. 7, Jacqueline repeatedly touched the three screens, following the order in which I had passed and withdrawn my closed hand, but she turned over only the last screen.

There is therefore clearly a system. We are unable to interpret these events only by fate, given the modifications that I introduced each time in a successive order. Nevertheless, it is not possible to state that the child remembers only the third position: the hesitations witnessed demonstrate the contrary, that the child mentally retraces the given order. Finally, the longer the duration the duration of the experiment, the more difficult it becomes to remember the last position, due to the growing overlapping of memories." (Piaget 1970, p. 71, transl. L.S.)[536]

536. "Jacqueline est assise en face de trois objets-écrans, A, B et C, alignés à égale distance les uns des autres (un béret, un mouchoir et sa jaquette). Je cache un petit crayon dans ma main, en disant: <Coucou, le crayon>, je lui présente ma main fermée, la mets sous A, puis sous B puis sous C (en laissant le crayon sous C); à chaque étape je présente à nouveau ma main fermée, en répétant <Coucou, le crayon>. Jacqueline cherche alors le crayon directement en C, elle le trouve et rit. Je recommence alors neuf fois de suite la même expérience, en prenant constamment les précautions suivantes: 1° Je montre à l'enfant ma main fermée chaque fois que je l'ai retirée de dessous l'un des trois objets-écrans, et en particulier après l'avoir sortie du troisième. 2° Je varie l'ordre à chaque expérience, en ayant soin de commencer par mettre ma main sous l'objet-écran sous lequel l'enfant a trouvé le crayon lors de l'éprouve précédente. Par exemple, le premier essai ayant été fait conformément à l'ordre A, B, C, le second essai suivra l'ordre C,A,B (le crayon étant en B), le troisième, B, C, A, etc. 3° Je change chaque fois les objets-écrans de place: le béret est tantôt à gauche, tantôt à droite, etc. 4° Le crayon est chaque fois laissé sous le dernier écran, sous lequel j'ai passé ma main. Or, durant les huit premières expériences, Jacqueline a constamment cherché et trouvé le crayon sous le dernier objet-écran sous lequel j'ai glissé ma main. Au neuvième essai, elle le cherche sousl'avant dernier et au dixième elle recommence à fouiller sans hésiter sous le dernier, De plus, elle a eu une hésitation caractéristique au sixième essai: elle a touché d'abord le mouchoir (sous lequel le crayon était caché la fois d'avant), mais sans le retourner, puis a passé spontanément au béret (juste), comme si elle corrigeait mentalement son erreur. L'attention et l'intérêt ont été très vifs, sauf durant les essais 8 et 9 (fatigue). L'effort a repris en 10. A 1; 7 (24), c'est-à-dire le lendemain, je répète l'expérience dans les même conditions. Jacqueline continue à ne retourner que le dernier écran. Il lui arrive cependant d'hésiter et de toucher successivement l'avant-dernier écran (sans le retourner), puis le dernier (en le retournant enfin), comme s'il y avait réflexion et combinaison mentale. Au cours de l'éprouve n° 7, Jacqueline a même touché successivement les trois écrans, en suivant l'ordre dans lequel j'avais moi-même glissé et retiré ma main fermée, mais elle n'a de nouveau retourné que le dernier, Il y a donc nettement système. On ne saurait, en effet, interpréter ces faits par le hasard seul, étant données les modifications que j'introduis chaque fois dans l'or-

When the children are confronted with complex dislocations of the object, their actions slow down: their hesitant movements show that they are following a mental representation of the object's dislocation, i.e., they are actually thinking. They do not look for the mere repetition of a pleasant action, but for an object finally considered as something permanent in their dislocations and independent from the children's own action[537].

Piaget synthesizes the process of object constitution in the following way:

> "Initially the object is nothing more than the prolonging of the movements of accommodation (prevision). Then it is the point of intersection, that is to say, of reciprocal assimilation of multiple schemata that express the different modalities of their own actions (accordance of experiences). Finally the object is achieved in correlation to causality insofar as this coordination of schemata succeed in the constitution of a universe intelligible in space and time and provided with permanence (understanding in relation to a collective deductive system)." (Piaget 1937, p.78, transl. L.S.)[538]

From these considerations it is possible to define the Piagetian notion of the schema of an object as a function endowed with different degrees of complexity, rooted in the practical and sensible actions and developing as a characteristic attributed to the universe of action and for the action: a universe, which is different from the action in itself, as it is spatially, temporally and causally self-structured. From his observations, Piaget concludes that, while at first all of a child's actions can be explained through the notion of a sensorimotor schema in perfect analogy with the physiological movement of the organism, which assimilates the milieu to its living body, gradually this assimilation (related to the accommodation) develops into a more complex system in which the child's action starts to be considered by the child as part of the world, and not as the whole world. When the child is confronted with the disappearance of a desired object, the distinction between object and subject becomes more and more defined: the object is something that resists the child's action, it opposes itself to the child's will, so the child's action is no longer everything, but now just one part of its complex system of experience.

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dre suivi. D'autre part, il n'est pas possible d'admettre que l'enfant se rappelle seulement la troisième position: les hésitations dont il témoigne souvent montrent au contraire, qu'il retrace mentalement l'ordre suivi. Enfin, plus l'expérience dure et plus il est difficile de se souvenir de la dernière position, à cause de l'interférence croissant des souvenirs."

537. "It's not surprising at all that during this stage the child also starts to consider his own body as an object: he can mentally represent his body, so the separation between internal and external, subject and object, can now be considered as fully developed."

538. "L'objet n'est d'abord que le prolongement des mouvements d'accommodation (prévision). Puis il est le point d'intersection, c'est-à-dire d'assimilation réciproque des schèmes multiples qui manifestent les différentes modalités de l'action propre (concordance des expériences). Enfin l'objet s'achève en corrélation avec la causalité dans la mesure où cette coordination des schèmes aboutit à une constitution d'un univers spatio-temporel intelligible et doué de permanence (compréhension relative à un système déductif d'ensemble)."

3.3.5 Experience as organisation through schemata. Piaget's perspective between empiricism and apriorism.

Considering Piaget's observations I can conclude that, for him, there is no original absolute separation between a mere passive sensibility and the world as such, but rather that there is a unique systematic process of organisation which constitutes the children's experience. As the children grow, their world (their system of perceptions and actions) becomes more and more complex: when the objects that they need or desire are not at their immediate disposal, they have to struggle to achieve their purposes, and do this by developing new patterns of action, new schemata, to coordinate his movements in a process that combines both assimilation and accommodation to the environment:

> "[…] insofar as things detach themselves from the individual action and the action is situated amongst series of events in environments, the subject must construct a system of relations to understand these seires and to be understood in relation to them. Yet, organizing such series, constitutes at the same time a spatial-temporal network and a system of substances and links of cause and effect. The constitution of the object is therefore inseparable from that of space, time and causality: an object s a system of perceptible images, endowed with a constant spatial form through its successive movements and constituting extricable term in tha causal series unfolding in time. Consequently, the elaboration of the object is in accordance with that of the universe as a whole."(Piaget 1937, p. 82, transl. L.S.)[539]

So far, underscoring Piaget's stress on the sensible-practical character of the notion of schemata, an interpretation of the Piagetian schema as a mere empirical-sensible habit seems to be plausible.

However, Piaget is very explicit in his opposition to this interpretation: the importance of the milieu in the development of intelligence is undeniable, yet empiricism holds an overly strong and "absolute" conception of experience, which is not able to properly explain the mental development:

> "But there is more in empiricism that an affirmation of the role of experience: empiricism is above all a certain conception of experience and action. On one hand, it tends to consider experience as self-imposing, without that the subject has to organize itself, that is to say, as if acts directly on the organism without the necessity of the activity of the subject to constitute it. On the other hand, and consequently, empiricism regards experience as existent as such."(Piaget 1936, p. 316, transl. L.S.) [540]

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539. "Dans la mesure où les choses se détachent de l'action propre et où celle-ci se situe parmi l'ensemble des séries d'évènements ambiants, force est au sujet de construire un système de relations pour comprendre ces séries et pour se comprendre par rapport à elles. Or, organiser de telles séries, c'est constituer à la fois un réseau spatio-temporel et un système de substances et de rapports de cause à effet, La constitution de l'objet est donc inséparable de celle de l'espace, du temps et de la causalité : un objet est un système de tableaux perceptifs, doué d'une forme spatiale constante au travers de ses déplacements successifs et constituant un terme isolable dans les séries causales se déroulant dans le temps. L'élaboration de l'objet est solidaire, par conséquent, de celle de l'univers dans son ensemble."

540. "Mais il y a plus dans l'empirisme qu'une affirmation du rôle de l'expérience: l'empirisme est

For the same reason, he also rejects the opposite extreme, i.e., apriorism, for it considers (according to Piaget's reception of this doctrine) the subjective forms as something static, real and absolute in themselves. Piaget's critique of Kant's a priori preformism is well-known:

> "Kant has then elaborated too rich a doctrine, which includes universality and necessity (the second of which is forgotten or considered as an illusion by empiricism), as it is required, but also of the anteriority in reference to experience: the logic anteriority, insofar as necessary condition, but also an anteriority in part chronologic (the a priori can occur only at the moment of experience and not before, and in no case after) and above all anteriority of level, insofar as the subject which engages in experience owns already an implicit structure that determines his activities,"(Piaget 1965, p. 82, transl. L.S.)[541]

The attempt to maintain a distance from deriving the schema of object from either arbitrary empirical association or from rigid a priori deduction leads Piaget to define his philosophical perspective as realism corrected through relativism, which considers the schema as something dynamic and not static.

So he puts it:

> "Insofar as they are mutable, forms are good or bad only between themselves and in relation to the data they have to organize. Relativism, here as always, has to temper a realism constantly arising. Undoubtedly such a relativism supposes the existence of some invariants. But they are functions and not structures. It is in this way that a form is better than another if it satisfies the double requirement of organization and adaptation of the thought. This organization consists in a interdependence of elements given and the adaptation to a balance between assimilation and accommodation."(Piaget 1936, p. 345, transl. L.S.)[542]"

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avant tout une certaine conception de l'expérience et son action. D'une part, il tend à considérer l'expérience comme s'imposant d'elle- même, sans que le sujet ait à l'organiser, c'est-à-dire comme s'imprimant directement sur l'organisme sans qu'une activité du sujet soit nécessaire à sa constitution. D'autre part, et par conséquent, l'empirisme regarde l'expérience comme existant en elle-même."

541. "Kant a donc élaboré une notion trop riche, comprenant comme il se doit l'universalité et la nécessité (la seconde oubliée ou considérée comme illusoire par l'empirisme), mais aussi l'antériorité par rapport à l'expérience: antériorité logique, en tant que condition nécessaire, mais aussi antériorité en partie chronologique (l'a priori peut ne se manifester qu'au moment de l'expérience, et non pas avant, mais en tout cas pas après), et surtout antériorité de niveau, en tant que le sujet qui se livre à l'expérience possède déjà une structure sous-jacente qui détermine ses activités."

542. "En tant que mobiles, les formes ne sont donc bonnes ou mauvaises que relativement les unes aux autres et relativement aux données qu'il s'agit de systématiser. Le relativisme, ici comme toujours, doit donc tempérer un réalisme sans cesse renaissant. Sans doute un tel relativisme suppose-t-il l'existence de quelques invariants. Mais ceux-ci sont d'ordre fonctionnel et non structural. C'est ainsi qu'une forme est d'autant meilleure qu'elle satisfait davantage à la double exigence d'organisation et d'adaptation de la pensée, l'organisation consistant en une interdépendance des éléments donnés et l'adaptation en un équilibre entre l'assimilation et l'accommodation.

In conclusion, Piaget's view can be defined as a synthesis of empiricism and apriorism, or, as he defines it, as a realism corrected through relativism: there is no reason to consider sensibility and reason as two absolute and separate functions (whose mutual relation would be then very hard to explain); rather they are different parts, or levels, in the organisation of the experience.

So far, I have considered Piaget's theory of schemata. However, is this interpretation loyal to Kant's doctrine?

3.3.6. Piaget's novelty and difference from Kant's view

As already stressed, Piaget adopts a Kantian terminology, thus situating himself in direct relation to Kant. Piaget uses terms such as schema, recognition, and form; yet, the question is: does he use them in the very same sense as Kant?

In Piaget's writings, 'schema' is indistinctly applied to distinct functions (object, space, time, causation) that in Kant are neatly separated (space and time are pure intuitions, causation is a category, substance is a category and the permanence of the substance in time is its schema). Kant's differentiation between pure intuition, categories, schemata, and symbols is absent in Piaget, who rather refers to all sorts of functions as schemata. It is possible to identify schemata with the processes underlying the child's activity as they are described by the observer. Schemata are pattern of behaviour, that in older children become more complex and include the capacity to classify, put things together and dorm hierarchies.[543] However, interestingly enough, Piaget calls these functions schemata[544], thus suggesting a strong connection to Kant's ideas: since in Kant schema refers to the mediation between sensibility and understanding, Piaget may have resurrected this particular term in order to address the unique process of the constitution of experience, describing his perspective as a kind of realism corrected through relativism. Unlike Piaget, Kant makes distinctions between the pure intuitions of space and time, categories, and schemata; these distinctions play a paramount role, as testified in his *Critique of Pure Reason* and particularly in the chapter of *schematism*. Kant affirms that his purpose is to explain how the synthesis between categories and intuitions actually works. This synthesis is necessary since both categories and intuitions are conditions for the constitution of the objects of experience: only by working together can they constitute and justify the possibility of experiencing an object. On the one hand, space and time are not sufficient to justify the unity of the object, as, at best, they can only justify a sort of undetermined object:

> "The undetermined object of an empirical intuition is called **appearance.**" (KrV A20/B34)[545] .

543. Ginsburg & Opper 2016, p. 33.

544. But he sometimes he refers to them as to categories or forms, thus revealing his deficiency in the use of a systematic philosophical language.

545. Der unbestimmte Gegenstand einer empirischen Anschauung, heißt Erscheinung.

On the other hand, categories, separated from intuitions, are only sufficient to provide explanation for the unity of abstract objects, but not for the concrete objects of possible experiences. For instance, the category of substance is to be considered only as a function of unification, as an x without content:

> "Without schemata, therefore, the categories are only functions of the understanding for concepts, but do not represent any object. This significance comes to them from sensibility, which realizes the understanding at the same time as it restricts it." (KrV A147/B187)[546]

Since categories are the more general rules of the thinking, they are necessary to determine the possibility of epistemic judgements on objects, and yet they are not definable in themselves for they do not refer to any specific object of experience":

> "Hence the categories require, beyond the pure concepts of the understanding, determinations of their application to sensibility in general (schema), and without these are not concepts trough which an object can be cognized and distinguished from others, but only so many ways of thinking of an object for possible intuitions and of giving it its significance in accordance with some functions of the understanding (under the requisite conditions), i**.e., of defining it**: they themselves cannot therefore be defined."(KrV A245)[547]

Only through the combination of both the functions of sensibility and understanding, objects can be determined:

> "With is **understanding** and **sensibility** can determine an object **only in combination**. If we separate them, then we have intuitions without concepts, or concepts without intuitions, but in either case representations that we cannot relate to any determinate object."(KrV A258/B314)[548]

As already stressed, though Kant claims that purpose of his chapter on schematism is an inquiry into how the synthesis works, the importance of this chapter cannot actually be confined to the mere unravelling of the concrete process of schematism (something that Kant himself admits would be hard and mysterious to understand[549]): but to a more fundamental epistemological purpose, namely to decide which are the

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546. "Also sind die Kategorien, ohne Schemate, nur Funktionen des Verstandes zu Begriffen, stellen aber keinen Gegenstand vor. Diese Bedeutung kommt ihnen von der Sinnlichkeit, die den Verstand realisiert, indem sie ihn zugleich restringiert."

547. "Daher bedürfen die Kategorien, noch über den reinen Verstandesbegriff, Bestimmungen ihrer Anwendung auf Sinnlichkeit überhaupt (Schema) und sind ohne diese keine Begriffe, wodurch ein Gegenstand erkannt, und von andern unterschieden würde, sondern nur so viel Arten, einen Gegenstand zu möglichen Anschauungen zu denken, und ihm nach irgend einer Funktion des Verstandes seine Bedeutung (unter noch erforderlichen Bedingungen) zu geben, d. i. ihn zu definieren: selbst können sie also nicht definiert werden."

548. "Verstand und Sinnlichkeit können bei uns nur in Verbindung Gegenstände bestimmen. Wenn wir sie trennen, so haben wir Anschauungen ohne Begriffe, oder Begriffe ohne Anschauungen."

549. KrV A141-142/B180-181.

general conditions of possibility of experience. From this perspective, the schemata identify the domain of the possible experience, thus providing a criterion for discriminating among possible objects of experience and other kinds of objects (ideas, object of thoughts with no actual realization in experience), thus providing the most general ground for sciences. In other words, the importance of Kant's perspective does not reside in the fact that the a priori forms are these specific functions instead of others; rather, the a priori forms are essential for expressing Kant's general conception of knowledge, considered as a systematic process that establishes links between types of faculties and types of objects. The final goal of philosophy is then the examination of each entity in its legitimate domain, the confrontation of questions such as: "can the proposition 'a' be considered as a scientific claim?" or "is 'b' true, and in what sense?" (empirically: it refers to a material object; formally: because it does not contradict itself; transcendentally: it is a possible object of experience, it is based on the conditions of possibility of the experience).

In short, following such an interpretative hypothesis, Kant's interest in the notion of object would not be limited to finding a solution to the question as to when and how the human being starts to consider objects as permanent things, in spite of his action. Instead, even in the discussion of object constitution, Kant is mainly concerned with the conditions of possibility of experiencing objects.

Contrary to Kant, Piaget's main interest does not concern a transcendental philosophy but a genetic psychology aimed at investigating how schemata develop. According to him, the question of knowledge lies in the discovery of the laws and functions that regulate this process, i.e., the genesis of the schemata. This perspective leads Piaget to develop a genetic epistemology involving several human disciplines (from logic to cybernetic) in the attempt to give a complete account of the emergence of schema. From these considerations, the distance between the Piagetian interpretation of the notion of schema and Kant's doctrine and perspective emerges.

However, Piaget's inquiry into the genesis of schemata as a whole is not entirely incompatible with Kant's perspective, exactly insofar as it can be considered an attempt to answer the question concerning origin and development of cognitive functions, that is not the task of Kant's *Critique of Pure Reason*, whose main goal is, on the contrary, to solve the problem of objectivity.

Moreover, Piaget's stress on the processual and gradually developing character of schemata can provide an important contribution when it comes to reconsidering Kant's system, as it highlights the dynamic growth of schemata, i.e., they are not conceived of as static boxes but as functions. This perspective seems then more comprehensive of Kant's spirit when compared to those of Hegel, Herbart and Trendelenburg who interpreted the notion of form and schema as static[550].

Conversely, Kant's transcendental approach can make a significant contribution to Piaget's view. Piaget's approach is within the nature of theoretical thinking, and so it is for the genetic psychology to seek truth claims which, however, are hard to justify

550. Pettoello 2000.

when relying on internal resources only. A foundation in fact is always required: if it is possible to establish a distinction between scientific assertions (not necessarily conceived as universal and necessary, but simply as "true" or effective) and nonscientific ones, there must be a principle, belonging to a meta-level of inquiry, according to which this distinction can be made and justified. It is possible to assert that there is no necessity to refer to an a priori level, and that the criterion for distinguishing between scientific and a nonscientific assertions is simply given, for example, by biology. Yet, even in this case, this claim needed to be justified: following the example, "why should biology be more scientific than art?" or else, "according to which criteria is biology a science?" A discipline whose aim is to consider this question is still required; put differently, a meta-science, inquiring into what is science and what isn't is required. In this sense Kant's transcendental approach can provide a contribution to Piaget, but also to all theories which are confronted with questions about knowledge. Then, philosophy still plays an essential and ineradicable role, even when confronted with the increasing power and capacities of particular scientific disciplines.

3.4 Lawrence Barsalou's reception of Kant's transcendental schematism and its significance in the consideration of the relation between psychology and philosophy

The aim of this section is to consider Barsalou's reception of Kant's doctrine of schematism and its significance regarding the relation between psychology and philosophy. I do not intend to focus on the details of Barsalou's theories but just to give hints to his general position in order to investigate two questions: the first regards the reason why Barsalou, a cognitive psychologist, situates himself in relation to Kant, to a philosopher; the second deals with the possibility of the relation between philosophy and psychology.

To answer the first question it is important to consider that Barsalou develops a cognitive psychology (3.4.1), according to which cognition is given by a process of information acquired from the environment, stored and returned to it. This process implied categorisation (3.4.2), regarded as gateway between perception and cognition. Barsalou refers to functions grounded in the perceptual system and defined as records of the neural states that underlie perception (3-4-3). In Barsalou modal theory, these functions or symbols are analogically related the perceptual states from which they originate and differs from a amodal perspective, which regards categories as trasduction of perceptual states in a system unrelated to perception to which categories are referred only in an arbitrary way. The main properties of the perceptual system are six(3.4.4): 1) symbols are neural representations in sensory-motor areas of the brain; 2) they are subsets representing schematic components of states of perception (not holistic); 3) they are multimodal; 4) they are integrated into a simulator; 5) symbols

are organised by frames within a simulator; 6) linguistic control over the construction of simulators is provided by words associated with simulators.

Then, in 3.4.5 I will sum up similarities and differences between Barsalou and Kant's accounts. On the one hand, both focus on the relation between cognition and sensibility and underline how activity as well as receptivity are necessary functions involved in cognition and representation; on the other hand, their perspectives and interests are different: while Kant focuses on the transcendental inquiry on the grounds and conditions of knowledge, Barsalou aims to determine how symbols and simulators are produced. Therefore (3.4.6) an answer to the question concerning the relation between philosophical and psychological inquires can be given: both share similar themes (representation, cognition, perception) but their tasks are different: psychology is a particular discipline with proper methods and tools and it deals with the process of cognition, while philosophy is situated on a meta level, from which it has to determine limits and fields of particular disciplines (such as psychology), individuating the conditions of possibility of knowledge and distinguishing sciences from disciplines and incorrect doctrines.

3.4.1 Cognitive psychology

The greatest challenge of Barsalou's research is to inquire the nature of human intelligence. According to him, cognitive psychology provides the useful method to understand the cognitive processes. Until the beginning of the XX century the history of psychology can be regarded as the history of internal laws and forces characterizing human nature without any empirical evidence of their existence (e. g. the Freudian Es or generally the idea of soul or the existence of different temperaments that determine human characters). However, from the XX century the reference to a mysterious internal mechanism was completely replaced by approaches such as behaviourism. For instance, an exponent of this current, Burrhus Frederic Skinner, considers man as an organism whose behaviour can be explained considering his reaction to the various stimuli provided by his environment. The idea of an internal mechanism was represented in the cognitive revolution of the middle of the last century through the theories of Noam Chomsky (assuming that the systematic structure of language reflects an internal universal grammar) and of the information theory, the psychological applications of which lead to a view according to which it can be assumed a parallelism between man's cognition and computer's processes, because both acquire information from the environment, store and transform it and return it to the environment.

Barsalou is heir of this perspective, in the sense that he considers human cognition as a process of information. According to him this process is based on categorization.

3.4.2. Categorisation

Categorisation is a philosophical term of Greek origin generally indicating the different ways to attribute an attribute to a subject, establishing a link between an individual and the class it belongs to. The inquiry into the nature of these classes (are

they only mental classes? Do they have a referent? And if they do, of what kind?) is one of the main guiding thread of the history of philosophy, in which it is possible to distinguish several positions, for example:

1) Mentalism: categories are only a product of our mind, they are names without references in the world of experience;
2) Realism: categories have references in the real world (Platonism);
3) Conceptualism: they are concepts necessary to understand and organise the world, so there is a relation between mind and world but they do not refer to objects of the experience; they are ways to organise them.

Barsalou is close to this third solution. He defines categories as:

> "The gateway between perception and cognition. After a perceptual system acquires information about an entity in the environment, the cognitive system places the entity into a category." (Barsalou 1992, p. 15)

Therefore categories are not real object nor mere abstract names without any kind of relation to perception. In fact the clue of Barsalou's position lies in the fact that to him categorisation is grounded in the perceptual symbols, i.e.

> "[…] records of the neural states that underlie perception. During perception, systems of neurons in sensory-motor regions of the brain capture information about perceived events in the environment and in the body." (Barsalou 1999, p. 582)

Symbols are records of this neural activation but obviously, they do not provide the record of all the neural activity of the brain, but they are schematic products of a process of abstraction, which isolate the information of perception and select through attention certain information that is stored in long time memory. Moreover they are dynamic, general and not determined in every detail since they are not the precise representation of a determined object perceived by the subject, but as they are organised and related to each other in an integrated system (frame), they can provide a simulator of an event, or an object, that, once stored in memory, will enable the subject to recognize *x* as car or *y* as a dog. Therefore, they can be considered as sort of general rules to recognize objects or events of experience as something belonging to a determined category.

Since the symbolic process and perception can be described by the same system, that is to say, Barsalou's theory is a modal one: symbols are represented in the same system as the perceptual states that produced them, thus determining an analogy between cognition and perception.

3.4.3 Modal theory versus amodal theory

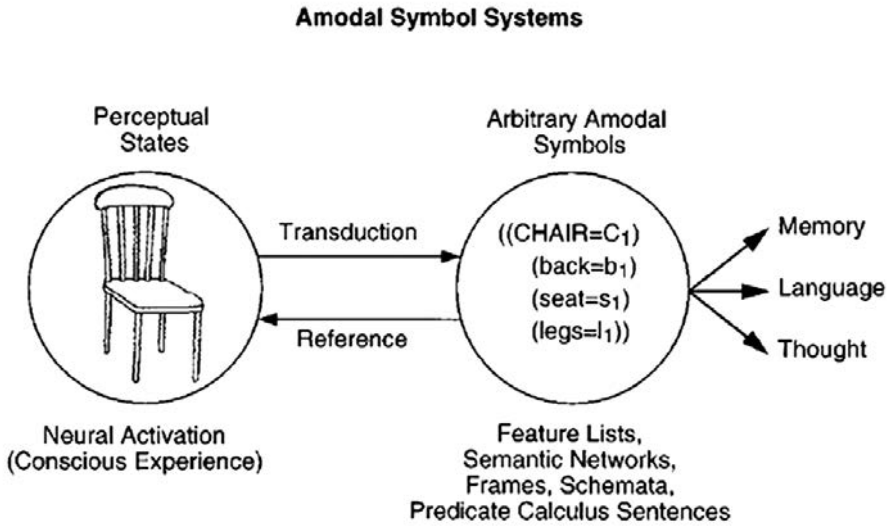

Fig.1. (Barsalou 1999, p.578)

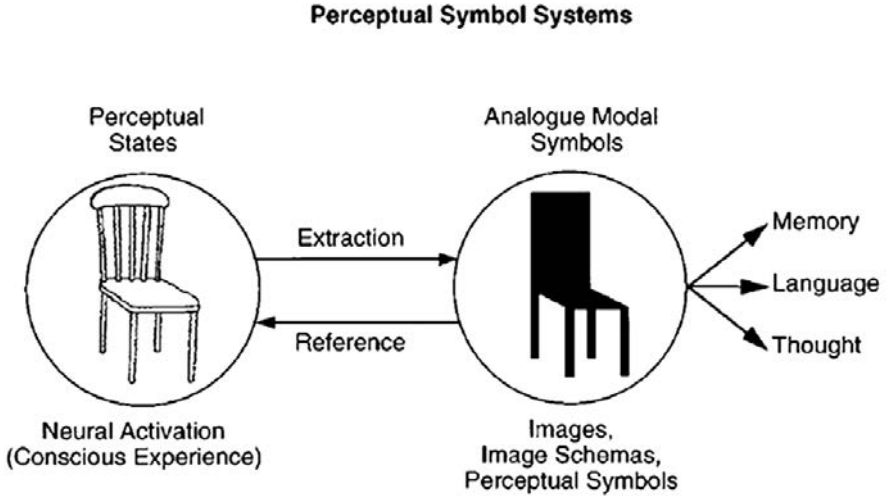

Fig.2. (Barsalou 1999, p.579)

Perceptual symbols are defined as:

> "[…] records of the neural states that underlie perception. During perception, systems of neurons in sensory-motor regions of the brain capture information about perceived events in the environment and in the body." (Barsalou 1999, p. 582)

They are records of the neural activation selected and stored in memory, thus providing general and schematic simulators of events and objects that enable the subject to recognize particular objects and events of the experience as belonging to a general category (for example: chair).

Since symbols are analogically related to the perceptual states from which they originate, Barsalou's theory can be defined as modal, thus making his view

comparable to Kant's philosophy: similar to Kant's schemata, Barsalou's symbols are a medium between sensibility and understanding; they are not particular images of determined objects nor mere abstract and formal structures as those presented in amodal theories. Barsalou, directly opposing the modal perspective, claims that categories (symbols, features lists) are result of the transduction of perceptive states in a new system unrelated to perception; these functions are then referred only in an arbitrary way to the perceptive states that have generated them. In Barsalou's words:

> "Because the symbols in these symbols systems are amodal, they are linked arbitrarily to the perceptual states that produce them. Similarly to how words typically have arbitrary relations to entities in the world, amodal symbols have arbitrary relations to perceptual states. Just as the word "chair" has no systematic similarity to physical chairs, the amodal symbol for chair has no systematic similarity to perceived chairs." (Barsalou 1999, pp. 578 - 579)

Due to the disadvantages originating from the amodal perspective, Barsalou supports an opposing theory (called modal theory), providing three main reasons of his choice.

Firstly, the explanation given from amodal theories to explain the transduction from perceptual states into amodal symbols sounds artificial, because it is difficult to provide an exhaustive comprehension of how perception and cognition are related, given that these two systems are presented as heterogeneous and separated. There is very little empirical evidence supporting amodal symbols (Glaser 1992) while, on the contrary, recent research seems to demonstrate that categorization has its roots in the sensory-motor region of the brain , for instance Damasio (Damasio 1989) claims that when a particular sensory-motor region of the brain is damaged, the categorical process related to this region responsible for perception is damaged: as in the case of the disruptive inability of the subject to use categories whose particular exemplars are visual objects (such as birds), when damages to the visual system occurs.

Secondly, if symbols are not grounded in perception, how can they be implied in order to understand and classify of the object of experience? How is it possible to demonstrate that they are actual functions, without proof of their relation to the perceptual system? However, it might be true that symbols might be implied only as formal instruments of quantification of data, with no respect to the content of the information.

Third, amodal theories might easily disregard the principle of economy and lack in parsimony. In contrast to this, Barsalou's theory, which maintains the analogy between symbols and perceptive system, eludes the above-mentioned difficulties because symbols are sort of middle functions between objects of perceptions and mental abstract structures. It is in this sense that Barsalou declares to be an heir of Kant:

> "Simulators have important similarities with other constructs. In the philosophical literature, Lockean dispositions and Kantian schemata are comparable concepts. Both assume that unconscious generative mechanism produce specific entities and events that go beyond particular entities and events experienced in the past." (Barsalou 1999, p. 586)

Although the amodal theory shows several shortcomings that are not implied in a modal theory, the latter is often considered with some reluctance. When theorists for image-like representation in memory offered some evidence of their hypothesis (Shepard and Metzler 1971; Kosslyn 1976) they found considerable resistance from the scientific community (Anderson 1978; Pylyshyn 1981). The causes of this resistance might be manifold: from the prejudice against perceptive theories which might recall behaviorism to the uncharitable and simplifications in formulating the theory of perceptual cognition, which lead it to be misunderstood. For instance, perceptual theories are often regarded as containing only conscious representations and not unconscious ones but these accusations have no ground since there are many examples of theorists (Locke, Kant, Price) assuming that unconscious dispositions or schemata produce conscious images. Moreover, it is believed that perceptual theories regard only empirical sense data, while many authors (Locke, Hume, Kant) assume that images reflect experiences that are not sensible (such as reflection or introspection). Besides, although sometimes misunderstood as dealing with static mechanical empirical collections of data, perceptual theories of images consider these latter as dynamic representations of events and snapshots of time. A cause of reluctance is that perceptual theories are often regarded only as kind of recording system. If so, the perceptual theory would be only a reproduction of copies of the physical information and it would not be sufficient to provide a system with features such as: the possibility of interpreting entities, to infer and go beyond the input, to produce complex concepts from simple ones and formulate propositions, given by the binding of a concept (type) to an individual (token). Barsalou,however, aims to support a theory seen as a conceptual system, as he declares:

> "As long as perceptually based theories of knowledge are viewed as recording systems, they will never be plausible, much less competitive. To become plausible and competitive, a perceptually based theory of knowledge must exhibit the properties of a conceptual system." (Barsalou 1999, p. 582)

3.4.4. Properties

Barsalou's theory of perceptual symbols is characterized by six main properties: 1) symbols are neural representations in sensory-motor areas of the brain; 2) they are subsets representing schematic components of states of perception and not holistic experiences; 3) they are multimodal; 4) they are integrated into a simulator that produces simulators of a perceptual state; 5) perceptual symbols are organised by frames within a simulator; 6) linguistic control over the construction of simulators is provided by words associated with simulators.

1) Neural representations

Perceptual symbols are not like empirical pictures or mental conscious images, but rather records of the neural activity during perception. In Barsalou's own words:

"During perception, system of neurons in sensory-motor regions of the brain capture information about perceived events in the environment and in the body." (Barsalou 1999, p. 582)

Here the information which is represented is first of all qualitative and includes colours, movements, spatial relations, as well as heat and pain. The author supports his thesis by referring to neuroscientists who demonstrate that the brain uses configurations of neurons to represent the properties of the perceived contents of experience in a sort of neural architectonic structure[551]. This feature of the perceptual symbol theory is shared by theories on perception and imagery (for instance, Kosslyn 1994, Crammond 1997) but Barsalou's claim is stronger, since he aims to assert that the neural systems common to perception and imagery also underlie conceptual knowledge.

2). Schematc perceptual symbols

With the support of both traditional philosophical theories (Locke 1960) and more recent research (Talmy 1983, Mandler 1992) Barsalou claims that perceptual symbols are not a record of an entire holistic representation of a perceptual brain state, rather they refer to a schematic aspect of it, and involve the functions of memory and attention. As demonstrated by recent studies, (Compton 1995, Logan 1996) selective attention is responsible for the storage of particular aspects of the perceptual information. The ways in which each subject focuses his attention is not fixed for everyone but rather it is variable and sophisticated (Treisman 1969) but once the feature has been isolated, it is easily stored in long term memory.

3) Multimodal symbols

Symbols are perceptual but in a very broad and innovate sense: they are not only based on senses but also on experience in its variety of functions. As Barsalou underlines:

"-Perceptual- is not being used in its standard sense here. Rather than referring only to the sensory modalities, as it usually does, it refers much more widely to any aspect of perceived experience, including proprioception and introspection." (Barsalou 1999, p.585)

During the process of symbol formation attention focuses not only on properties provided through vision, but also to the other senses as well as introspection and proprioception (for instance those symbols acquired for bodily movements). This thesis is supported by the works of Damasio (Damasio & Damasio 1994) and Gainotti (Gainotti et al. 1995), who show that each symbol is established in its respective brain area, that, if damaged, disrupts the processing of categories of its type (for instance, damage in the visual area disrupts the conceptual processing of this type of categories).

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551. See Zeki 1993, Gazzaniga et al. 1998.

4) Simulators

In long time memory, symbols are organised into a simulator that permits the production in the cognitive system of simulations of event and objects that are not present. After having focused selective attention on the details of a car, perceptual records are organised spatially so that perceivers can simulate it in its absence: "They can anticipate how the car would look from its side if they were to move around the car in the same direction as before; or they can anticipate how the car would look from the front if they were to go around the car in the opposite direction."(Barsalou 1999, p. 586)

Moreover, the perceptual symbols extracted during a particular experience produce a frame that contains symbols extracted previously from the same categorical instances (for instance, car):

> "[…] after processing many cars, a tremendous amount of multimodal information becomes established that specifies what it is like to experience cars sensorially, proprioceptively, and introspectively. In other words, the frame for car contains extensive multimodal information of what it is like to experience this type of thing" (Barsalou 1999, p.586)

To avoid misunderstanding Barsalou underlines three important features of simulators. First, they do not produce complete simulations of objects or events, but are always partial and the frames are not as rich in details as the perceptions that generated it. Second, they are supposed to be often distorted in different ways, as explained through the principles of the *Gestalt* organisation:

> "When a linear series of points is presented visually, an underlying line is perceived. As a result the stored perceptual information goes beyond what is objectively present, representing a line, not just the points. […] when an imperfect edge exists on a perceived object, the perceptual system may idealize and store the edge as perfectly straight, because doing so simplifies processing. As a result, the storage of perceptual symbols might be nonveridical, as may the simulators constructed from them." (Barsalou 1999, p. 586)

Third, simulators are not static empirical collections of impressions but are regulated by complex mechanisms. For instance: emotions and genetic predispositions guide the processing of space, in a similar way as particular movements underlie the storage of symbols and the process of simulation. Moreover, as some studies demonstrate (Elman 1996), interaction with the environment plays an important role. For all these reasons, simulators are sensible and intellectual, or in Barsalou's own words:

> "A simulator is both a –rational- and an –empirical system, reflecting intertwined genetic and experiential histories." (Barsalou 1999, p. 586)

This is the reason why Barsalou makes references to Locke and Kant, as well as to the more recent studies of Damasio, as a similar antecedent of his perceptive symbols. They all assume that a mechanism produces images (concepts, schemata) of entities and events that go beyond the particular experiences and play a

fundamental role in organising cognition. Therefore, in Barsalou's theory, there is a fundamental link between the development of simulators and understanding: when a subject (especially during childhood) develops simulators for entities and events, which are encountered in his culture, then he has an understanding of it. In other words, simulators are sort of concepts;

"[…] a concept is equivalent to a simulator. It is the knowledge and accompanying processes that allow an individual to represent some kind of entity or event adequately." (Barsalou 1999, p. 587)

The advantage of a modal theory of categorization is that whereas amodal structures are static and are related to the perceived entities only in a comparative way, which is hard to explain, a modal approach is dynamic and the perceptual simulator used to categorize a particular entity (a car, for instance) approximates the perception of it, i.e., the simulator is represented in the same way as the perceive entity that is categorized.

5) Frames

As anticipated, perceptual symbols are not independent, but are integrated in a frame used to build particular simulations of categories. Simulators are given by the frame and the simulations produced by it.

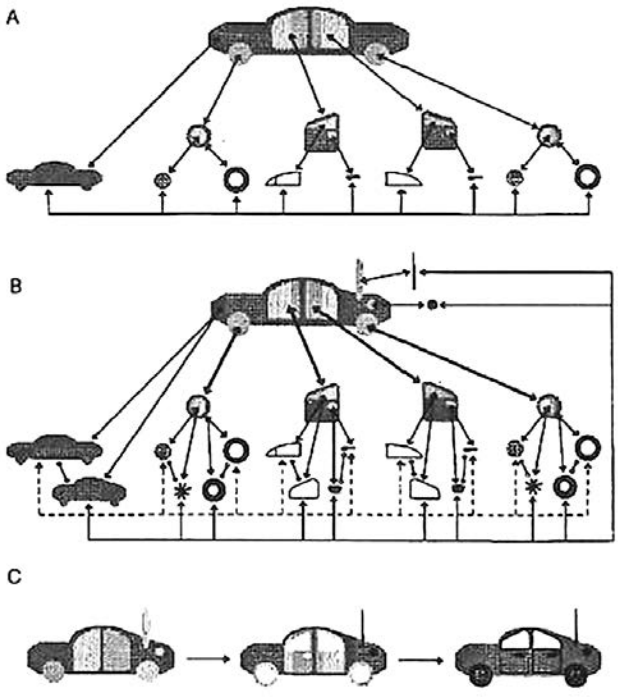

Figure 3. (A) An example of establishing an initial frame for *car* after processing a first instance. (B) The frame's evolution after processing a second instance. (C) Constructing a simulation of the second instance from the frame in panel B. In Panels A and B, lines with arrows represent excitatory connections, and lines with circles represent inhibitory connections.

Fig.3. (Barsalou 1999, p.590)

For instance, figure 4 shows how frames are implemented by symbols. During the perception of a first car perceptual symbols for the car's components and shape are produced and then integrated into a centred reference, i.e. a frame. In the example, the frame separates the volumetric regions of the car (the representations of its spatial layout) and the particular content (the doors, tires and so on) as if the spatial representation were a skeleton filled with the specific contents. When a second car is perceived (figure 3B) the set of symbols of the first car is retrieved and the content information of the second car's shape is connected to the same regions as the content of the first car. Eventually, new sub-regions may be established, producing new perceptual symbols (for instance, a fuel cap, an antenna) and all the information obtained from the experience of the two (or more) cars becomes integrated into a whole structure constituting the frame of car. At the same time, perceptual symbols of a same volumetric region (for instance, doors) of different cars are integrated in the sub-region of the frame of car. The increment of the amount of perception of a same instance has consequences on the connections within the regions of its frame: for example, a mechanism to reinstate the same instance is provided through the connection of the specializations of a same instance. Moreover, these connections become weaker over time and inhibitory links between specializations competing for the same sub-region develop, while at the same time connections processed with more repetitions become stronger (in the example, the sub-regions for doors and wheels). As more cars are perceived, the frame for *car* becomes more complex.

6) Linguistic indexing and control

The last interesting feature of Barsalou's theory regards language. He states that linguistic symbols are not amodal, but rather develop like perceptual symbols:

> "as selective attention focuses on spoken and written words, schematic memories extracted from perceptual states become integrated into simulators that later produce simulations of these words in recognition, imagination and production. As simulators for words develop in memory, they become associated with simulators for the entities and event to which they refer." (Barsalou 1999, p. 592)

Some simulators for words are linked to simulators for entire entities or events, while others are related to sub-regions: for instance, the word *car* refers to the entire simulation for this object, while *green* to an aspect of the simulator. This link between simulations for words and those for perceptual symbols (concepts) determines the control of words on simulations. When we recognize a word, the cognitive system activates the simulator for the concept. As amodal theories also state (Chomsky 1957, Fodor 1975) the human cognitive system can produce unlimited number of words and concepts. This characteristic, together with the connection between simulators for words and perceptual simulators, provides people with the possibility to go far beyond their individual personal experience.

3.4.5 Barsalou and Kant

It is now possible to compare and contrast Barsalou's perception symbols and Kant's schemata. The two theories share two important features: first, both symbols and schemata are regarded as functions mediating between the activity of the cognitive functions and the receptiveness of sensibility and both are not presented as mere formal amodal rules nor as representations of particular perceptions. Second, both perspectives underline how the process of cognition is not reducible to an active or a mere passive side, but implies a joint collaboration of different although related functions. Besides these similarities, important points of distance between the two might be put into evidence. A first, more formal difference, is given by the fact that in Kant schemata have a restricted number, 12 since there are 12 categories from which they are derived, while Barsalou does not hint at a restricted number of perceptive symbols. But the most significant distance lies in the different perspective of the two authors: whereas Barsalou is primarily interested in elaborating a theory able to explain how simulators are produced and he dedicates his work to answer the question concerning how particular symbols are produced. In this sense, his theory provides a good solution to this question in contrast to both amodal theories and Kant's schematism. This latter, if regarded as a psychological doctrine with the aim of providing an answer to the problem regarding the development of schemata, is very limited and provokes some critical questions: What does it mean that through time the categories are temporalized? Why are the categories (and the schemata) those 12 and not others? Why does Kant himself assert that it is difficult to understand how this mysterious synthesis works? Does this mean that Kant fails in his aim to understand the relation between cognition and intuition?

Nevertheless, Barsalou's theory is not free from criticisms. His explanation of the formation of simulators might be accused of circularity: if symbols are given by a process of generalization and selection from data, how is it possible to explain the possibility of such a generalization without already presupposing criteria of choice? It seems inevitable to refer to another level, different from the perceptive one, in order to explain the possibility of selection.

Now, considering Kant's view, it is clear that if we approach this doctrine with the aim of understanding what the actual schemata are, Kant's theory cannot provide us a satisfactory answer.

But on the other hand, if Kant does not aim to solve the psychological question on schemata. Therefore, if we approach the schematism not as a theory aiming at focusing on the cognitive psychological nature of schemata, but from a mere theoretical point of view (transcendental), this doctrine can be considered very useful not because schematism states that the laws of the experience's possibilities are these particular laws (permanence in time, for instance) and not others, but because it states that there is a separation between possible objects of experience (based on schemata) and, for example, mere formal thoughts without content, without any perceptual meaning (categories). Moreover, this point might be regarded as providing the reason for the separation of the philosophical and psychological purposes: while

psychologists through experiments, theories and hypothesis inquire into this actual process, philosophers deal not with the knowledge of a particular aspect of what we call reality, but with the problem of the foundations of these theories, that is not what is experience but how is it possible, not with the content of a specific theory but with its foundation.

This position is interesting because it provides an answer to the question on the relation between psychology and philosophy.

3.4.6 Psychology and philosophy

While in the past questions dealing with the nature of cognition and the relation between understanding and sensibility were in the field of the philosophical research, nowadays the relation between these two disciplines is much more complicated and not well defined.There are at least three possible positions: 1) there is no relation at all between philosophy and psychology; 2) philosophy is not necessary and useful anymore, since its questions nowadays find a better solution through psychology (the viewpoint of stronger versions of naturalism); 3) there is a relation, although they belong to different domains (the viewpoint of moderate versions of naturalism).

The first possibility has to be rejected. Psychology and philosophy do interact not only because they often deal with apparent similar topics (such as cognition, the architecture of mental faculties, the senses, and so on), but also because the sciences have to presuppose philosophical assumptions[552], although they are oftentimes hidden. As it is reported in a well-known handbook for cognitive science:

> "In studying a scientific project philosophically we bring out taken for granted presuppositions and subject them to critical scrutiny. To do well in the practices of some domain it is desirable to have a clear idea of what is presupposed in what one does. Philosophical studies of presuppositions have a practical role. Not only are there philosophical presuppositions involved in the practice of the sciences, but there are highly influential philosophical theories of the very nature of science itself. These too we must scrutinize. Taking the sciences to be the disciplined searching for indubitable truths, philosophers have demanded that only what can be perceived by the senses should be admitted to the domain of the sciences, this is the philosophical position of positivism, the contrasting position is realism. The physical sciences, from their beginnings in the ancient world, have been based on hypotheses about processes that cannot be readily perceived." (Harré 2002, p. 2)

Likewise, the second answer should be rejected insofar as psychological approaches presuppose philosophical claims[553] and proceed through hypothesis testing. As Kant himself stated, science needs to be guided by general rules (ideas used in a

552. Philosophy, within this perspective, can be regarded as a meta-science: "[…] the mathematical principles of the mathematization of nature themselves are justified transcendentally by a non-mathematical critique that shows their possibility. The possibility of mathematics, physics and all the theoretical sciences of nature is not shown in and by those sciences, but only in the critique of reason." (Ferrarin 1995, p. 155)

553. For instance, insofar as they use unclear terms such as 'self'. Cf. Sturm 2007

regulative sense) in order to investigate nature.[554] These guiding principles are among the philosophical contributions to sciences.

Following these considerations, it is reasonable to agree with the third position, which might be regarded as a view in accordance with Kant's perspective.In this view, the psychological domain focuses on the actual process of cognition, while the philosophical domain deals with the problem of the objectivity of cognition and its justification, that is to say, it investigates the presupposition of a particular theory and limits it to its legitimate domain. For instance, it underlines that when a theory is merely formal it can provide only formal conclusions and not conclusions dealing with perception or the sensible existence of objects.

In conclusion, Kant aims at achieving the task of philosophy through the identification of limits and domain of the possibility of knowledge. In clear contrast to this, Barsalou (as well as Bartlett and Piaget) intends to fulfil the aim of psychology providing an account of the development of the schemata through his modal theory. Therefore, Barsalou is right in relating his theory to Kant because he sees in Kant's schematism a anticipation of modal theories, but Barsalou's purposes are different from Kant's ones: his psychology is a particular empirical science.Its foundations and methateorical assumptions and implications must be inquired by a philosophical investigation.

554. KrV A644/B672; KrV A647/B675.

Conclusion

As outlined in the Introduction, the three main tasks of my work were: 1) to develop an historical inquiry on the uses of the term schema before and after Kant, aiming at understanding how it becomes a philosophical defined term and how Kant comes to the problem of schematism; 2) to achieve of a critical definition of the notion of schema in the well-known chapter of the *Critique of Pure Reason*, in order to understand whether or not the introduction of schemata is a necessary step in Kant's work or a reduntant addition to the pure forms of sensibility and the understanding; 3) to understand the legacy of the Kantian doctrine of transcendental schema and its relation to analogous psychological notions.

Schema: the history of an idea

Through the inquiry on the use of 'schema' before Kant, I have shown that the term did not possess a definite meaning, although its use was widespread in the philosophical literature. Especially in early modern thinkers such as Tetens, it was often used to refer to a mediating function between the activity of the intellect and the passivity of sensibility.Kant was not the first thinker to have used the term concerning this topic. More specifically, I have underlined how in ancient times, 'schema' possessed the meanings of form, appearance, shape, and that it was used with a variety of connotations: rhetorical (Plato, Aristotle), moral (Plato), geometrical (Plato), logical (Aristotle), ontological (Leucip, Democritus, Theophrastus, Aristotle), epistemological (Proclos), and physical (Philo of Alexandria). Later on, during early medieval times, the Greek term 'schema' was translated by logicians into the Latin *figura* which derives from *fingĕre* (modelling, shaping, giving form) and was used to address symbol, allegory, rhetorical figures and qualities as well as to indicate the visible appearance of a person or the visible and tangible form of anything. But it is in its logical meaning, related to the Aristotelian figures of a syllogism, that the noun was mostly used in philosophical works of these ages. In contrast to the Middle ages, during the modern ages the notion of schema returned to be used in manifold connotations apart from logic: figurative (Wolff), rhetorical (Sturmius, Diderot, D'Alembert), biological (Ploucquet), physical (Bacon) and epistemic (Thomasius, Darjes, Tetens). Confronting with this variety of uses, I have shown that 'schema' has manifold connotations (shape, figure, example, form) and applications (logical, rhetorical, ontological, biological), even if it can be predominantly regarded as a function of mediation and order. Moreover, it is remarkable that the expression 'schema' and its cognates in other languages is often part of more complex linguistic

constructions (such as *schema perceptionis*), or used more as a way to define terms rather than something that requires explicit definition itself**.** This lack of interest in defining the notion probably led to the multiplicity of its meanings in different contexts.

Kant builds a doctrine of schemata whose meaning finds in the *Critique of Pure Reason* its greater epistemic and philosophical expression and complexity. It can be used as a main element for explaining the possibility of knowledge and the relation between sensibility and understanding. However, Kant is not the first to ascribe to 'schema' this function: there are similarities between Kant's conception and certain aspects of the views of predecessors such as Thomasius, Darjes and Tetens. Kant might be accused of having disregarded his predecessors's accounts of the notion of schemata. In the first *Critique*,he makes several references to Plato, Aristotle, Bacon and Tetens**,** but none of these are devoted to 'schema'. In difference to his predecessors, Kant has the merit to have provided schemata with a definition (or definitions) and a precise role in his thought, namely to solve the problem concerning the application of pure concepts. To understand how Kant comes to relate the term 'schema' to this question, I have analysed the presence of 'schema' inhis precritical works, as well as traces alluding to or anticipating the problem of schematism. In the first part of the second chapter, I have focused on the anticipation in the precritical works of a kind of schematism intended as a a constructive process of the imagination similar to that of mathematical construction. In the description of the mathematical method in *Untersuchung über die Deutlichkeit der Grundsätze* from 1763, Kant does not yet use the terminology of schematism, although he introduces relevant aspects of the problem of applying pure concepts to experience. Besides, I have stressed that Kant attributes a metaphysical meaning to 'schema' presented in the *Nova Delucidatio*, while in the Dissertation of 1770 it refers to the "shadowing outlining of things", "outline for the coordination of sensations". I have shown how the use of 'schema' changes from indicating a mere unclear outline to address the form through which the coordination of impressions is possible. Then, since the notion of schema occurs in reference to space and time, I have shown how Kant situates in the debate of the time, in which realists (such as Newton) and idealists (Leibniz, for instance) about space and time were opposed. After elucidating how Kant's theory of space and time as forms provide a new approach to the nature of space and time, I have underlined how it still contain some limitations, which needed for a further inquiry. Although Kant's conception of space and time distinguishes him sharply from the tradition, he is still very influenced by the classical division between inferior and superior faculties, receptivity and activity, thus generating incoherences, or at least ambiguities. For instance, Kant refers to the understanding as an active faculty but unfortunately, he does not delve into detail with this kind of action, nor does he explain if and how such activity holds an objective value: how can it not simply be a product of the imagination? How is its reference to actual things (*sicuti sunt*) justified? Furthermore, another limitation of his view can be seen in the fact that, although he states that the difference between understanding and sensibility is not meant to evaluate these faculties, it is difficult to avoid the thought that the knowledge concerning things

uti apparent is somehow inferior to that of the things *sicuti sunt*. The overcoming of this separation and the attribution of 'schema' to the solution of the problem of the application of pure conceptsis one of the results of the *Critique of Pure Reason.*

The function of schematism

I have investigated the second question, which regards the role and function of schematism, in the third, fourth and fifth chapters. In the third chapter, I focused on the necessary premises for understanding the problem of schematism in the *Critique of Pure Reason.* Focusing on both the "Transcendental Aesthetic" and the "Transcendental Analytic" as well, I have defended an interpretation that is neither idealistic (in a subjective sense) nor psychological. I have focused first of all on his account on sensibility, namely the faculty through which we are affected by things with no mediation. According to Kant, the indeterminate object of an empirical intuition (*phenomenon*, *Erscheinung)* is given not only by matter but also by form;in order to find the forms of sensibility, it is necessary to analyse appearances, isolating everything that belongs to the function of the understanding and to matter so that only pure elements of sensibility remain, namely, space and time. In this considerations, Kant seems to be repeating the same explanation provided in his Dissertation from 1770. However, his perspective in the *Critique* is significantly different: he is not trying to provide an explanation of the constitution of the world (sensible and intelligible) but of the possibility of the claims of knowledge. Given the presupposition that there are universal and necessary propositions (called synthetic a priori judgements), he aims to explain their ground, relying on the combination of different elements and functions.

After illustrating the features of space and time, Kant first focuses on the "Transcendental Exposition" [555], aiming at underlying how space and time form the basis of possibility of a priori knowledge such as geometry and dynamic. As he underlines, the form is the condition that can justify the regularity of human experience, in which the contents vary, but this variation occurs in accordance to legalities. These considerations explain why space and time are endowed with empirical reality as well as transcendental ideality: they are not conditions of the possibility of things, but of experience with respect to its limits and conditions. In other words, while it makes sense to apply space and time to appearances, to objects of experience (empirical reality),there is no sense in applying them to things in themselves(transcendental ideality of pure intuitions). So far, sensibility can only provide a necessary, although insufficient, indication of the constitution of the unity of the object: the forms of intuitions are not those in which the synthesis is completely constituted, but it is only thanks to the activity of the understanding that

555. KrV B38-41.

the possibility of the representation of an objective unities (and not only of relations of successions or coexistence among impressions) can be justified. Without the act of thinking, knowledge cannot be possible because there would be only a flow of separate impressions in which nothing could be distinguished as permanent, objective or unitary. Then, it is clear why the purpose of the "Transcendental Analytic" consists in focusing on the faculty of the understanding in order to look for the principles of objectivity. In order to individuate the principles of knowledge of the understanding it is necessary to refer to a guide which is found by Kant in the forms of the thinking intended as formal modalities at the basis of the judgement, deprived of all content: if thinking means judging, i.e. the process through which a predicate is attributed to a subject, then there are as many modalities of the thinking as those of the judgement. After exposing categories in the metaphysical deduction, Kant has to focus on their validity. On the contrary of the pure intuitions, that refer necessarily to sensible objects that cannot be experienced without the forms of sensibility. the necessity of the reference of the categories to the objects must be demonstrated. That is the problem of the "Transcendental Deduction", in which Kant claims that sensibility and its pure intuitions are not sufficient to justify experience and knowledge since they cannot provide a justification of the objective unity, but only of the succession and coexistence, although they are universal rules. Therefore, it is necessary to rely on a conceptual level able to provide such a unity that cannot be merely empirical, because otherwise it would not constitute a level of legalities able to justify the unity of the experience and the necessity and universality of the thought. Yet, the reference to the pure concepts, to categories regarded as functions of unification and conditions of the possibility of the unity of the objects of experience also is not sufficient. The conjunction of pure concepts of the understanding, presupposes another unity for its justification and for their condition of possibility. This unity is the 'I think', that must join up with each representation in order to make it possible, If there were no such a synthetic unity, it would not be possible to justify the unity in experience, which would only be a flow of impressions, deprived of objectivity. But so far, the transcendental inquiry is not complete and must be explored further. Although Kant has explained the knowledge's possibility and the value of pure concepts as limits of the system of reference of our experience, he still has to face the question concerning how pure forms can be applied to the matter and how understanding and sensibility, in their heterogeneity, can actually work together. This is the opening question of the schematism chapter, to the analysis of which is devoted the fourth chapter of this Dissertation. I have inquired why schematism is situated in the transcendental doctrine of Judgement (and not in the transcendental Aesthetic nor as part of the "Transcendental Deduction"). Moreover, I have focused on Kant's descriptions of schemata as time-determinations produced by the faculty of imagination, distinct from images and concepts. In chapter 5 I have stressed that among the manifold critiques of the schematism chapter, the criticism against its necessary role inside the *Critique of Pure Reason* is the most challenging. To evaluate the function of the chapter, I have considered in detail seven criticisms moved by

authors selected as representatives because of the strength of their arguments and the distance of their positions.

More specifically, section 5.1 is devoted to Zschocke, who considers Kant's schematism as a redundant addition to the Deduction, in which Kant is supposed to have already provided the forms of sensibility with the ground of the justification of the unity of experience. If so, there is no inhomogeneity between categories and forms of sensibility and no need of a mediating function such as the schema. However, according to Zschocke categories have the peculiarity to serve to provide necessity to the practical use of judgement. In Zschocke's view, Kant provides a misleading illustration of an actual problem: schema is misinterpreted if intended as a solution to the problem of the gap between understanding and sensibility by means of time-determination, because there is no inhomogeneity between them and because time is not as general as Kant states. On the contrary, schematism has a role and a validity if it is developed by means of the representations of space and if considered as a clarification of how the unity of experience is constituted (by showing "how the general rule descends to the field of sensibility").

In section 5.2 I have considered Curtius's claim that the schematism chapter is a redundant addition to the *§24* of the "Transcendental Deduction" and that the only difference between the two parts is that while *§24* refers to a process of synthesis by which categories might be applied to experience, schematism relies on the subsumption of intuitions under pure concepts. But in Curtius's view, the notion of subsumption is inccorectly used by Kant, because it is referred to things and objects that do not belong to the same kind, as it is required by the classical definition of subsumption. Then, I have presented Curtius's interpretation of Kant's definition of schema as a rule that modifies the pure synthesis through the determination of the inner sense. Consequently, schemata are not third things implied in the subsumption, but rules of the synthesis of the understanding. After considering Curtius'scriticism, I have focused on Bussmann's interpretation, according to which homogeneity is the actual topic of the chapter about schemata. The author regards homogeneity as the possibility of carryingout a subsumption, namely the process of unification of the representation of a thing and the form of its concept. Moreover, Bussmann gives an original interpretation of schematism as self-reflection of the understanding: schemata are self-referential applications of categories through time and are necessary insofar as categories alone do not contain the conditions of the inner sense, and are therefore insufficient conditions of the possibility of experience in time. Besides, schematism is a necessary dynamic and recursive process, which provides things with a conceptual order. Schemata, then, are not "third things" but the result of a process in which the understanding reflects on itself in time.

In 5.4, I have focused on Walsh's view, who tries to go beyond the obscureness of some passages of the chapter of schematism, stressing its importance in order to understand not only the meaning and use of categories, but also the view of Kant on the nature of concepts. Walsh shows how schemata are different from empirical concepts, categories and ideas, although they are seen as excessive rigid: why should

schematism work in one way only? Why must categories be determined only through time? Starting from this criticism, he suggests to refashion schemata by putting aside the mechanical Newtonian physics and introducing non-mechanical principles of organisations.

A critic who claims that the schematism chapter has an important and necessary role in the *Critique of Pure Reason* is Dahlstrom. He stresses that schemata show the conditions of applicability of categories: one thing is the possession of a concept, (categories as transcendental principles of the unity of knowledge that must be applied to experience); one other is the knowledge of its proper use (how they are applicable to experience). Besides, I have presented Guyer'smain objections, who criticizes the temporal nature of the Kant's schemata by underlining that it might be the case that a category applies to representation that do not require a temporal principle of unification, but only space. Moreover, according to Guyer, the relation between categories and their correspondent schemata is unclear and confusing.

Finally, in the last subsection of the chapter devoted to the interpreters of schemata, I have considered Allison's perspective on Kant's chapter. Allison claims that the necessity of the schematism chapter lies in the real use schemata give to categories: they show *how* (and not *that*) pure concepts are applied to experience. Moreover, he stresses on the difficulties concerning space and time and the role of judgement (distinct from reason and understanding) as faculty of the use of discursive rules to guide perception. Besides, deepening the problem concerning the interpretation of subsumption, Allison underlines how it has to be referred to judgement, as the faculty of subsuming particulars under general rules. While the understanding provides the rule, judgement indicates the case whether a given instance falls under the rule or not. Allison then tries to order the eighteen definitions related to 'schema' that are present in Kant's chapter, by distinguishing them into definitions of what schemata *do*,of what they *are*, and by stressing their differences from categories and principles. After the analysis of the positions of each of these interpreters, I have added critical remarks and observations concerning their assumptions in order to clarify what is the role of the schematism chapter, namely to solve the question concerning how pure concepts are applied to categories – emphasizing that this task implies a transcendental,and not a psychological perspective, as it deals with the necessary conditions of the possibility of objective experience.

Schematisms's legacy between philosophy and psychology

After having considered the function and role of schematism in the *Critique of Pure Reason*, I focused on the philosophical receptions of Kant's passages on schemata. Interestingly enough, Kant's theory is criticised by most philosophers after him, while it is considered as an important doctrine by several psychologists who developed the notion of schema in their theories. More specifically, I have considered the reception

of the term 'schema' right after Kant: Maimon, first of all, re-echoes the term in the sense of mediation between concepts and perception, while Herder uses the term in to senses: in a negative sense, as the shadow of things, and in a positive one, as linked to the use of language. In contrast, Humboldt does not explicitly refer to Kant's schematism, but he still regards language in a similar way as Kant does, namely as *medium* between thought and representations. Later on, in Fichte 'schema' assumes two main meanings: the way in which the spirit limits itself and the process through which appearances are overcome (free schematism). In Schelling, again, the notion of schema has a broad use: it alludes to time- determination, sensible rules, mediating functions and language. Hegel refers to schemata as lifeless time determinations in his criticism of Kant's rigid elaboration of the principles of cognition. However, in the section devoted to the theoretical spirit in his *Encyclopedia of the Spirit*, some similarities with Kant's process of mediation through schemata can be founded. Herbart goes further with the criticism to schematism by rejecting it as there is no need of a medium between active and passive functions. Schema, in his view, is a useless introduction. In a similar way, although from a different perspective and without directly referring to the passages of schematism, Beneke seems to refuse the introduction of a mediation as a consequence of the foundation of philosophy on empirical psychological grounds. Later on, Schleiermacher relates 'schema' to the acquisition of language, while Fries to the process through which images are built and to the activity of imagination. Finally, I have considered Schopenhauer's well-known criticism of Kant's schematism: he compares Kant to someone who wants to measure the height of a tower by measuring its shadow instead of putting the measuring tape (the schema) on top of the tower itself.

In the next chapter, I have moved on to consider the late nineteenth and early twentieth centuries, when the notion of schema was used in a uncountable variety of meanings. I have here presented the most significant ones byconsidering the general influenceof the thinkers, the direct relation to Kant as well as the use of notions close to the function ascribed to schema by Kant. In Nietzsche 'schema' refers to the logical structure of thinking, while in Bergson to a way to organise movements and actions. Moreover, in Merlau-Ponty's work 'schema' means the connection between body and the object of perception, whereas Dilthey uses the notion into, at least, two meanings: he alludes to a schematic thinking and to a schematic way of life. Besides, I presented Husserl's notion of thing-schema, which is very close to Kant's description of the form of the intuition, although the two perspectives are significantly different. Then, I considered the well-known interpretation of schematism given by Heidegger, who stresses the relevance and necessity of the chapter in the *Critique*. Another important interpretation is Cassirer's, who does not refer to schemata, but rather to symbols (considered as structures, forms which provide organisation and unity) in his conception of the human nature. Like Nietzsche, Jaspers uses the term in a logical sense, whereas Whitehead often refers to "cosmological schema" (sort of frame of the general state of the universe) and schemata intended as concepts able to clarify and give unity to theories. Besides, another important, although neglected,

interpretation here considered, is the one by Horkheimer and Adorno, who regard schematism as the way in which the dominion of reason is realised and embodies the technical mentality of the industrial society. Last, I have shown how Wittgenstein uses the notion of criteria to answer a problem similar to that of schematism, namely the application of a general rule to the particular case. As presented, Kant is accused by many philosophers who regard schematism as an obscure, unnecessary passage of the *Critique of Pure Reason* which demonstrated the artificiality of his system.

In contrast, the value of the schemata as procedure of the imagination, which links intuition and understanding is stressed (mostly) by psychologists concerned with the problem of the constitution of the mental world and faculties. But why is schematism regarded with interest by psychologists? Is a psychological interpretation of Kant's passages in accordance with Kant's ownintentions and aims? What is his view of psychology and its relation to philosophy?In order to answer these questions, I have presented the evaluation of Kant of psychology and philosophy and then focused on the influence of the doctrine of schemata on some psychologists. As stressed by Dessoir, between the eighteenth and the nineteenth centuries, the study of the mind saw the exaggerated increasement of faculties: thinkers of these years advocated not only to an intellect, at the basis of the mental activity, and a will, at the basis of desire and actions, but to thousand of capacities and faculties. Kant himself might be accused of creating an excessive variety of faculties, whose functions are sometimes difficult to evaluate, and of which it is difficult to decide whether they belong to the philosophical,the anthropological, or the psychological domains. In order to shed some light on this question, I have stressed that Kant makes a sharp distinction between philosophy and psychology. Philosophy is a system of rational knowledge through concepts and might be distinguished into real (dealing with objects of the thinking) and formal (general logic). This real philosophy is then separated into philosophy of nature and of morals. Therefore, there are different domains in which a particular faculty is legislative. In difference to this, psychology can only be regarded as a mere doctrine and not a actual science with proper *a priori* principles. After the *Critique of Pure Reason*, Kant negates the possibility of a rational psychology, because it would be based only on fallacious reasoning (paralogisms). Psychology can only be developed as a discipline (an empirical study) which inquires the subject as phenomenon of the internal experience. Kant develops in different works (*Beobachtungen über das Gefühl des Schönen und Erhabenen, Versuch über die Krankheiten des Kopfes, Anthropologie in pragmatischer Hinsicht*)a psychology of temperaments and a psychology of faculties. After a short exposition of these doctrines, I tried to answer the question concerning the impossibility of psychology to be a science (because of its method), as well as to consider the possible reasons for why Kant did not simply put it aside as useless. As he himself states, psychology is too important to be left aside.It seems, then, that Kant has at least the hope that in the future an adequate method for investigating inner states without relying only on introspection, which is not a scientific correct method. Relatedto this, I considered interpretations according to which Kant developed a transcendental psychology.

Kitcher, situating herself in contrast to Strawson's analytical interpretation, regards Kant's *Critique* as such a psychology. I have argued that, on the one hand, Kitcher provided a fruitful and important contribution among Kant's scholars but, on the other hand, she does not address sufficiently aspects of the *Critique* that do not find an explanation in her account. Most especially, her reading does not do sufficient justiceto Kant's interest in the objectivity of epistemic judgements.

After elucidating the differences between Kant's account and a transcendental psychological interpretation, I have confronted the theory of schemata in Kant with similar accounts actually developed in psychology in order to understand points of difference between them. The notion of schema plays an important role in most of the modern investigations dealing with memory, language and perception. Schemata are generally regarded as models or structures of cognition, used to provide rules and order to new inputs and information. In this way they contribute to make perception an active process, no longer regarded as a mere static reproduction of data, but rather as determination of the information received, stored, and modified through schemata. The function of schemata implies pre-representation, expectation, and might be interpreted as individually as well as phylogenetically determined. It is important to underline a first important difference between Kant's notion of schema and theories on schemata developed by modern psychologists. On the one hand, Kant's inquiry is not empirical, and his schemata are not empirical representations but methods for specifying the conditions of possibility of knowledge (i.e. categories). On the other, among psychologists, the question as to whether the fundamental structures of cognition can be empirically fully explained is still open to debate.

In the first section, I focused on a psychologist who uses the notion of schema in an interesting perspective related to Kant: Frederic Bartlett, who wanted to apply the experimental method not only to the study of perception but, in particular, to memory as well. His experimental psychology is based on a systematic method to explore human reactions (similar to the studies of Fechner, Helmholtz, and Stumpf). The main topics of his experiments are perceptions, remembering and imaging. These functions constitute cognition, which in his view has a constructive character, because past experiences influence the reactions of the subject. I have considered some of his tests,underlining how they are prevalently based on verbal reports with no reference to quantified measurements (in contrast to Ebbinghaus' approach). For instance, Bartlett tests the memories of subjects listening to a fictitious story (the "War of Ghosts") and focuses on how their memory of it changes over time. According to him, memory is constructed: traces of past experiences are involved in the organisation of the new contents and produce typical reactions, that are organised in schematic settings related to each others. Since each part of the schematic setting is linked to the others, each part of the setting go beyond itself in a sort of "effort after meaning", that provide unity to the experience of the subject. Kant's and Bartlett's accounts of schemata differ in several respects. First, Bartlett's schemata do not possess a transcendental function: they are not mediating function of the application of pure concepts to experience, but are objects of a psychological inquiry on the cognitive

faculties, without interest in the objectivity of epistemic judgements. Second, Bartlett's account concern the case of memory and not of cognition in general. Third, Bartlett does not present a table of different schemata, but rather use the term in a general sense, without discriminating particular kinds of such general patterns. Fourth, unlike Kant, Bartlett (whose researches are quoted in Minsky's works) is elaborating an experimental inquiry that implies empirical research. However, it is interesting that Bartlett focuses on a topic of philosophical interest and uses, although without directly referring to Kant, the philosophical term 'schema', thus suggesting that he was familiar with the *Critique*

After this, I turned to Piaget's account. According to Piaget, the subject in his physical and mental aspects is involved in a process of continuous organisation of himself and his world; therefore, to study the subject, different branches (from logic to biology) have to be considered. Several authors influenced Piaget, not only Bergson with his notion of creative evolution, but also Kant, to whom he refers describing his view of the tasks of philosophy. Piaget's notion of schema concerns a variety of functions developed by human beings insofar as intelligent, in order to assimilate and adapt to the environment. More specifically, these are structures used to organise pattern of behaviour developed through assimilation and accomodation, from the first simple structure of the infancy to more refined ones, for instance, the schema of a object, which refers to the way in which the child organise his behaviour insofar as it recognizes that something resists its action (the object) and is endowed with permanence. I have stressed that Piaget's thinking might be contrasted to both empiricism and apriorism: he opposes the former because it states an absolute and too strong notion of experience (as if everything could be reducible to sensible states), but also the latter, claiming that a strict and rigid apriorism is not able to provide explanations of the changes and developments which occur in the subjects. As a consequence, Piaget's view of the notion of schema is dynamic and combines mutability and invariant constrains. For what concerns the relation between Piaget and Kant, there are similarity in their terminology (concepts, schemata, forms, intuition), but Kant differentiates these terms in a clearer and more determined way. Moreover, although both authors seem to deal with same questions concerning the relation between sensibility and cognition, their interests and approaches are quite different. Piaget is interested in the notion of schema (for instance of the object) in order to find a solution to the question on when and how human beings start to behave considering a distinction between themselves and external permanent things. Kant, however, is interested in the necessary conditions of the possibility of objective experience; he has a transcendental focus on the problem.

In the last chapter, I have considered Barsalou's reception of Kant's doctrine of schematism and its significance for the relation between psychology and philosophy. Barsalou develops a cognitive psychology, according to which cognition is given by a process of information acquired from the environment, then stored and returned to the environment. This process implied categorization, regarded as gateway between perception and cognition, which helps the subject to organise his world of thinking

and action. Barsalou refers to functions grounded in the perceptual system and defined as records of the neural states that underlie perception. In Barsalou's modal theory, these functions or symbols are analogically related the perceptual states from which they originate and differs from a amodal perspective, which regards categories as transduction of perceptual states in a system unrelated to perception to which categories are referred only in an arbitrary way. The main properties of the perceptual system are the following: 1) symbols are neural representations in sensory-motor areas of the brain; 2) they are subsets representing schematic components of states of perception (not holistic); 3) they are multimodal; 4) they are integrated into a simulator; 5) symbols are organised by frames within a simulator; 6) linguistic control over the construction of simulators is provided by words associated with simulators.

After presenting Barsalou's theory on perceptual symbols, similarities and differences between Barsalou and Kant's accounts became clear. On the one hand, both focus on the relation between cognition and sensibility and claim that activity as well as receptivity are necessary functions involved in cognition and representation. On the other hand, their perspectives and interests are not the same: while Kant focuses on the transcendental inquiry on the grounds and conditions of knowledge, Barsalou aims to determine how symbols and simulators are produced. Then, after this analysis, I could give a first answer to the question concerning the relation between philosophical and psychological inquires: both share similar terms and problems (representation, cognition, perception etc.) but their tasks and focuses are different: psychology is a particular discipline with proper methods and tools and it deals with the process of cognition, while philosophy is situated on a meta-level, from which it has to determine limits and fields of particular disciplines, thus clarifying the conditions of possibility of knowledge and distinguishing the various domains of sciences.

To conculde, this inquiry has defended the claim that the schematism chapter has a fundamental function in the project of the *Critique*. its understanding has consequences not only for the innterpretation of Kant's philosophy but it also provides a more refined conception of the relation between philosophy and psychology. In addition, this study has raised questions and problematics that could and should be deepened by further investigations.

New perspectives

This study has several limitations, which I would like to point out in order to pave the way for future research.

The first one consists in the inquiry on schemata in Kant's works. I have here focused mainly on precritical works and on the schematism chapter of the first *Critique*. However, Kant alludes to schemata in other works too: the *Critique of the Power of*

Judgement (to which I have made a couple of hints), the *Critique of Practical Reason*, *Religion within the Bounds of Reason Alone*, *Perpetual Peace* and the *Opus Postumum*.

Second, the historical comparison can be developed with more specific detail. One coulddeepen the relation of Kant especially to his predecessors Thomasius, Darjes and Tetens. Likewise, one might consider more closely the interpretations of schemata in the works of the idealists, Heidegger or Husserl as well as inHorkheimer, whose uses of schema seem more important than it has been considered so far in scholarship.

Third, one could delve into Kant's discussion of empirical psychology and analyse more carefully his reception by psychologists not considered here (such as Oswald Külpe (who edited the *Anthropology from a Pragmatic Point of View* for the Academy edition), Franz Brentano, Carl Stumpf,or Otto Selz),but also on Bartlett, whose knowledge of Kant seems more comprehensive, although, until now, there are no studies that demonstrate this through historical investigations.

I would be happy if the present studywould inspire more research in these and related directions.

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Lists of abbreviations for classical works

Aristotle (Bekker and Rose numberings)

Apr: Prior Analytics
De ani: On the soul
De Democrito : On Democritus
De gen. et corr.: On generation and Corruption
De part. Anim.: Parts of Animals
Phys: Physics

Philo of Alexandria

De op. m.: De factory mundi On the creation of the Cosmos According to Moses

Plato (Stephanus numbering)

Epin: Epinomis
Ion: Ion
Resp: Republic
Tim: Timaeus

Proclus

In Euc. : A Commentary on the First Book of Euclid's "Elements"

Theophrastus

De sens. : On sense perception

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