Analogy, technical reason, and living beings: the role of analogy in representing Kant's concept of naturzweck

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Analogy, Technical Reason, and Living Beings: The Role of Analogy in Representing Kant's Concept of *Naturzweck*

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Introduction

This dissertation is about the role of analogy in Kant's "Critique of the Teleological Power of Judgment", especially the role of analogy for the formation of the Kantian concept of natural end (*Naturzweck*)[1]. In the second part of the *Kritik der Urteilskraft* (KU), Kant tries to distance himself from a purely mechanistic account of nature's organization, and he develops a teleological view of living nature through his regulative concept of *Naturzweck*. Briefly, a natural end is a regulative concept of the reflective power of judgment that serves to make sense of the seemingly end-directed and self-organizing character of living beings and to guide our research into nature's organization.

Kant's description of the concept of *Naturzweck* appeals to three analogies: namely, the analogy with our own causality in accordance with ends (*unserer Kausalität nach Zwecken*)[2]; the analogy with an artifact or work of art[3]; and the analogy with *life*, which is a concept that pertains to practical philosophy in Kant's view[4]. Nevertheless,

[1] In this dissertation, I focus my attention exclusively on the KU, since it is the main place where Kant systematically develops his natural teleology and the crucial concept of *Naturzweck*, which is key to understanding his teleological commitments about nature. I am aware that there are more texts where Kant addresses the problem of teleology in nature, but they do not systematically or critically develop this issue. There are several references to teleology in his pre-critical writings, but I decided to focus this dissertation on the critical period, since my aim is to philosophically reconstruct an argument that belongs to a particular philosophical system like the Kantian *Critical* philosophy. There are further "critical" Kantian references to natural teleology, however. For instance, in *Über den Gebrauch teleologischer Prinzipien in der Philosophie* (1788), he offers an interesting and novel account of the use of teleological principles for the research into nature, but his ideas were not mature enough yet, as they are in the KU (he barely mentions the term "*Naturzweck*", let alone develops it further). Other references to teleology can be found in *Recensionen von J. G. Herders «Ideen zur Philosophie der Geschichte der Menschheit»* (1785) and *Muthmaßlicher Anfang der Menschengeschichte* (1786), mostly in relation to natural history. However, I hold that these texts do not contain further analysis of natural teleology and *Naturzweck* in the light of the Critical system—especially in relation to the reflective power of judgment, which is the real novel Kantian contribution in this regard. In the *Opus Postumum*, he broadens his reflections regarding natural teleology, but this text is problematic by itself, since it was unfinished and it is mainly composed of more or less disconnected fragments. I chose to limit my analysis to the clearest and most systematic treatment of teleology within the Kantian Critical corpus, which is the Critique of the Teleological Power of Judgment.

[2] "The concept of a thing as in itself a natural end is therefore not a constitutive concept of the understanding or of reason, but it can still be a regulative concept for the reflecting power of judgment, for guiding research into objects of this kind and thinking over their highest ground in accordance with a remote analogy with our own causality in accordance with ends [*nach einer entfernten Analogie mit unserer Kausalität nach Zwecken überhaupt*]" (KU, AA V, 375: lines 20-22). In chapter 5, I shall offer a plausible and consistent interpretation of this quote.

[3] (KU, AK. V, 374, lines 9-33).

[4] "Perhaps one comes closer to this inscrutable property if one calls it an analogue of life: but then one must either endow matter as mere matter with a property (hylozoism) that contradicts its essence, or else associate with it an alien principle standing in communion with it (a soul), in which case, however, if such a product is to be a product of nature, organized matter as an instrument of that soul is already presupposed,

after suggesting these analogies in §65 of the KU, Kant states that the concept of natural end is not analogous with any causality known to us[5], including that pertaining to human artifacts and life. Even though these analogies shed some light on the concept of *Naturzweck*, they do not fully encompass the irreducible features that a living being seems to possess, namely, self-organization and end-directedness. On the other hand, Kant states that the analogy with our "causality in accordance with ends" is "remote" (*entfernten*)[6], but he nevertheless insists on the comparison between these concepts.

Kant's text is inconsistent and problematic: it uses and simultaneously rejects these analogies. Furthermore, he seems to (partially) embrace the analogy with our causality in accordance with ends, but with some reservations that he does not bother to clarify. Why does Kant not fully reject the (remote, according to him) analogy with our causality in accordance with ends when describing the concept of organized being judged as a *Naturzweck*? It is pretty clear that Kant somehow maintains the analogy with our causality in accordance with ends, but the relevant question is: *to what extent* does he maintain this analogy? What is the very role of analogical reflection in general and of this analogy in particular? How should we construe this particular analogy? Does the concept "causality in accordance with ends" encompass all human purposeful activity, including moral actions? Should we construe this analogy as the traditional analogy between artifacts and organisms, or rather in a different sense?

The analogy with our causality in accordance with ends, thus, is far from clear in Kant's text, but, at the same time, it seems to be indispensable for a proper understanding of *Naturzweck*. Our final causality can refer not only to the domain of morality (our moral actions) but also to the domain of human rational production (technical reason in general). Both activities are rational as well as purposive, and Kant does not make explicit in which of these two senses he is invoking this analogy. Or, rather, he only appeals to human technique in the analogy, but not to the domain of moral action. Accordingly, one of the main philosophical questions that this dissertation will tackle is: how can we construe the concept of our causality in accordance with ends in this analogy? Is Kant invoking here

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and thus makes that product not the least more comprehensible, or else the soul is made into an artificer of this structure, and the product must be withdrawn from (corporeal) nature. Strictly speaking, the organization of nature is therefore not analogous with any causality that we know." (V, 374-75). In chapter 4, I shall offer an analysis and interpretation of this analogy.

[5] "Strictly speaking, the organization of nature is therefore not analogous with any causality that we know" (375).

[6] (375, line 20).

both technical-practical reason and moral-practical reason? It is indispensable to determine in which sense Kant is taking the concept of causality in accordance with ends in these passages, since this would clarify the very concept of *Naturzweck*, which is based on this peculiar analogy.

Even though Kant does not directly refer to the sphere of moral action when invoking the analogy with our own causality in accordance with ends, several commentators maintain that in this context the concept of human causality (causality in accordance with ends) implies both technical and moral human reason. Zammito, for instance, states that human purposive activity involves a rational causality, even a *noumenal* one (that is, a free causality in the moral sphere) (1992, 221). Along similar lines, Guyer states that: "[t]hough we are driven to raise the question of the purpose of nature by (the limits of) our theoretical comprehension, only practical reason can furnish a candidate for this end, namely, our own existence as moral agents. Thus reflection on nature leads us to the goal of our own morality" (2005, 95-96). Steigerwald is more emphatic in stating that the analogy involves both aspects of human practical reason, as she says: "The concept of purpose [in the Teleological Judgment] included human purposive activity in artistic production as well as moral action." (2006, 716). Finally, Mensch points out: "Because an organized natural purpose was inconceivable by way of an analogy to a mechanical product, in other words, the analogy had to rely on reason and the kind of demonstration of free causality that it provided in the moral sphere" (2014, 143). Despite this line of interpretation, I follow McLaughlin (1990) and Zuckert (2007), who state that the concept of our causality according to ends that is at stake in the context of the third *Critique* is a technical one, that is, a type of causality in human rational activity in the technical-practical sphere[7]. One of the main objectives of this dissertation is, accordingly, to properly justify this statement.

However, ruling out the moral dimension of the analogy with our causality in accordance with ends does not suffice to clarify this very analogy at all. Thus, I can raise again the question: how can we properly construe the analogy between living beings and our causality in accordance with ends?

[7] Even though McLaughlin and Zuckert restrict the analogy with our causality in accordance with ends to the technical-practical sphere, they do not investigate further the role of analogy in Kant's Teleological Judgment, let alone the role this peculiar analogy plays in representing the concept of *Naturzweck*.

Secondary Kantian literature has dominantly—and typically—conflated this analogy with the traditional analogy from design[8]. According to this reading, Kant is drawing an analogy between artifacts and living beings not in order to prove God's existence, but in order to make sense of the seemingly end-directed character of nature's organization. In this reading, accordingly, the term "causality in accordance with ends" is construed as "rational design", and the analogy would be as follows: between a living being (which seems to possess end-directedness) and a designed object (which is designed for a determinate end). This reading is mainly followed by McFarland (1970), Zumbach (1984), McLaughlin (1990), Aquila (1991), Fricke (1990), Ginsborg (2001), Guyer (2001, 2006), Zuckert (2007), Lenoir (1982), Steigerwald (2006), and Van den Berg (2014, 2017), amongst others[9].

I claim, however, that this is a misreading. Kant is very emphatic in stating that the analogy between artifacts and organic beings is more properly a disanalogy, and he finally rules out the analogy with intelligent design[10]. The analogy between artifacts and living beings is useful for understanding the apparent purposive character that living beings exhibit, but it does not account for the self-organizing character of living beings (which is the key point in Kant's account of living beings judged as *Naturzweck*). Furthermore, and this is the key point for rejecting this dominant reading, Kant invokes the analogy with our causality in accordance with ends just after dismissing the analogies with life and artifacts. Therefore, it is highly improbable that Kant is referring here to the traditional (although slightly modified) analogy between nature and design.

[8] The traditional analogy from design is one of the main arguments—together with the ontological and cosmological proofs—for proving the existence of God. This traditional analogy is composed of the following elements: an artifact (the dominant example is a watch) and its designer (in this particular example, a watchmaker), and a living being and its creator (God). The key point of this analogy is that living beings seem to exhibit a design-like character, just like any artifact designed by an artisan. That is to say, the common characteristic these products (artifacts and organic beings) seem to share is end-directedness, that is, the idea that these products were produced for the sake of accomplishing some determined end.

[9] McFarland, for instance, states: "It is evident that Kant saw clearly that natural organisms are quite different from machines in so far as they produce themselves, repair their own deficiencies, and so forth. But, at the same time, he was unable to free himself from the watchmaker-watch analogy completely enough to be able to ask whether organisms can be understood in any other way than as if they had been designed" (1970, 139).

[10] "One says far too little about nature and its capacity in organized products if one calls this an analogue of art: for in that case one conceives of the artist (a rational being) outside of it. Rather, it organizes itself, and in every species of its organized products, of course in accordance with some example in the whole, but also with appropriate deviations, which are required in the circumstances for self-preservation" (V, 374). Recently, Angela Breitenbach has pointed out the shortcomings of this dominant interpretation as well (2009b, 2014a).

In this dissertation, I propose that the best way for construing this analogy is not by identifying it with the old argument from design, but rather with our own reason in its "technical use"[11]. That is to say, the analogy with our causality in accordance with ends does not establish a relation of identity between organisms and artifacts—as the secondary literature has dominantly stated—but between organisms and our own technical-practical reason. In other words, this analogy is not between organisms and the products of a rational designer, but rather between organisms and the technical reason of such rational designer—or the technical reason of any rational being. Angela Breitenbach also dismisses the analogy with design to be the analogy with our causality in accordance with ends in §65, and she claims that the analogy between organisms and our causality in accordance with ends is an analogy between organisms and "practical reason itself"[12]. However, this would imply encompassing practical reason also in its moral sphere, which is something that would be probably rejected by Kant. Breitenbach is not very clear on whether by "practical reason itself" she is also including the moral sphere or not. In line with Breitenbach, I do emphatically reject the dominant reading of linking this analogy with the argument from design.[13] Unlike Breitenbach, however, I do think it is indispensable to be emphatic in rejecting the moral dimension of this analogy, because what is at stake in our teleological judgments on nature is an analogy "with our own causality in the *technical use* of reason" (KU, AA V, 383, my emphasis).[14] Therefore, it is essential to specify in which sense of practical reason Kant is using the term "causality in accordance with ends", since this would clarify not only the very concept of *Naturzweck*, but also the way in which we can make sense of the organization of nature.

[11] "Hence in teleology, […], we speak quite rightly of the wisdom, the economy, the forethought, and the beneficence of nature […] such talk is only meant to designate a kind of causality in nature, in accordance with an analogy with our own causality in the technical use of reason" (V, 383).

[12] See, for instance: "On a different and, I believe, more plausible interpretation, however, we can read Kant as drawing an analogy not with the products of human activity but with the very capacity for that activity, namely, the capacity of practical reason itself" (2014a, 137); "In this way, *the analogy with human reason* can account for both the unified organisation and the purposive self-organisation of living beings" (2014b, 23 my emphasis); and „Die systematische Organisiertheit und die Fähigkeit des Organismus zur Selbstorganisation kann nun nach der Analogie mit der Systematizität und Zweckgerichtetheit des gesamten Vernunftvermögens begriffen warden. Die Kausalität nach Zwecken, das *praktische Vernunftvermögen* in uns, welches in der Analogie die Organisation von lebendiger Natur enhellen soll, kann verstanden werden als die allgemeine Fähigkeit der Vernunft, sich auf einen selbstgesetzten Zweck zu richten: den Zweck ihrer eigenen, selbstbestimmten Einheit" (2009b, 101 my emphasis).

[13] Zammito also states something similar in his "Teleology then and now: The question of Kant's relevance for contemporary controversies over function in biology": "To what is the analogy really being made? It is not the work of art, but the artist (human agency)" (2006, 760). However, this statement is not further developed (or justified) by Zammito.

[14] I shall offer good reasons for this Kantian rejection and why it is better to identify this analogy with reason only in its technical use in 5.2 and 5.3 of this dissertation.

Therefore, the main thesis of this dissertation is that Kant's analogy between organisms and our causality in accordance with ends is better understood if it is read as an analogy between technical reason and living beings judged as *Naturzwecke*. Our technical reason is not only responsible for our capacity of creating artifacts, but also it is the responsible for our capacity to represent ourselves ends in general[15] and to find a way—that is, creating a rule or precept—for accomplishing them. This technical-rational capacity in us is, therefore, the source from which emerges the analogical concept of *Naturzweck*. This technical-rational capacity in us has end-directedness and self-determination, and we judge living beings as *Naturzwecke* because we seem to recognize in them some features that are similar to our technical reason, namely, purposiveness and self-organization.

This interpretation, furthermore, reveals another thesis that is at stake in my dissertation, which is related to the question about the very role of analogy in the "Critique of the Teleological Power of Judgment". Kant, once again, is not very clear about the scope he aims to ascribe to analogy in general and to the analogy with our technical reason in particular. Yet, the usage of analogical reflection throughout the KU is much more persistent than Kant himself would dare to admit. In this dissertation, I propose that our teleological judgments about nature are based on this analogy with our technical reason. And as a consequence, the role of analogy is absolutely necessary, since it enables us to indirectly exhibit the analogical-reflective concept of *Naturzweck* (that is, it allows us to indirectly present this concept in intuition for its subsequent intelligibility)[16]. This is because it allows us to conceptualize something as organized and self-organizing[17], which is how we make sense of living beings qua "living".

However, one element is still missing here: the concept of analogy itself. "Analogy" is a technical concept in Kant, and, as such, we have to clarify it (because it appears in different contexts, with different uses and meanings). How does Kant understand the notion of analogy throughout his works and, particularly, in the third *Critique*? Kant's general definition of 'analogy' can be found in the *Prolegomena*: "[a cognition by analogy is] a perfect similarity between two relations in wholly dissimilar

[15] Or, properly speaking, technical reason is the responsible for representing those ends pertaining to "art and skill in general, as well as those of prudence, as a skill in influencing human beings and their will" (KU, AA V, 172).
[16] Breitenbach (2014a) and Nassar (2016) also hold a similar argument. For further details of this topic, see section 3.5 of this dissertation.
[17] See, for instance, KU, AA V, 398.

things" (Prol. AA IV, 357-8). We have to bear in mind that Kant distinguishes three particular uses of analogy in philosophy, namely, the analogy (or analogies) of experience (necessary analogies for enabling possible experience, such as: substance and accident, cause and effect, and community or reciprocal action)[18]; symbolic analogy (with objects that do not pertain to possible experience, and which ground symbolic representations)[19], which is introduced in §59 ("Beauty as a symbol of morality") of the KU, in the "Critique of the Aesthetic Power of Judgment"; and analogy in its 'logical' application as a mode of inference of the reflective power of judgment. In his lectures on *Logic*, Kant states that analogy is one of the "two kinds of inference of the [reflective] power of judgment" (Logik, AA IX 132, 21-2). Together with induction, analogy is a function of the reflective power of judgment and, as Breitenbach clearly explains, since analogical function operates "[b]y comparing two things that share certain properties we can thus infer by analogy that certain other properties, known to hold for only one of the two objects, also hold for the other. In this way, we can arrive at general concepts that subsume different phenomena" (Breitenbach 2014a, 140). Moreover, these kind of inferences (analogy and induction) are useful for extending our cognition through experience, although we "must use them with caution and care" (*Logik*, AA IX, 133, 26-27).

This brief account of Kant's concept of analogy brings us to another relevant philosophical question: What is the type of analogy that is at stake in Kant's "Critique of the Teleological Power of Judgment"? Why is it so necessary to clarify the kind of analogical procedure operating within the KU? Answering these two questions will allow us to arrive at a well-formed idea of how analogical reflection is key for understanding the procedure of the reflective power of judgment in general, and of our teleological judgments about nature's organization in particular. There is a lack of a thorough study not only of the analogy between technical reason and the organism, but also of the role of analogy within the Teleological Judgment in general. When investigating analogy in the KU, Kantian literature has focused its attention mainly on the role of symbolic representation (which is a type of analogy) introduced in the Aesthetic Judgment[20], but an exhaustive analysis of the type of analogy and its relevance for the very formation of our teleological judgments about nature remains scarce[21]. Analogy is almost seen as a

[18]See KrV B 218 ss., where Kant develops in more detail the Analogies of Experience.
[19]See KU §59, AA V, 353 ss., and *Prol* AA IV, 357.
[20] See, for instance, Düssing (1990), Vossenkuhl (1992), Guyer (1997), and Bielefeldt (2003).
[21] As always, there are a few exceptions. There are illuminating and interesting attempts at stressing the role of analogy in Kant's Teleological Judgment in Breitenbach (2009b, 2014a), Nassar (2015, 2016), and

Kantian rhetorical device, like a mere metaphor. But this is not the case. In fact, Kant is emphatic in stressing the heuristic role of analogy for our empirical research. But I propose that analogy goes beyond this mere heuristic role, since it enables us to indirectly present the very concept of *Naturzweck*[22] (and making it intelligible to us). That is to say, analogy is not only a heuristic device for investigating nature, but also the very condition for the possibility of the reflective concept of *Naturzweck*—in the sense that it helps us to conceptualize or conceive a *Naturzweck,* from which our teleological judgments of nature derive. We can gain intelligibility about the seemingly purposive and self-organizing character of living beings only by virtue of an analogy with our technical reason, which operates in a purposive and self-organized manner as well.

In order to tackle the philosophical Kantian problems just outlined, this dissertation is divided into five chapters. The first two chapters are mainly introductory, since they present the problems, arguments, and main philosophical concepts introduced by Kant in the KU and in the "Critique of the Teleological Power of Judgment", respectively. Chapter 1 provides a general overview of the KU. Although it is an overview, this first chapter contains a reading proposal for a better understanding of the main Kantian problems introduced in the third *Critique*. This chapter is crucial for situating the main problem of this dissertation within the overarching project of the KU and critical philosophy in general, viewed as a system. Thus, this chapter introduces the philosophical concepts that are at stake in this Kantian text and it offers a plausible reconstruction of the main arguments Kant elaborates in the two Introductions of the KU—which contain in a condensed (and at times obscure) way the whole content of the book.

Chapter 2 contains, in turn, an overview of the entire "Critique of the Teleological Power of Judgment". In this chapter I describe, explain and analyze Kant's Teleological Judgment and all those aspects that are necessary for reconstructing the main argument of this second section of the third *Critique*. Furthermore, this chapter offers a first reconstruction of the key concept of *Naturzweck*. However, this reconstruction is a "provisional" one, since it puts on hold the clarification of this concept through the analogies invoked by Kant. Accordingly, this reconstruction of the concept of *Naturzweck*

van den Berg (2017). Angelica Nuzzo (2005), in turn, highlights the role of analogy in Kant's KU, especially for the reflective power of judgment in general. However, she does not thematize the role of analogy for the concept of *Naturzweck* or for our teleological judgments on nature.

[22] Breitenbach (2014a) and Nassar (2016) also state that analogy has more than a heuristic role in Kant's Teleological Judgment (see section 3.5 of the dissertation for further analysis of this reading).

functions, in this second chapter, more as a first approximation than an exhaustive and systematic analysis of it. The latter will take place in Chapter 4 and mostly in Chapter 5. As I have already mentioned, this chapter (together with the first one) is mainly an introduction to the main philosophical concepts that are at stake in the "Critique of the Teleological Power of Judgment", which are fundamental for understanding the argument of this dissertation and the development of the following chapters as well.

Chapter 3 offers a reconstruction of Kant's concept of analogy, especially in the critical period. Even though Kant remains somewhat ambivalent toward the notion of analogy, and even seems quite critical at times regarding its use for scientific inquiry, he uses and invokes this notion regularly throughout his works. Furthermore, and as already mentioned, analogy is a technical term in Kant's philosophy, with different meanings and uses. This chapter offers, first, a distinction between mathematical and philosophical analogies, which is the Kantian starting point for any reflection regarding the use of analogy in philosophy. Next, I provide further distinctions within philosophical analogies: namely, analogies of experience, analogy as a mode of inference in its logical function, and symbolic representation. Finally, the chapter concludes with an interpretation of the kind of analogical procedure operating in our teleological judgments about nature. This chapter, accordingly, offers a systematization of Kant's different conceptions of analogy in order to clarify what kind of analogical procedure is at stake in the "Critique of the Teleological Power of Judgment". This final aim of the chapter is crucial, since it offers a plausible reading of the kind of analogical procedure operating in Kant's Teleological Judgment, especially for enabling us to indirectly present and making sense of the reflective concept of *Naturzweck*—which is something that is far from clear in the Kantian text.

Once the type of analogical procedure that is at stake in the Teleological Judgment is defined and described, the analogies invoked by Kant for describing, elucidating and making sense of the concept of *Naturzweck* can be addressed. Chapter 4, therefore, provides an analysis and interpretation of the role of two analogies used by Kant when he describes living beings judged as *Naturzwecke*: the disanalogy with artifacts and the partial analogy with life. In this chapter, I offer a detailed analysis of these two analogies, highlighting their respective contributions and limitations for understanding Kant's concept of natural end. Analogical procedure is essential throughout the KU—and especially in the Teleological Judgment—so a thorough study of the analogies—and

disanalogies—used by Kant are crucial as well, insofar as they demarcate the limits under which a *Naturzweck* can be conceived, in relation to what kinds of concepts it can be akin to, and so forth.

Thus, in order to understand the aforementioned reflective concept, even the analyses of the analogies dismissed by Kant are necessary, not only because they reveal how the reflective judgment eminently operates by means of analogy, but also because they disclose some of Kant's novel contributions regarding natural teleology[23]. In view of this, this chapter provides, first, an historical account of the argument from design in order to establish how Kant distances himself from this history and elaborates, instead, a critical evaluation of the (dis)analogy between organisms and artifacts. In this part of the chapter, I conduct an overview and discussion of how Kantian literature has construed this analogy with intelligent design (which has been dominantly—and wrongly—equated with the analogy with our causality in accordance with ends). Second, this chapter offers a reconstruction of Kant's conception of life, in order to show how the analogy between life and organisms sheds some light on *Naturzweck*'s concept. However, this analogy is nevertheless shown to be insufficient for accounting it.

Finally, chapter 5 deals directly with the main thesis of this dissertation: namely, the claim that reflective power of judgment is essentially analogical in its procedure, and our teleological judgments about nature are, in fact, grounded on an original analogy with our causality in accordance with ends, which I construe as an analogy with our own technical reason. In order to address and justify this assertion, 5.1 analyses the crucial role of analogy in the KU. While this role is often overlooked by Kantian literature—and, at times, by Kant himself—it is indispensable for forming two main concepts of the KU, namely, the reflective principle of *Zweckmäßigkeit der Natur* (purposiveness of nature) and *Naturzweck*. This first section of the chapter tackles, accordingly, the place and role of analogy for our reflective power of judgment in general. 5.2 and 5.3 focus on two fundamental question: How can we properly construe the concept of our causality in accordance with ends (*unserer Kausalität nach Zwecken*)? Is this analogy as "remote" (*entferten*) as Kant states, and what is the indispensable role of this analogy for our teleological judgments? These sections are fundamental, since they offer a plausible

[23] Especially his critical view regarding the old argument from design and the persistent comparison between organisms and artifacts. In chapter 4 I shall offer further details of this critical view.

interpretation of what is the best way for understanding this obscure analogy between organized beings and our technical-practical reason.

Once the role this particular analogy plays in representing the concept of *Naturzweck*—and, hence, of our teleological judgments about nature in general—is addressed and analyzed in detail, it will be possible to explore (in 5.4) the role this analogy plays for biology. If we consider our technical-reason as the source from which we can analogically conceptualize a *Naturzweck*, we can also determine the boundaries of biological knowledge itself. For Kant, *Naturzweck* is the reflective concept that allows us to make sense of living beings as if they had end-directedness and self-organization. And this unavoidable teleological standpoint for judging living beings posits a serious dilemma to biology in its aspiration to be deemed as a proper science, according to Kant. This section tackles this dilemma and highlights the reception of Kant's theory of living beings for subsequent biological thinkers. At the end of this chapter, I offer a brief reflection concerning the role of this analogy for the understanding of our own reason.

Chapter 1: Kant's *Kritik der Urteilskraft*. An Overview

Before entering the chief topic and problem of this dissertation, it will be necessary to place the "Critique of the Teleological Power of Judgment" into the larger project of the *Critique of the Power of Judgment* (*Kritik der Urteilskraft*) in particular and Kant's critical philosophy in general. For that reason, this first chapter is devoted to introducing the third *Critique* in its main philosophical arguments and problems, in order to provide a contextual framework for understanding teleological judgment in general, and the role of analogical reflection for the formation of our teleological judgments of nature in particular.

The *Critique of the Power of Judgment* was published for the first time in 1790, that is to say, nine years after the first appearance of the *Critique of Pure Reason* (1781), the work that inaugurates the Kantian critical project. As it is well known, the *Critique of the Power of Judgment* is the third and last part of the aforementioned critical project; hence it is key to understanding his critical philosophy as a whole. However, as how some scholars have realized[24], this last *Critique* has received less attention than the other two *Critiques*, at least until the 1960s. Moreover, there is a considerable difference in the reception and attention paid to the Aesthetic Judgment vis-à-vis the Teleological Judgment (traditionally, the scales have been tipped towards the aesthetic part[25]). In the last twenty years, however, some scholars have attempted to confront this imbalance. In any case, it is undeniable that there has been increasing interest in the third *Critique* (both the aesthetic and teleological parts) over the last fifty years.

[24] For instance, Pablo Oyarzún begins his Introduction to his Spanish translation of the third *Critique* by stating that this Critique "has received a comparatively minor attention in the tradition of reading and exegesis of Kant" (1992, 7). Attention has been especially focused on the first *Critique* and, secondarily, the second *Critique*. Nevertheless, a couple of lines after the quoted words, Oyarzún concedes that the particular focus on the third *Critique* "has increased in a notorious way since the decade of the 60s" (7 [my translatiom]). However, this growing interest in the third *Critique* is generally accompanied by an ambivalent evaluation, as "an association rather unstable between an aesthetic and a biological philosophy" (7). Alejandro Vigo, in turn, states that amongst the three Critiques, the third one "has had the most eventful fate, from the viewpoint of its influence and reception as well as, afterwards, from the viewpoint of its role in the specialized research of Kantian thought" (2004, 749 [my translation]).

[25] Indeed, Vigo states that the KU is usually read until the middle of the book, that is, only the Aesthetic Judgment is read, since it generates, apparently, more fascination than the teleological discussion. Teichert maintains almost the same position (1992, 14), as well as Zumbach (1984). However, there has been increasing interest in the teleological part since the 2000s decade.

Beyond the fact that the third *Critique* represents the last part of Kant's critical work, it is also known for offering Kant's attempt at reconciling the two spheres that had been radically separated in the previous two *Critiques*, namely, nature and freedom. In the *Critique of Pure Reason*, Kant explained how the understanding is an autonomous faculty of cognition that has constitutive *a priori* principles, and which possesses a legislation of its own, that is, it applies its transcendental laws to the sphere of nature. In the *Critique of Practical Reason*, on the other hand, Kant shows how our reason also has an *a priori* and constitutive principle (the moral law) that determines our will, and which legislates over the sphere of freedom. In the third *Critique*, therefore, Kant has the task of asking whether or not the power of judgment, as an intermediary faculty of cognition[26], has an *a priori* principle of its own (just like the understanding and reason). The answer that Kant offers throughout the third *Critique* is an affirmative one, and this *a priori* and peculiar principle of the power of judgment is called the purposiveness of nature (*Zweckmäßigkeit der Natur).* The description and thematization of the principle of purposiveness will be the common thread throughout the whole third *Critique*.

In what follows, I shall introduce the main arguments of the third *Critique*, precisely as they are developed in the Introduction of the KU. The main argument of this *Critique* is the question whether the power of judgment has an *a priori* principle of its own and how this principle (i.e., *Zweckmäßigkeit der Natur*) operates when judging nature in its empirical manifestation. In order to limit the scope of my analysis to the chief topic of this investigation, I have omitted the major details of both the genesis of the third *Critique* and the analysis of the "Critique of the Aesthetic Power of Judgment". That is to say, I shall not carry out a detailed analysis of the first part of this *Critique* (i.e., the Critique of the Aesthetic Power of Judgment), since it would exceed the limits of my proposed investigation. However, I shall briefly introduce the Aesthetic Judgment, especially those aspects that are thematized and highlighted in the Introduction of the KU.

Accordingly, the present chapter offers, as its title suggests, a general introduction to and overview of the third *Critique* in order to provide the Kantian-critical context for the Teleological Judgment. In order to do so, the first section of this chapter (1.1) is devoted

[26] The power of judgment is an intermediate faculty of cognition in a double manner. On the one hand, it mediates between the domains of the understanding (nature) and reason (freedom), so it has the potentiality of rendering a sort of bridge between nature and freedom. On the other hand, it is an intermediate faculty of cognition because it cannot apparently have its own legislation, unlike the understanding and reason. I shall return to this point throughout section 1.3 of this chapter.

to introducing the precursor to Kant's later notion of the principle of the purposiveness of nature, which is found in the Appendix of the *Critique of Pure Reason.* This appendix is relevant not only because it anticipates one of Kant's major concerns in the third *Critique* (i.e., the problem of the immense diversity of nature and how to bring this empirical diversity into systematic unity), but also because it serves as a direct precedent for the very principle of purposiveness. The second section (1.2) concerns the Preface of the *Critique of the Power of Judgment,* which contains in a very condensed way the chief topic that Kant will address in this *Critique*. The third section (1.3) is devoted to reconstructing the main argument of the whole third *Critique*, which is fully contained in the Introduction of the KU. While this Introduction can at times be obscure, it is also quite illuminating and is unavoidable for understanding the KU, since it contains the main concepts, problems and arguments of the book. In order to provide this reconstruction, this section is divided into six parts: (1.3.1) the distinction between the determining and reflective judgments; (1.3.2) an introduction to the chief problem of this *Critique*, namely, nature as a system of empirical laws and the peculiar and transcendental principle of purposiveness of nature (*Zweckmäßigkeit der Natur)*; (1.3.3) the feeling of pleasure and its immediate connection with the principle of purposiveness; (1.3.4) the subjective purposiveness of nature and its relation to the aesthetic judgment; (1.3.5) the objective purposiveness of nature and its relation to the teleological judgment; and finally (1.3.6) the *Critique of the Power of Judgment* from a systematic-critical standpoint. All of these sections will be useful for locating the "Critique of the Teleological Power of Judgment" within the general framework of the critical project and especially of the third *Critique.*

1.1. - The Appendix of the *Kritik der reinen Vernunft* as a direct precedent to the principle of purposiveness of nature

One of the most highlighted and commented[27] precedents of the peculiar principle of the purposiveness of nature (*Zweckmäßigkeit der Natur*) is found in the Appendix to the Transcendental Dialectic of the first *Critique*. In the Appendix, Kant anticipates one of

[27] See, for instance, McFarland (1970), McLaughlin (1990), Zammito (1992), Nuzzo (2005), Molina (2007), Zuckert (2007), amongst others.

the major concerns exhibited throughout the KU, namely, the overwhelming problem of bringing the infinite diversity of nature and its empirical data into systematic unity. In this Appendix, Kant introduces the well-known (heuristic) use of the ideas (*die Ideen*) of reason for our empirical cognition of nature, and also the celebrated distinction between constitutive and regulative principles. The regulative (problematic) use of the ideas of reason and their fundamental role for obtaining systematic unity for our empirical cognition of nature can be seen as a direct approach to the principle of the purposiveness of nature as a transcendental principle of the reflective power of judgment. Accordingly, let us summarize the argument of the Appendix in order to see why it is a good introduction for the problems raised in the KU.

In the Appendix, Kant underlines the legitimate use of the transcendental ideas (*die transzendentalen Ideen*) of reason (such as God, the soul, and the world) as long as its use can be considered immanent (indigenous), and not transcendent (extravagant) (A643/B671). That is to say, when using these ideas as concepts of "real things" given in possible experience, we are taking them in a transcendent, illegitimate manner. In order to avoid this illegitimate use of the ideas of reason, Kant introduces the distinction between constitutive and regulative principles (a distinction that will be crucial for thinking the possibility of the systematic unity of our experience). The former are the *a priori* conditions for the objects of possible experience in general (the categories of the understanding are a good example of constitutive principles or concepts), whereas the latter are subjective principles or maxims (that is to say, we do not prescribe these ideas to things themselves, but only to ourselves) for attaining the systematic unity of our empirical cognition of nature. As Kant explains:

> [T]he transcendental ideas are never of constitutive use [*konstitutiven Gebrauche*], so that the concepts of certain objects would thereby be given, and in case one so understands them, they are merely sophistical (dialectical) concepts. On the contrary, however, they have an excellent and indispensably necessary regulative use [*regulativen Gebrauch*], namely that of directing the understanding to a certain goal respecting which the lines of direction of all its rules converge at one point which, although it is only an idea (*focus imaginarius*)—i.e., a point from which the concepts of the understanding do not really proceed, since it lies entirely outside the bounds of possible experience [*möglicher Erfahrung*] nonetheless still serves to obtain for these concepts the greatest unity [*Einheit*] alongside the greatest extension (A644/ B672).

Taken as constitutive principles, the ideas of reason would have to face dialectical reasoning, from which no legitimate use can be obtained. However, taken as regulative maxims, these ideas have an indispensable and legitimate use, namely in the search for the "systematic in cognition", that is, the unity or connection of all our empirical cognition into one single (higher) principle. This higher principle is the idea of the "form of a whole of cognition", in which the very idea of the whole precedes the "determinate cognition of the parts and contains the conditions for determining *a priori* the place of each part" and its relation to the whole (A 645/B 673). This idea of our empirical cognition as an interconnected whole is crucial for conceiving our cognition of nature as a systematic unity in accordance with necessary laws, and not as a mere aggregate of disconnected particular cognitions.

In this section of the *Critique*, Kant defines reason as the faculty of deriving the particular from the universal (A646/ B674). Nevertheless, this process of derivation can be conducted in two ways: either by the "apodictic" use of reason (*der apodiktischen Gebrauch der Vernunft*), which consists in subsuming the particular under the already certain and given universal (in which case the faculty of judgment is required only as a tool for subsuming the particular under the given rule); or by the "hypothetical" use of reason (*der hypothetische Gebrauch der Vernunft*), in which case the universal is only assumed problematically. That is to say, "the particular being certain while the universality of the rule for this consequent is still a problem" (A646/ B674). In these last cases, reason must "test" the rule for several particulars in order to infer the universal and its particular cases. It is worth pointing out that the distinction between the apodictic and hypothetical use of reason is put in the same terms as the distinction between determining (*bestimmende*) and reflective (*reflektierende*) judgments in the *Critique of the Power of Judgment*. There, the determining judgment carries out a merely subsuming role, that is to say, the rule (the universal) is already given and the faculty of judgment only has to subsume the case (the particular) under the aforementioned rule, whereas the reflective judgment has to look for the universal that is not given yet in order to subsume the already given particular. Moreover, the apodictic use of reason represents a constitutive use of reason, whilst the determining power of judgment is constitutive as well. The hypothetical use of reason, on the other hand, represents a regulative use of reason by "bringing unity into particular cognitions as far as possible and thereby approximating the rule to universality" (A647/ B675). For its part, the reflective judgment also operates by means

of regulative principles in order to unify our particular cognitions of nature into more general and universal laws. In any case, it is clear that the apodictic/hypothetical use of reason is a direct precedent of what is going to be the distinction between the determining and the reflective judgments in the third *Critique*, at least in what concerns the functions and scopes of both judgments[28].

Accordingly, the hypothetical-regulative use of reason is fundamental for unifying our empirical knowledge of nature in its immense diversity of rules and particulars. In other words, we must presuppose the systematic unity of nature as a necessary principle[29] (although only in a regulative fashion), since otherwise we would get lost in the immense manifold of particular laws that experience may supply. Having said that, Kant needs to show how this regulative principle of the systematic unity of nature operates. This regulative principle of reason operates by means of three sub-principles: the homogeneity (*Homogenität*), specification (*Spezifikation*), and continuity (*Kontinuität*) of forms. As Kant explains:

> Reason thus prepares the field for the understanding: 1. by a principle of sameness [*Gleichartigkeit*] of kind in the manifold under higher genera, 2. by a principle of the variety [*Varietät*] of what is same in kind under lower species; and in order to complete the systematic unity it adds 3. still another law of affinity [*Affinität*] of all concepts, which offers a continuous transition from every species to every other through a graduated increase of varieties. We can call these principles of the homogeneity, specification and continuity of forms (A 657-58/ B 685/ 86).

Briefly explained, each of these principles provides the systematic unity in our cognition of nature, by way of i) the principle of homogeneity, which keeps one from getting lost in the immense manifold of genera, "and recommends sameness of kind"; ii) the principle of specification, which "limits in turn this inclination to unanimity, and demands that one distinguish subspecies before one turns to the individuals with one's universal concepts" (A660/ B688); and iii) the principle of continuity, which unifies the first two principles by prescribing homogeneity of kind even in the "highest manifoldness" amongst species, since it indicates affinity in the diversity of species "in so far as they have all sprouted from one stem" (A660/ B688). All of these principles have objective ("but

[28] In the section 1.3, I shall thematize further the distinction between determining and reflective judgments.
[29] It is important to mention that these regulative principles of reason are also called by Kant "maxims" of reason, insofar as they represent a subjective "interest of reason in regard to a certain possible perfection of the cognition of [the constitution of] this object" (A666/ B 694).

indeterminate") validity and are employed for the sake of possible experience as heuristic principles for forming the higher principle of systematic unity of our experience.

The regulative principle of the systematic unity of cognition is the "purposive unity of things" (*die zweckmäßige Einheit der Dinge*), which consists in regarding every order in nature as if (*als ob*) it had been ordered by "the intention of a highest reason" (A687/ B715). This principle of the systematic and purposive unity of the cognition of nature "would have us study nature as if systematic and purposive unity together with the greatest possible manifoldness were to be encountered everywhere to infinity" (A700/ B728). That is to say, reason's principles of the systematic unity and purposiveness of nature (*Zweckmäßigkeit der Natur*) are crucial for our empirical knowledge, inasmuch as they provide unity into the seemingly unbounded diversity of particular laws of nature. As Kant says: "For the law of reason to seek unity is necessary, since without it we have no reason, and without that, no coherent use of the understanding, and, that, *no sufficient mark of empirical truth*" (A651/ B679, my emphasis).

The regulative principle of the systematic and purposive unity of our cognition of nature is close enough to the transcendental principle of the reflective power of judgment (i.e., *Zweckmäßigkeit der Natur*) of the third *Critique*. In fact, Kant manifests a clear concern for how to think systematic unity vis-à-vis the immense diversity of our empirical cognition of nature. And this concern appeared for the very first time in the Appendix of the *KrV*. However, it is clear that reason's regulative principles of systematic unity and purposiveness in the Appendix, although quite close to the reflective principle of the "purposiveness of nature" of the *KU*, are not yet a *transcendental* principle of the reflective power of judgment (and hence worthy of a "critique"). As Angelica Nuzzo states, "it would take Kant almost ten years to recognize in the regulative use of reason with regard to the highest unity of appearances and their laws the activity of the reflective faculty of judgment in need for an *a priori* principle of its own" (2005, 179). Nevertheless, it can be said that Kant's concerns throughout the Appendix are of the same kind as those expressed in the *Critique of the Power of Judgment*, except that the Appendix's principle of *Zweckmäßigkeit der Natur* is a maxim of reason instead of a *transcendental* and *a priori* principle of the reflective power of judgment. For that reason, the reading of the Appendix is a quite good strategy for trekking through the thorny passages of the third *Critique*.

1.2. – Entering the labyrinth: The Preface of the *Critique of the Power of Judgment*

The Preface of the third *Critique*, despite being only four pages long, addresses two central questions that will accompany the whole book, namely, whether the power of judgment (*Urteilskraft*) possesses an *a priori* principle of its own, and whether this principle provides an *a priori* rule for the feeling of pleasure and displeasure. These two questions are, according to Kant in the Preface, the central concern of this *Critique* (KU AA V, 168). Even though Kant avoids the larger concern of the infinite manifold of the empirical laws of nature and the possibility of unifying these laws into a system of experience, the Preface is certainly crucial for introducing the peculiar (and *a priori*) principle of the reflective power of judgment: the purposiveness of nature (*Zweckmäßigkeit der Natur*), even without a single mention of it. Accordingly, the Preface of the KU is important for establishing the unavoidable and *critical* question whether the power of judgment has an *a priori* (and transcendental) principle of its own that makes this faculty worthy of a *critique*.

In order to tackle this question, Kant states that, just as the understanding (*Verstand*) and reason (*Vernunft*) have their own domain (the faculty of cognition and the faculty of desire, respectively) with *a priori* principles of their own, we can legitimately expect that the power of judgment would also have its *a priori* principle. In Kant's words:

> Now whether the power of judgment, which in the order of our faculties of cognition constitutes an intermediary between understanding 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) [...]: it is this with which the present critique of the power of judgment is concerned (V, 168).

Once the question of the possibility of the power of judgment for having a principle of its own is raised, Kant remarks that the discovery of this principle will be accompanied by "great difficulties". These difficulties appear because the peculiar principle of the power of judgment is of such a kind that, on the one hand, it can provide a concept, but, on the other hand, this concept does not determine the object at all, since it only serves as a rule

for the faculty of judgment itself. That is to say, this principle is a subjective one that only serves as a rule for the mere act of judging, but it does not determine any object.

Moreover, the *a priori* principle of the power of judgment, in addition to being valid as a rule only to itself, proves "an immediate relation of this faculty to the feeling of pleasure or displeasure [*Gefühle der Lust und Unlust*]", at least in regard to aesthetic judgments (V, 169). In fact, the Aesthetic Judgment constitutes the most important part of a critique of the power of judgment, according to Kant, since in these judgments we can find a direct relation to the feeling of pleasure ("which is precisely what is puzzling [*Rätselhafte*] in the principle of the power of judgment and what makes a special division for this faculty necessary in the critique", 169). The teleological judgment (or the "logical judging of nature"), in turn, uses the *a priori* principle of the power of judgment in order to judge some natural products, but it does not have an immediate relation to the feeling of pleasure (and hence it "could always have been appended to the theoretical part of philosophy", 170). With this *Critique*, Kant says at the end of the Preface, the whole critical "enterprise" (*Geschäft*) comes to an end.

Accordingly, the Preface introduces the peculiar principle of the power of judgment and addresses one of the main questions of this *Critique* (i.e., whether the power of judgment has an *a priori* principle of its own that makes this faculty worthy of a critique, and whether this principle has an immediate relation to the feeling of pleasure and displeasure). At the same time, the Preface avoids thematizing the necessity of this principle for our empirical research into nature and for providing systematic unity to our experience (an issue that will be tackled in the Introduction and throughout the *Critique of the Power of Judgment*).

1.3. - The two Introductions of the *Critique of the Power of Judgment*: A Proposal for Interpretation

The Introduction of the *Critique of the Power of Judgment* is perhaps one of the most puzzling passages of this *Critique*, but it is also indispensable for the understanding of the development of the whole book and of the Critical project as well. It is well known that Kant wrote two introductions for his third and last *Critique*, but he finally rejected the first draft of the introduction (the so-called First Introduction [*Erste Einleitung,* EE]),

because of the "disproportionate extensiveness" of the first text. Nevertheless, Kant highlights in a letter sent to Beck that this rejection is not based on the content of this first draft, since the First Introduction "still seems to me to contain much that can contribute to a fuller understanding of the concept of a purposiveness of nature" (AA XI, *Briefwechsel* 1792, 394)[30]. That is to say, the First Introduction contains some conceptual and argumentative elements that can be useful for the understanding of the main concept of the *KU*, i.e. purposiveness of nature[31], which cannot be fully deduced from the published Introduction. For that reason, in this section I will suggest a reading proposal of the Introduction of the *Critique of the Power of Judgment*, in which I will take into account both introductions in order to reconstruct the main concepts and arguments of them. I will mainly follow the path traced in the published Introduction, but I will supplement the reconstruction of this Introduction by adding elements that Kant used and developed in more details in the EE, such as the crucial notion of the "technique of nature" (*Technik der Natur*) and the very principle of the purposiveness of nature.

Kant begins the Introduction by stating that philosophy can be "correctly" divided into theoretical (philosophy of nature) and practical (moral philosophy), because each of these parts has *a priori* concepts "that allow an equal number of distinct principles of the possibility of their objects" (KU, AA V, 171). Moreover, Kant explains that our entire cognitive faculty (*Erkenntnisvermögen*) has only two domains (*Gebiete*): "that of the concepts of nature and that of the concept of freedom; for it is *a priori* legislative through both" (V, 174). And that is the reason why philosophy can be divided into theoretical and practical, because each of these parts exerts its legislation through the concepts of nature and freedom respectively. Nevertheless, Kant emphasizes that the territory (*Boden*) in which these domains and their respective legislations are exerted "is always only the set of objects of all possible experience" (174). The legislation of theoretical philosophy is carried out by the concepts of nature through the understanding, whereas practical philosophy is carried out through the legislation of the concept of freedom through reason. Accordingly, the understanding and reason, as the higher faculties of cognition, have their different legislation "in one and the same territory", which is possible experience.

[30] Some interesting accounts of the details of the "rejection" of the First Introduction, See Tonelli (1954), Nuzzo (2005), and Sánchez (2011).
[31] In the First Introduction, Kant uses the expression "technique of nature" (*Technick der Natur*), but then he omits this expression in the published Introduction and uses instead the term 'purposiveness of nature'.

However, Kant warns us that there is an intermediate (*Mittelglied*) faculty between the higher faculties of cognition, which is the power of judgment. As an intermediate faculty, the power of judgment cannot have its own legislation, but "one has cause to presume, by analogy, that it too should contain in itself *a priori* […] a proper principle of its own for seeking laws" (177). That is to say, it can be expected that the power of judgment, as an intermediate faculty and by analogy with the other higher cognitive faculties, has its own *a priori* and peculiar principle. However, this *a priori* principle is only subjective and, "even though it can claim no field of objects as its domain, [it] can nevertheless have some territory and a certain constitution of it, for which precisely this principle only might be valid" (177). This does not mean that philosophy can thus be divided into three parts (since the power of judgment ultimately pertains to theoretical philosophy, according to Kant); but it does mean that the power of judgment can be subjected to a *critique*, inasmuch as it can be found in an *a priori* principle of its own—and, in this way, the limits and scopes of this principle can be studied. Therefore, in the three first sections of the Introduction, Kant addresses why a *critique* of the power of judgment as an intermediate faculty of cognition would be necessary (and why it can be justified).

1.3.1. - The Determining and the Reflective Power of Judgment

Right after stating that the power of judgment (*Urteilskraft*) can be subjected to a *critique*, just like the understanding and reason, Kant needs to define how the power of judgment proceeds and what are the different uses of this faculty. The most general definition of the power of judgment can be found at the beginning of section IV of the Introduction ("On the power of judgment as an *a priori* legislative faculty"), where Kant defines it as "the faculty for thinking of the particular as contained under the universal" (KU AA V, 179). However, this faculty of thinking the particular under the universal can be carried out in two ways. When the universal ("the rule, the principle, the law") is already given, the power of judgment only has to subsume the particular under this rule, and the power of judgment is called, in these cases, determining (*bestimmende*). When only the particular is given and the universal must be found, then the power of judgment is, according to Kant, reflective (*reflektierende*, V, 179).

The determining power of judgment, as can be seen, does not elaborate by itself a principle for subsuming the particular under the universal, since this principle is already given by the understanding, so the faculty of judgment only has to apply it. For this reason, the determining power of judgment only has a subsuming role, in which it applies the *a priori* and transcendental laws given by the understanding in order to subsume the particular under these general and universal laws. Throughout the first *Critique*, the power of judgment has a merely determining role, because this faculty only has to apply the already prescribed rules of the understanding (under its "universal transcendental laws").

On the other hand, the reflective power of judgment "is under the obligation of ascending from the particular in nature to the universal" (V, 180). That is to say, as the universal is not given yet, the power of judgment has to find a principle in order to subsume the given particular. However, the given particular manifests the manifold as such, that is, the manifold in its great and seemingly endless diversity. At this point of the argumentation, Kant introduces for the very first time—at least in the published Introduction—the problem of the immense manifold of the empirical laws of nature (*große Mannigfaltigkeit in empirischen Gesetzen*). Although the introduction of this problem is only mentioned, it serves to underline the peculiar relevance of the reflective power of judgment for grounding "the possibility of the systematic subordination of empirical principles under one another" (180). According to Kant, only the reflective power of judgment has the faculty for giving to itself a transcendental principle of the systematic unity of empirical laws and hence not deriving it from elsewhere. That is to say, the reflective power of judgment is the only faculty that can deal with this immense manifold and systematize it—i.e., find unity amongst this diversity—by means of a higher-transcendental principle. Nevertheless, this transcendental principle cannot be prescribed to nature, but only to the power of judgment itself, as a heuristic principle.

Accordingly, the first part of section IV of the Introduction is relevant because it provides the definition of the power of judgment and, most important, the distinction between the determining and reflective power of judgment. However, the following part of this section must explain the main problem of the infinite manifold of empirical laws and the possibility of finding systematic unity (*systematische Einheit*) in nature by means of the peculiar and *a priori* principle of the reflective power of judgment. This problem (and its possible solution) is also developed in sections V and VI of the Introduction,

which are—together with IV—the most crucial of the Introduction and, perhaps, of the whole third *Critique*.

1.3.2. - Nature as a system of empirical laws and the peculiar and transcendental principle of the *Zweckmäßigkeit der Natur*

After Kant shows how the power of judgment is an intermediate faculty of cognition which, at the same time, has its *a priori* principle—at least in regard to the reflective power of judgment— he needs to clarify what this principle entails and how it operates when human beings face the particular and diverse experience of nature. The first aspect worth emphasizing here is that Kant is using a new conception of "experience" (*Erfahrung*) throughout the third *Critique*. That is to say, we are no longer dealing with the general and transcendental experience described in the *Critique of Pure Reason*, but rather with particular, empirically given, experience. The chief problem in the first *Critique*, at least in regard to experience, was to establish the *a priori* and transcendental conditions for possible experience (i.e., the possible conditions for our knowledge in general). These conditions of possibility are "the universal laws without which nature in general (as an object of the senses) could not be conceived; and these rest on the categories, applied to the formal conditions of all intuition that is possible for us, insofar as it is likewise given to us *a priori*" (V, 183). In other words, the first *Critique* settled the conditions under which experience is possible for us, the *formal* conditions (these universal and general laws) under which nature *in general* can be grounded, i.e., as the object of possible experience. These universal laws of possible experience are applied by the determining power of judgment in its subsuming role and they are "cognized as absolutely necessary" (183). Nevertheless, what is determined by these universal laws is nature *in general* (that is to say, nature as a system of transcendental and *a priori* laws), but not nature *in particular*, that is, nature as a system of empirical laws, nature in its *material* (not only formal) manifestation. Thus, particular experience remains undetermined by the universal-transcendental laws of nature in general, and accordingly a new problem arises, namely, the empirical laws of nature and its articulation into a system, that is to say, how to conceive a system of empirical laws in order to attain an

interconnected experience of nature[32], and how to settle the possibility of our empirical knowledge as such.

These crucial problems trigger the major concern of the third *Critique,* namely, the threatening manifold of the particular, and the boundless empirical laws of nature. It is not incidental that Kant uses expressions such as "infinite multiplicity of empirical laws", "such a great heterogeneity of forms of nature", "labyrinth of the multiplicity of possible empirical particular laws", and so forth, in order to refer to the diversity of empirical laws of nature[33]. Indeed, all of those expressions illustrate a real concern in Kant (a concern that he had anticipated in the Appendix of the first *Critique*, but now it appears stronger and reformulated). Therefore, the possibility for unifying the immense diversity of empirical laws must be established, or at least this will be Kant's task in the KU. As Kant puts it in a quite long but remarkable quote:

> Thus we must think of there being in nature, with regard to its merely empirical laws, a possibility of *infinitely manifold* empirical laws, which as far as our insight goes are nevertheless *contingent (cannot be cognized a priori)*; and with regard to them we judge the unity of nature in accordance with empirical laws and the possibility of the unity of experience (as a system in accordance with empirical laws) as contingent. But since *such a unity must still necessarily be presupposed* and assumed, for otherwise no thoroughgoing interconnection of empirical cognitions into a whole of experience would take place […] the power of judgment must thus assume it as an *a priori* principle for its own use that what is contingent for human insight in the particular (empirical) laws of nature nevertheless contains a *lawful unity*, not fathomable by us but still thinkable, in the combination of its manifold into one experience possible in itself (V, 183-84, my emphasis).

[32] One may even think that this new conception of experience that arises from the KU could jeopardize the strong Kantian conception of experience of the KrV (that is, experience as the system of transcendental laws). But the truth is otherwise: this new notion of experience (i.e., experience as a system by empirical laws) enlarges the limited and certainly "ideal" conception of experience of the first *Critique*, which had left undetermined the particular experience.

[33] In fact, some celebrated Kantian scholars have highlighted this concern in a quite illustrative way. For instance, Zammito (1992) speaks of the "nightmare of particulars"; Zuckert (2007) as the "Threat of diversity"; Butts speaks of the "recalcitrant particulars" (1990]); and Nuzzo (2005) simply as the "labyrinth" of the particular. Zammito is specially clear in described this Kantian concern: "Indeed, each experience could be such that it showed no similarity to any other, so that each would stand in total isolation and consciousness would be 'confronted by a crude, chaotic aggregate totally devoid of system'. Under such conditions, consciousness, though a formal unity, would be faced with a nightmare of particulars, of individual intuitions for which no classificatory empirical concepts could be found" (1992, 160).

Let us break down this quote. First of all, Kant wonders about the possibility of such an immense diversity of the empirical laws of nature, which are, however, absolutely contingent with regard to our understanding (i.e., they cannot be cognized *a priori* unlike the transcendental laws of nature provided by the understanding). Furthermore, the unity of nature in accordance with empirical laws is also judged as contingent. Nevertheless, we need to presuppose some unity of experience as a system in accordance with empirical laws, since otherwise we lose any hope to orient ourselves within this labyrinth of the empirical and particular laws of nature. That is to say, the systematic unity of experience according to interconnected empirical laws of nature is a necessary presupposition, but these laws are, nonetheless, absolutely contingent with respect to our understanding. For that reason, this presupposition of a systematic unity of experience by empirical natural laws is a necessary maxim of the reflective power of judgment (and not of the understanding). Or, in other words, we must presuppose that this immense diversity of empirical and contingent laws of nature can be systematized into more general and universal laws. This necessary presupposition is, therefore, an *a priori* principle (or maxim) of the reflective power of judgment, which provides lawfulness where the understanding only sees contingency (or, in words taken from the first Introduction, which provides a "lawfulness of the contingent as such"[34], [EE XX, 217]). This lawfulness of the contingent is indispensable for our experience of nature, even though it does not come from the transcendental laws of the understanding.

This *a priori* principle of the reflective power of judgment is, therefore, the purposiveness of nature (*Zweckmässigkeit der Natur*). It is by means of the principle of purposiveness that we can expect systematicity for our experience of nature in its empirical laws. But what does the principle of purposiveness mean? According to Kant, an end is the concept of an object insofar as the former contains the ground of the reality of the latter; now the purposiveness of a thing is "the correspondence of a thing with that constitution of things that is possible only in accordance with ends" (V, 180). In §10 of the Aesthetic Judgment, Kant defines the concept of purposiveness as the causality of a concept in relation to its object (V, 220). Accordingly, the *a priori* principle of the reflective power of judgment is the purposiveness of nature in its diversity of empirical laws. Kant adds that by means of this principle nature is represented "as if an

[34] As Nuzzo puts it: "There is a lawfulness (*Gesetzmäßigkeit*) that, essential to experience, cannot be explained in terms of the universal laws of the understanding" (2005, 92).

understanding contained the ground of the unity of the manifold of its empirical laws" (V, 181). That is to say, just as the understanding contains the transcendental laws for the possible experience of nature in general, we can expect by analogy that the power of judgment contains a principle that enables the possibility of thinking a unity of the empirical laws of nature, even in its great diversity of particular data. Moreover, the principle of purposiveness is completely different from practical purposiveness (of both human art and morals), but it is thought of by analogy with that, according to Kant (V, 181)[35].

Now, it is important to emphasize that the principle of *Zweckmäßigkeit* is not only an *a priori* principle of the power of judgment, but also a transcendental principle thereof. In general, a transcendental principle is, for Kant, "one through which the universal *a priori* condition under which alone things can become objects of our cognition at all is represented" (V, 181). For instance, the principle of causality is transcendental, inasmuch as this principle establishes that all alteration of a substance (or a body) must have a cause (as Kant states, in this example we conceive a body by ontological predicates, that is, by pure concepts of the understanding, such as the category of substance). This kind of principles are contrasted with "metaphysical" principles, which are principles that represent *a priori* the condition "under which alone objects whose concept must be given empirically can be further determined *a priori*" (181). For instance, a metaphysical principle would establish that the alteration of a body has an external cause, to the extent that "the empirical concept of a body […] must be made the ground of this proposition, from which […] it can then be understood fully *a priori* that the latter predicate (of motion only through an external cause) applies to the body" (181). This distinction is relevant because it shows why the principle of the purposiveness of nature is a transcendental (and not a metaphysical) principle. Purposiveness is a transcendental principle, according to Kant, because "the concept of the objects insofar as they are thought as standing under this principle is only the pure concept of objects of possible experiential cognition in general, and contains nothing empirical" (181-82). That is to say, by means of this transcendental principle the very *possibility* of the experience of nature (and hence of the empirical cognition of it) as a system of interconnected empirical laws can be thought.

[35] I will return to this point in 5.2.

The concept of "practical" purposiveness, on the contrary, is a metaphysical principle, inasmuch as the concept of a faculty of desire (like human choice, for example) has to be first empirically given in order to conceive its possibility, and hence it does not belong, according to Kant, to the transcendental predicates. However, both *Zweckmäßigkeit der Natur* and practical purposiveness are *a priori* principles, since "the combination of the predicate with the empirical concept of the subject of their judgments requires no further experience, but can be understood entirely *a priori*" (182). Thus, it can be said that this transcendental principle of the reflective power of judgment is *a priori* placed as the basis for the research into nature. As Kant says, this principle tells us neither how nature actually is nor how nature is judged, but rather how nature "ought to be judged" ("*sondern wie geurteilt werden soll*", V, 182) by the subject. This apparently subtle difference is however the crucial point here, because the peculiar principle of the reflective power of judgment is not a constitutive principle that determines nature and its products, but rather a regulative maxim of the power of judgment for judging and reflecting on nature. In other words, it is a necessary and subjective assumption that helps us to make sense of the empirical constitution of nature in its great diversity of forms and laws.

In the First Introduction, the principle of purposiveness is equated to the notion of the "technique of nature" (*Technik der Natur*). Kant states in this first draft of the Introduction that the concept that originally arises from the reflective power of judgment is "nature as art", or more precisely, the "technique of nature" regarding its empirical and particular laws. This concept does not enlarge our empirical knowledge of nature, but rather it is, again, a maxim of reflection in order to observe nature in its diversity and bring this variety of forms into systematic unity. Kant defines the technique of nature as "the causality of nature with regard to the form of its products as ends" (EE, AA XX, 219). As can be seen, the notion of the technique of nature is posed in almost the same terms as the *Zweckmäßigkeit der Natur*, found in the published Introduction. However, and as mentioned above, Kant avoids mentioning the term "technique of nature" in the published Introduction, and instead he replaces it by the principle of the purposiveness of nature (which means, however, almost the same as the concept "technique of nature"). Kant mentions "technique of nature" again in the Teleological Judgment, where he usually uses this term in order to contrast it to the "mechanism of nature", which is the

other way in which the power of judgment reflects on nature and its products[36]. As Kant puts it in the First Introduction:

> With regard to its products as aggregates, nature proceeds mechanically, as mere nature; but with regard to its products as systems, e.g., crystal formations, various shapes of flowers, or the inner structure of plants and animals, it proceeds technically, i.e., as at the same time an art. The distinction between these two ways of judging natural beings is made merely by the reflecting power of judgment (EE, AA XX, 218).

When judging nature and its products, the reflective power of judgment can proceed in accordance with two maxims, namely: i) by the principle of the mechanism of nature, which conceives nature and its products as mere aggregates and by means of efficient causes; and ii) by the maxim of the "technique of nature", which regards nature and some of its products teleologically, that is, as if nature proceeded through the conception of an end, as if it proceeded technically in its process of division and specification. While the concept of the purposiveness of nature just as it is described in the published Introduction is perhaps clearer than the concept of the technique of nature invoked in the First Introduction, Kant does not completely reject the latter term, since it helps one gain a better (and fuller) understanding of the peculiar principle of the reflective power of judgment and how this principle operates when judging nature.

In conclusion, the reflective power of judgment has a peculiar principle of its own: an *a priori* and transcendental principle for seeking out the systematic unity of our experience of nature in the great diversity of its empirical laws. This principle is called "purposiveness of nature", and it is a subjective principle (or maxim) of the reflective power of judgment. That is to say, this principle is not constitutive, as it would be in the determining power of judgment in its subsuming role, but rather it is a subjective guideline for investigating nature in its immense diversity of empirical and particular laws. In other words, this *a priori* principle operates as a law that is prescribed to the reflective power of judgment itself as "heautonomy" (V, 186), i.e., as a type of legislation that is applied to the reflective power of judgment itself and for the sake of its own reflection concerning nature[37]. This kind of law is neither prescribed to nature for

[36] I shall come back to the distinction of mechanism of nature and technique of nature (or the maxim of teleology) in the Chapter 2.

[37] Angelica Nuzzo explains very clearly the kind of legislation that the principle of purposiveness has: "Kant calls this peculiar form of legislation 'heautonomy'. Since judgment can raise claim to an *a priori* legislation of its own, it does have an 'autonomy'. This legislation, however, is not 'objective' as are the

determining a concept of the object nor to freedom in the practical sphere, but only subjectively to the power of judgment itself for the sake of its own activity of reflecting. It is by means of the peculiar principle of the purposiveness of nature that it is possible to think "that nature specifies its universal laws in accordance with the principle of the purposiveness for our faculty of cognition" (186). That is to say, it is by virtue of this principle that we can begin to hope that nature (in its great diversity of forms and specifications) can be represented *as if* (*als ob*) it is commensurable with our faculty of cognition in general. Now, there is another peculiarity of the principle of the purposiveness of nature that is worth mentioning, namely, its immediate relation to the feeling of pleasure and displeasure.

1.3.3. - The feeling of pleasure and displeasure and its relation to the principle of *Zweckmäßigkeit der Natur*

In the section VI of the published Introduction of the KU, whose title is "On the combination of the feeling of pleasure with the concept of the purposiveness of nature", Kant addresses in more details the link between the feeling of pleasure (*Gefühl der Lust*) and the principle of *Zweckmäßigkeit der Natur*[38], which will be fundamental for the development of the third *Critique*. Accordingly, the starting point in this section of the Introduction is the question whether or not there is a necessary and transcendental relation of the following three terms: the principle of purposiveness, the feeling of pleasure and the power of judgment itself. Once answered this fundamental question, the next step is to raise a new question, namely, how this necessary relation is linking with the aesthetic and teleological judgments. Thus, after introducing and explaining the peculiar and *a priori* principle of *Zweckmäßigkeit der Nature,* Kant needs to introduce now the other peculiarity that makes the (reflective) power of judgment worthy of a *critique*: the feeling of pleasure and displeasure as also determined by an *a priori* ground, and the immediate relation of this feeling with the principle of purposiveness.

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legislations of understanding and reason. These refer to concepts of objects or possible actions and first constitute them as what they are (as objects of possible knowledge or free actions). Instead, reflective judgment's legislation is only 'subjective', namely valid for the faculty of judgment insofar as its activity is grounded on a principle a priori" (2005, 175).

[38] However, it can be said that this link is more deeply developed in the next section, where Kant thematizes the formal (aesthetic) purposiveness of nature. Accordingly, I will return to this link again in what follows.

In the First Introduction, Kant defines the feeling of pleasure as "a state of the mind in which a representation is in agreement with itself, as a ground, either merely for preserving this state itself […], or for producing its object" (EE, AA XX, 230-31). He immediately adds that if "it is the former, then the judgment on the given object is an aesthetic judgment of reflection" (XX, 231) Then, in the published Introduction, Kant states that the achievement (*Erreichung*) of every aim or intention (*Absicht*) is necessarily linked to the feeling of pleasure. Now, "if the condition of the former [*die Absicht*] is an *a priori* representation, as in this case a principle for the reflecting power of judgment in general, then the feeling of pleasure is also determined through a ground that is *a priori* and valid for everyone" (V, 187). That is to say, in order to have an *a priori* ground that determines the feeling of pleasure in the representation of any end or aim, the latter neither can have an empirical condition (like the representation of the *agreeable* in the sensation, for instance) nor taking into account the faculty of desire (like the representation of the satisfaction in the *good*). The *a priori* representation that determines this intention is, of course, the necessary assumption that nature is constituted *as if* (*als ob*) it is commensurable (or in agreement) with our cognitive faculties. The feeling that *a priori* arises from the representation of this "commensurability" is the feeling of pleasure[39]. And the principle that makes necessary this assumption of commensurability is the *a priori* principle of purposiveness of nature. As Kant puts it in a certainly beautiful passage:

> [T]he discovered unifiability [*Vereinbarkeit*] of two or more empirically heterogeneous laws of nature under a principle that comprehends them both is the ground of a very noticeable pleasure, often indeed of admiration, even of one which does not cease though one is already sufficiently familiar with its object.[…] It thus requires study to make us attentive to the purposiveness of nature for our understanding in our judging of it, where possible bringing heterogeneous laws of nature under higher though always still empirical ones, so that if we succeed in this accord of such laws for our faculty of cognition, which we regard as merely contingent, pleasure will be felt (V, 187-88).

The finding of empirical laws amongst an immense heterogeneity of particulars; the assumption that nature is specified and ordered in accordance with our very capacity of knowledge; the idea that nature is commensurable with our very way of knowing it; all

[39] As Angelica Nuzzo explains in very straightforward terms: "what we feel pleasure in is the possibility of attributing meaning to the world of experience" (2005, 204). Even though Kant does not use the expression "attributing meaning" for referring to this "commensurability" of nature and our faculties of cognition by means of the principle of purposiveness, I think that the term "meaning" captures this idea quite well (that is to say, it helps us to make more understandable the principle of purposiveness).

of this provokes in the subject an *a priori* and immediate feeling of pleasure. As mentioned above, one of the chief aims of Kant in this *Critique* is to associate (*a priori* and transcendentally) the principle of *Zweckmäßigkeit der Natur* with the feeling of pleasure, since it is one of the main reasons that can justify a *critique* to the power of judgment. However, Kant stresses that the link between the principle of purposiveness and the feeling of pleasure is necessarily settled in aesthetic judgments, since there is an immediate relation between both terms (and "which is precisely what is puzzling in the principle of the power of judgment and what makes a special division for this faculty necessary in the critique", [V, 169]). For that reason, in what follows I shall introduce the Aesthetic Judgment in the light of subjective purposiveness and in the light of the necessary link with the feeling of pleasure and displeasure.

1.3.4 The subjective purposiveness of nature: Aesthetic Judgment and the feeling of pleasure and displeasure

In section VII of the published Introduction, Kant introduces the aesthetic representation of the principle of the purposiveness of nature by stating that that which is merely subjective in any representation of an object is what "constitutes its relation to the subject" (KU, AA V, 189), and not to the object. On the other hand, what constitutes a relation to the object in the representation (in order to determine the object for cognition) is the logical representation or logical validity. And then Kant states: "in the cognition of an object of the senses both relations are present together" (V, 189). Nevertheless, Kant underlines the fact that what is subjective in a representation but nonetheless "cannot become an element of cognition" ("although it can well be the effect of some cognition") is the feeling of pleasure connected to this representation (V, 189). The purposiveness that precedes any cognition of an object, "which is immediately connected with it even without wanting to use the representation of it for a cognition, is the subjective aspect of it that cannot become an element of cognition at all" (189). That is to say, the subjective-formal purposiveness of a thing is the representation that both precedes the cognition of the object (inasmuch as it does not consider the concept of the object at all) and that is immediately connected to the feeling of pleasure. This kind of representation is called, according to Kant, an "aesthetic representation of purposiveness" (189).

The key aspect of the aesthetic representation of purposiveness is, therefore, the feeling of pleasure that is connected with the apprehension of the mere form of an object given to intuition, inasmuch as this representation precedes any determination of the concept of the aforementioned object. That is to say, the aesthetic representation of purposiveness is only referred to the subject (to the feeling of pleasure that the subject experiments) and not to the cognition of the object by the determination of a concept. As Kant explains:

> Such a judgment is an aesthetic judgment on the purposiveness of the object, which is not grounded on any available concept of the object and does not furnish one. That object the form of which (not the material aspect of its representation, as sensation) in mere reflection on it (without any intention of acquiring a concept from it) is judged as the ground of a pleasure in the representation of such an object […]. The object is then called beautiful; and the faculty for judging through such a pleasure (consequently also with universal validity) is called taste (V, 190).

Accordingly, taste is the faculty for judging the beautiful through the feeling of pleasure. The ground of this pleasure is placed on the apprehension of the mere form of the object, not for a determinate cognition of it, but for reflection in general. The important point to bear in mind here is, therefore, that the feeling of pleasure is not grounded on a sensation (i.e., on the effect of the material aspect of the representation), nor on "any intention of acquiring a concept from" a particular representation. It is rather the apprehension of the mere form of the object that produces the feeling of pleasure in the subject when judging the beautiful[40]. That is the reason why Kant will call the subjective purposiveness of the aesthetic judgment a purposiveness without an end (*Zweckmäßigkeit ohne Zweck)* (V, 220), since the very ground of such judgments is the mere *form* of the purposiveness of the object (that is to say, the ground of such purposiveness is neither a concept nor a determined end[41]).

[40] The aesthetic judgment refers to the beautiful and also to the sublime. Accordingly, the aesthetic power of judgment is divided into both types of aesthetic judgments, that is, the analytic of the beautiful and the analytic of the sublime. Besides, the aesthetic power of judgment is susceptible to a "deduction" of its *a priori* principle of formal purposiveness, at least regarding to the judgment of taste (i.e., the faculty for judging the beautiful). Finally, the Aesthetic Power of Judgment has a Dialectic just as the Teleological Power of Judgment has its own Dialectic. Nevertheless, as this work is devoted to the study of the Teleological Judgment and the role of analogy for forming the very concept of natural end, I have to suppress the analysis of the first part of the KU (i.e., the Aesthetic Power of Judgment).

[41] As Kant explains in paragraph 10 of the Aesthetic Power of Judgment: "Purposiveness can thus exist without an end, insofar as we do not place the causes of this form in a will, but can still make the explanation of its possibility conceivable to ourselves only by deriving it from a will. Now we do not always necessarily

However, even though no cognition of the object takes place in this judgment, there is a free accordance between the faculties of imagination ("as the faculty of *a priori* intuitions") and the understanding (as the faculty of concepts) in the apprehension of the form of the object. As Angelica Nuzzo clearly puts it: "the form of the object suits the assignments of our cognitive faculties –namely to 'unify the intuition with concepts in a *cognition in general*'- and is seen as purposive with regard to this task" (2005, 238). That is to say, the requirements for *cognition in general* are met in the aesthetic judgment, since there is a given object whose form is apprehended in free agreement with imagination and the understanding. Moreover, the aesthetic judgment displays the *a priori* principle of purposiveness in its maximal originality, insofar as it proves "an immediate relation of this faculty to the feeling of pleasure or displeasure in accordance with some *a priori* principle" (V, 169). For that very reason, the aesthetic faculty of judgment is the most important part within a critique of the power of judgment, since this judgment serves as the model not only for displaying the *a priori* principle of *Zweckmäßigkeit*, but also for highlighting the intimate relation between the reflective power of judgment and the feeling of pleasure and displeasure in the subject (an aspect that will be crucial for Kant's attempt "for mediating the connection of the domain of the concept of nature with the concept of freedom in its consequences"[42] [V, 196]).

1.3.5. - The objective purposiveness of nature: Teleological Judgment

As mentioned before, what constitutes the essential part of a possible critique of the power of judgment is the aesthetic judgment in its *a priori* principle of the formal-subjective purposiveness of nature and in its immediate relation to the feeling of pleasure. The teleological judgment, on the other hand, has no immediate relation to the feeling of pleasure, and its principle is not completely one of its own. In fact, the aesthetic faculty of judgment serves to "prepare" (as a sort of "background") the peculiar principle of the teleological judgment in order to be applied. The "Critique of the Teleological Power of

need to have insight through reason (concerning its possibility) into what we observe. Thus we can at least observe a purposiveness concerning form, even without basing it in an end (as the matter of the *nexus finalis*), and notice it in objects, although in no other way than by reflection" (V, 220). The notion of purposiveness without an end is pretty crucial for the understanding of the Aesthetic Judgment, and it is one of the key elements that makes the Kantian account so novel regarding aesthetic reflection. For an interesting analysis of this notion, see Zuckert (2007).

[42] I will return to this point at the end of this section.

Judgment", therefore, is not essentially bound to a critique of judgment, but, as Kant says, it constitutes a "special" part of the critique. For that reason, in what follows, I will introduce the objective purposiveness of nature and explain in what the teleological judgment consists[43]. Moreover, in this part of the chapter, I will carry out a brief reflection on the status of the teleological judgment in light of a critique of the power of judgment.

Kant introduces the Teleological Judgment by differentiating two representations of the ground of purposiveness, namely: i) a merely subjective ground of purposiveness, or ii) an objective (or logical) ground, "as a correspondence of its form with the possibility of the thing itself, in accordance with a concept of it which precedes and contains the ground of this form" (KU, AA V, 192). As already seen in the previous section of the Introduction, it is clear that the representation of a subjective ground corresponds to the formal (aesthetic) purposiveness, which lies in the immediate pleasure that the subject feels thanks to the very form of the (beautiful) object. The representation of objective purposiveness (*objektiven Zweckmäßigkeit*), in turn, has nothing to do with the feeling of pleasure (at least, there is no *immediate* relation to it), because there is a relation to the understanding inasmuch as there is "a determinate cognition of the object under a given concept" (V, 192). That is to say, unlike the formal-aesthetic purposiveness of nature, the objective purposiveness of nature presupposes a concept of the object in order to reflect on it (not for determining it). In other words, the representation of this purposiveness is mediated by a concept, and for that very reason there is no immediate relation to the feeling of pleasure. In the first Introduction, Kant says that the judgment based on the objective purposiveness of nature, which is considered a ground of the very possibility of some natural products, is called teleological judgment (XX, 232). And the natural products that are judged by teleological considerations are called natural ends (*Naturzwecke*).

The teleological judgment, therefore, judges nature and some of its products (such as organized beings) in view of some end (a concept that only has objective validity in the scope of practical reason, in both its technical and moral sense[44]) as the very ground of their internal possibility. As Kant states in the first Introduction:

[43] A detailed analysis of the Teleological Judgment can be found in the chapter 2 of this dissertation.
[44] I shall go deeper into this distinction in Chapter 5.

> But to represent nature as technical, like a reason (and so to attribute purposiveness and even ends to nature), is a special concept, which we cannot encounter in experience and which only the power of judgment introduces into its reflection on objects, in order to treat experience, following its direction, in accordance with special laws, namely those of the possibility of a system (XX, 234-35).

That is to say, it is by means of the teleological judgment that we can judge some natural products (organized beings) as if they were natural ends, which allows us to conceive something as organized and self-organizing, features which organic beings seem to possess and which cannot be fully explained by merely mechanical considerations (that is, by means of the mere concept of nature in general, as it was defined in the *Critique of Pure Reason*). The teleological judgment, inasmuch as it is one of the procedures of reflection, serves only as a subjective guideline in order to reflect on some things in nature, but it does not determine these natural products at all. Accordingly, for Kant the admission of teleological judgments in our reflection on some natural products is indispensable, since it is the only way in which we can make any sense of their internal possibility and orient our investigation of nature and its organized products.

However, as mentioned before, the essential part of a critique of the power of judgment is the study of the formal-subjective purposiveness present in the aesthetic judgment. The reason for this preponderance of the aesthetic judgment over the teleological one in the light of a critique is that the aesthetic faculty of judgment "alone contains a principle that the power of judgment lays at the basis of its reflection on nature entirely *a priori*, namely that of a formal purposiveness of nature in accordance with its particular (empirical) laws" (V, 193). This reason, added to the immediate relation to the feeling of pleasure, makes the aesthetic judgment the essential part of any possible critique of the power of judgment. For Kant, the formal purposiveness of nature is a principle absolutely *a priori* and, in fact, it "prepares" the principle of the objective purposiveness of nature in the teleological judgment. Therefore, the aesthetic judgment (as based on subjective purposiveness) is, according to Kant, a "special faculty for judging things in accordance with a rule but not in accordance with concepts" (V, 194). The teleological judgment, in turn, is not a special faculty in itself, but it constitutes a "special part of the critique" ("*einen besonderen Teil der Kritik*", 194), at least with respect to its peculiar principle (but in regard to its application it belongs to theoretical philosophy). It is evident that the status of the teleological judgment is merely secondary in light of a

critique of judgment, at least according to the lines just quoted[45]. Nevertheless, the teleological judgment is, according to Kant, "the reflective power of judgment in general" (V, 194), insofar as it applies the *a priori* principle of purposiveness in order to reflect on some natural products (such as organic beings) through the concept of an end, there where the mechanical explanation of nature falls short in providing an account of such products.

At this point of the argument, I can sum up and differentiate aesthetic and teleological judgments as follows: i) the former is based on subjective purposiveness of nature, whereas the latter is based on objective (logical) purposiveness of nature; ii) the aesthetic judgment is concerned with the apprehension of the mere form of the object and it does not presuppose (or consider) the concept of the object at all (that is to say, the reflection that this judgment carries out precedes the very concept of the object). Teleological judgment, on the other hand, presupposes the concept of the object, because it is concerned with the cognition of a particular object; and finally, iii) the aesthetic representation of purposiveness is immediately connected with the feeling of pleasure and displeasure, whereas the logical representation of purposiveness has nothing to do with the feeling of pleasure.

1.3.6. - The KU's purpose from a systematic point of view

The last section of the Introduction of the third *Critique* is devoted to placing the power of judgment in relation to the higher faculties of cognition, such as the understanding and reason, and to posing the question concerning the possible mediating role of the power of judgment. That is to say, the purpose of this part of the Introduction is to establish the possibility of thinking a possible "bridge" that mediates between the concepts of nature

[45] Angelica Nuzzo explains this idea as follows: "the notion of an objective purposiveness of nature is neither an original a priori principle nor an empirical concept. It is rather a concept that reason uses 'in analogy' with the aesthetic subjective ground that makes possible the connection of the representations in us" (2005, 330). And Schrader explains it also in straightforward terms: "the principle of teleological judgment, Kant asserts, belongs to the faculty of cognition. It not only is not a special faculty but has no special a priori principle of its own. The whole exposition of teleological judgment stands in the most intimate connection with the *Critique of Pure Reason*. In so far as teleological judgment is a moment of reflective and, hence, cognitive judgment in general, it cannot mediate between the faculties of cognition and desire" (1953, 205). As clear as both comments are, I still think that there is something missing in the principle of objective purposiveness of the teleological judgment: something that Kant himself overlooks but that appears in the examples he gives in order to clarify the very principle of purposiveness. I think that Kant has, at the very least, an unresolved (problematic and ambivalent) position concerning the status of the teleological judgment throughout the third *Critique*.

and freedom, and hence the possibility of thinking all our higher faculties of the soul (*Seelenvermögen*) in their systematic unity. Unfortunately, this last crucial problem is only vaguely resolved in this four-page section of the Introduction[46]. At any rate, let us summarize how Kant addresses this last problem.

The last section of the published Introduction is called "On the connection of the legislations of understanding and reason through the power of judgment", since it addresses how the connection between the scopes of nature and freedom can be established, and how the power of judgment mediates in the aforementioned connection. Kant reminds us that the understanding legislates *a priori* the sphere of nature (as the world of appearances), whereas reason legislates *a priori* the sphere of freedom (as the supersensible sphere of human beings expressed in moral action). Both spheres remain absolutely separated, since there is a "great chasm that separates the supersensible from the appearances" (V, 195). That is to say, the concept of nature has nothing to do with the determination of the moral law (as the practical law of freedom); likewise the concept of freedom does not determine our theoretical knowledge of nature as the world of appearances. Nevertheless, Kant states that the "effects" of our freedom (or our causality through freedom) take place in the empirical world of nature. Now, the effect of the concept of freedom in nature is the "final end" (*Endzweck*), "which (or its appearance in the sensible world) should exist, for which the condition of its possibility in nature (in the nature of the subject as a sensible being, that is, as a human being) is presupposed" (V, 196). According to Kant, the condition for the possibility of the final end in nature is presupposed by the power of judgment by means of its *a priori* principle of the purposiveness of nature, which serves as a mediating concept between nature and freedom. In other words, it is due to the principle of purposiveness that the possibility of a final end in nature is cognized (*erkannt*). Accordingly, a sort of bridge between nature and freedom can be thought of along the following lines: i) the understanding determines nature in accordance with its transcendental laws and it is cognized by us only as

[46]It is important to remark that there is no other place in the Introduction where this last task is especially addressed, so one may legitimately state that Kant does not elaborate this crucial aspect of his last *Critique* further. Throughout the Aesthetic Judgment and in the Methodology of the Teleological Judgment, Kant addresses this problem further, but the possible bridge between nature and freedom remains uncertain in the end, because it is only established in a subjective, certainly artificial manner. Unfortunately, I cannot further develop this point here, because it escapes the scope of this investigation. Anyway, in chapter 2 of this dissertation, I shall return to this problem in light of the Methodology of the Teleological Judgment, where Kant carries out an attempt to establish a bridge between the scopes of nature and freedom (but this attempt is established in view of a different problem—i.e., the question of the methodological role of teleology for our research into nature—that leaves aside the question of our higher faculties of cognition).

appearance, but at the same time, a supersensible substratum is recognized, "but it [the understanding] leaves this entirely undetermined" (196); on the other hand, ii) the power of judgment, by means of its peculiar principle of the purposiveness of nature, provides "determinability" (*Bestimmbarkeit*) to this supersensible substratum; nevertheless, this substratum only acquires determination (*Bestimmung*) by iii) reason, through the moral-practical law. However, it can be seen that "the power of judgment makes possible the transition from the domain of the concept of nature to that of the concept of freedom" (196), since it supplies the "determinability" for this supersensible substratum of nature (that is to say, it provides the *capacity* for being determined then by reason through the moral law), which had remained undetermined by the transcendental laws of nature provided by the understanding.

Kant ends the Introduction (both the first and published introduction) by overviewing our higher faculties of the soul (*Seelenvermögen*) in relation to their systematic unity. Kant introduces a "table" which contains these faculties divided into the faculties of the mind (*Vermögen des Gemüts*), e.g., the faculty of cognition, feeling of pleasure and displeasure, and faculty of desire). These faculties of the mind are each divided into their respective faculties of cognition (e.g., the understanding, the power of judgment, and reason); their respective *a priori* principles (e.g., lawfulness, purposiveness, and final end); and their respective application sphere (e.g., nature, art, and freedom). Even though each of these faculties of the mind grounds their own *a priori* principles (which are applied to different spheres), philosophy is only divided into two parts: theoretical and practical. Each of which grounds two domains (*Gebiete*): nature and freedom. These, in turn, ground two radically different worlds: the sensible and the supersensible. Thus, the power of judgment does not form a third part in the division of philosophy, but rather it remains a middle-term (*Mittelglied*) that mediates between the separated spheres of nature and freedom. The way in which the power of judgment mediates between nature and freedom is through the principle of the purposiveness of nature, more particularly, in the necessary and immediate link of this latter principle with the feeling of pleasure in the aesthetic judgment. As Kant explains:

> The spontaneity in the play of the faculties of cognition, the agreement of which contains the ground of this pleasure, makes that concept [purposiveness of nature] suitable for mediating the connection of the domain of the concept of nature with the concept of

> freedom in its consequences, in that the latter at the same time promotes the receptivity of the mind for the moral feeling (V, 197).

Accordingly, the power of judgment is not only a middle-term that is placed between the understanding and reason, but it also has the potentiality—due to this in-between placement—of mediating, by means of its *a priori* principle, between these two radically separate concepts of nature and freedom. The principle of the power of judgment provides us—albeit only subjectively—with a tool—which only has objective validity in the scope of practical philosophy (i.e., the concept of "Zweck")—to investigate nature in its empirical, particular manifestation. This principle allows us to judge nature *as if* it is commensurable with our own way of knowing it, which provokes an immediate connection with the feeling of pleasure. Finally, this immediate connection between the purposiveness of nature and the feeling of pleasure "promotes", in Kant's words, "the receptivity of the mind for the moral feeling"[47]. As mentioned in the end of the Preface of the KU, this third *Critique* closes the critical project—or the "critical enterprise" —as a whole, hence Kant's announcement that he will "proceed without hindrance to the doctrinal part" (V, 170).

In this chapter, I have introduced the chief topic and problem of the third *Critique*. In order to do so, I have mainly focused the analysis on the reconstruction of the Introduction's argument (since, as is well known, Kant usually lays out his main philosophical arguments, concepts and strategies in his introductions, before unfolding the particular topics of each section of the work). The *Critique of the Power of Judgment* is composed of two main parts: the Critique of the Aesthetic Power of Judgment and the "Critique of the Teleological Power of Judgment". In what follows, I shall focus my analysis on the "Critique of the Teleological Power of Judgment", which corresponds to the second part of the KU. Accordingly, the following chapter will be a reconstruction and analysis of the Teleological Judgment, since it is necessary to have, first, a clear panorama of what a teleological judgment is about, before tackling the main problem of this dissertation.

[47] This last point is further developed in the Aesthetic Judgment (both the beautiful and the sublime). The Teleological Judgment, on the other hand, has a sort of promotion of the moral, at least in regard to what is expressed in the Methodology of the Teleological Judgment. This promotion is not related to the "moral feeling", but rather to the kind of rational belief that can be inferred due to "ethicotheology", namely, the moral proof of the existence of God. I will thematize it in the chapter 2 of this work.

Chapter 2: Kant's "Critique of the Teleological Power of Judgment"

Chapter 1 has presented an introductory overview of the *Critique of the Power of Judgment*, especially by emphasizing those aspects underlined by Kant in the Introduction of the work (aspects that are crucial for the understanding of the whole third *Critique*). Moreover, the previous chapter has briefly introduced the importance of the admission of the objective purposiveness of nature (*objektiven Zweckmäßigkeit der Natur*) for the construction of our teleological judgments. Our teleological judgments are based, according to Kant, on objective purposiveness; but they are not only based on objective purposiveness, but most precisely on objective-material and *internal* purposiveness (*innere Zweckmäßigkeit*). The only way in which we can legitimately justify the use of teleological judgments on nature is by means of objective internal purposiveness, which tells us something about the very *possibility* of some products of nature (KU, AA V, 360), at least in the way in which we judge (or reflect on) them. In chapter 1, I explained the very principle of the *Zweckmäßigkeit der Natur* and I also addressed the distinction between the subjective and objective purposiveness of nature. In this chapter, therefore, I will address in more detail what I have already sketched out in the section 1.3.4 of the Chapter 1, namely, Kant's "Critique of the Teleological Power of Judgment" as a whole.

That is to say, in this chapter I shall describe, explain and analyze Kant's "Critique of the Teleological Power of Judgment" and all those aspects that are necessary to reconstruct the main argument of this Section of the third *Critique*. As I have already said in the Introduction, this Chapter (together with the first one) is mainly an introduction to the chief topic of my dissertation, in order to introduce and systematize the main concepts that are at stake in the "Critique of the Teleological Power of Judgment", which are fundamental for understanding the argument of this dissertation as well as the following chapters.

In order to do so, this chapter is divided in six sections. The first one (2.1) is a brief explanation of why relative purposiveness does not justify, according to Kant, the use of teleological judgments about nature. This section is relevant for understanding the fact that not every purposive relation of natural things can be ascribed as teleological, because a mere relation of usefulness between natural things does not authorize us to

judge them as natural ends. The second section (2.2) is about the "mechanical inexplicability" of living organisms (seen as natural ends). According to Kant, the mechanical explanation of nature is insufficient for giving a proper account of organized being (*das organische Wesen*), because this kind of explanation reduces a natural whole to a mere aggregate of parts and their moving forces. Therefore, we need to appeal to another principle (a teleological one) in order to even start thinking something as *organized* and *self-organizing*, which are the main features that a living being seems to exhibit. Nevertheless, before describing and analyzing the concept of *Naturzweck*, it is necessary to briefly introduce the distinction between the concepts of end (*Zweck*), purposiveness (*Zweckmäßigkeit*), and natural end (*Naturzweck*), which will be done in the third section (2.3).

The fourth section (2.4) is devoted to defining and describing what an organized being (judged as *Naturzweck*) is. This section is basically a description and systematization of the main features and peculiarities of a *Naturzweck*, so this characterization will be crucial for the development of the argument of the following chapters. Nevertheless, this section will leave aside the analogies invoked by Kant when he describes the concept of *Naturzweck*, since they will be thoroughly addressed and systematized in the last two chapters. Accordingly, this fourth section will be a preliminary approach to the notion of natural end (*Naturzweck*) rather than a final account of it. The fifth section (2.5) is about the Antinomy of the Teleological Judgment, which is fundamental for understanding why the teleological maxim is unavoidable when our human and discursive understanding investigates nature. I will try to synthesize in a straightforward way this rather obscure passage of the "Critique of the Teleological Power of Judgment", in order to clarify the main aspects of Kant's argument. Finally, the last section (2.6) is devoted to the Methodology of the Teleological Judgment, which is the last part of Kant's third *Critique*. Even though the main topic of the Methodology does not play a major role to the very argument of this dissertation, this passage (or Appendix) is unavoidable when sketching out the Teleological Judgment as a whole. In short, this chapter will provide a general overview of Kant's "Critique of the Teleological Power of Judgment", of its main arguments and discussions, as well as its fundamental philosophical concepts and issues.

2.1. The relative-external purposiveness of nature does not suffice to justify teleological judgments

At the beginning of §63 of the third *Critique*, Kant asserts that experience itself "leads our power of judgment to the concept of an objective and material purposiveness [*objektiven und materialen Zweckmäßigkeit*], i.e., to the concept of an end of nature, only if there is a relation of the cause to the effect to be judged" (KU, AA V, 366). Accordingly, we must ask in which cases we encounter a thing that is judged through the concept of material-objective purposiveness, or in which cases a natural thing seems to fit the idea of objective-material purposiveness. As Kant explains in §62, in objective-formal purposiveness there is no relation of the cause to the effect (i.e., "subsuming the idea of the effect under the causality of its cause as the underlying condition of the possibility of the former", 367), so we cannot justify the use of teleological judgments in geometrical figures[48], even though these figures display an objective and intellectual purposiveness. Geometrical figures have certainly objective-formal purposiveness, but their purposiveness "does not make the concept of the object itself possible" (363). That is to say, geometrical figures have objective purposiveness, but it is merely formal, and not material. Now, the representation of the effect under the causality of its cause as the determining ground of the very possibility of the former can happen in two ways: "either if we regard the effect immediately as a product of art or if we regard it only as material for the art of other possible natural beings, thus if we regard it either as an end or as a means for the purposive use of other causes" (367). The latter purposiveness is called by Kant 'usefulness' (for human beings) as well as 'advantageousness' (for every other natural being); either way, both usefulness and advantageousness are relative-external purposiveness (*äußere Zweckmäßigkeit*). The effect regarded immediately as a product of art is, in turn, an absolute-internal purposiveness (*innere Zweckmäßigkeit*). According to Kant, only internal-material purposiveness can justify teleological judgments in nature, whilst external-material purposiveness does not meet the necessary requirements to legitimately justify such judgments. Let us see why.

[48] As Kant explains it: "The purposiveness here [geometrical figures] is evidently objective and intellectual, not, however, merely subjective and aesthetic. For it expresses the suitability of the figure for the generation of many shapes aimed at purposes, and is cognized through reason. But the purposiveness still does not make the concept of the object itself possible, i.e., it is not regarded as possible merely with respect to this use" (KU, AA V, 363). After stating this, Kant rejects that formal-objective purposiveness justifies any kind of teleological judgments.

Kant provides a number of examples of relative ends (*relativen Zwecke*) in nature: rivers that carry with them fertile soil for the growth of plants; the advantages of sandy soil for pine trees; the grass for cattle, sheep, horses, and any kind of herbivores; herbivores that serve as food to carnivorous animals, and so forth (367-68). It is quite clear that in these examples there is a means-ends relation based on the benefit between living organisms. Even though this kind of relative-purposive relation between natural products "gives hypothetical indications of natural ends" (369), it does not authorize an absolute teleological judgment[49]. We cannot authorize absolute teleological judgments by appealing to mere relations of benefit because this kind of relation suggests contingent purposiveness, that is, external purposiveness. As Kant explains:

> Hence the objective purposiveness which is grounded on advantageousness is not an objective purposiveness of the things in themselves, as if the sand in itself, as an effect of its cause, the sea, could not be comprehended without ascribing a purpose to the latter and without considering the effect, namely the sand, as a work of art. It is a merely relative purposiveness, contingent in the thing itself to which it is ascribed; and although in the examples we have given the species of grasses themselves are to be judged as organized products of nature, hence as rich in art, nevertheless in relation to the animals which they nourish they are to be regarded as mere raw materials (KU, AA V, 368).

The kind of objective purposiveness that is based on a mere relation of benefit does not justify teleological judgments, because the means-ends relation is merely contingent to the thing itself, and it is not immanent or internal to it. A merely contingent means-ends relation cannot ground teleological judgments of nature, since for justifying such judgments we need to appeal to an *absolute* purposive relation in the thing (that is to say, purposiveness must be internal and necessary to the natural product instead of external to it)[50]. Even though such natural things are organized beings and, as such, can be called natural ends (*Naturzwecke*), they are only relative ends when we regard them in terms of their mere relation of benefit. Accordingly, advantageousness or usefulness cannot authorize us to judge natural products as *Naturzwecke* properly speaking. To do so, we need to judge these natural products as if they had an *internal* purposiveness, as if they

[49] As Kreines clearly points out: "[Kant] provide[s] an argument to justify the claim that mere relations of benefit themselves fall short of grounds to judge nature in teleological terms, or to consider something to be a Naturzweck." (2005, 277 note).

[50] As Cassirer explains: "For even if we assumed that we had proved an individual phenomenon of nature or nature as a whole to be necessarily for the sake of another and teleologically constrained, what is our guarantee of the necessity of this other?" (1981, 339).

had a necessary purposiveness and not just a contingent one. In section 2.4, I will return to this point, since it is necessary to analyze, first, the limits of mechanical explanation of nature.

2.2. - Mechanical explanation of nature and its limits in the third *Critique*: a brief account

In order to justify introducing teleological judgments to the investigation into nature, Kant needs to show not only that we judge nature as if there were an objective-internal purposiveness (albeit as a regulative-subjective assumption), but also that the way in which we can *explain*[51] these products is insufficient for fully grasping the peculiarities that some natural products seem to exhibit. The only way in which we can explain nature and its products is, according to Kant, by means of *mechanical* explanations. However, this kind of explanation has its limitations regarding some natural products such as living beings. Accordingly, it is necessary to clarify, in the first place, what a mechanical explanation of nature is; and, in the second place, why this kind of explanation does not suffice for accounting living organisms.

In his early, pre-critical work *Universal Natural History and Theory of Heaven* (*Allgemeine Naturgeschichte und Theorie des Himmels*, 1755), Kant states that it would be more plausible to understand the arrangements and constitution of the whole universe than the creation of the simplest living organism—like a blade of grass or a caterpillar, to use Kant's instances—in merely mechanical terms.

> It seems to me that in a certain sense one could say here without being presumptuous: Give me matter and I will build a world out of it, that is, give me matter and I will show you how a world is to come into being out of it. Because if matter endowed with an essential attractive force is present, then it is not difficult to determine those causes that can have contributed to the arrangement of the world system, viewed on the large scale. [...] But can we claim such advantages about the most insignificant plant or insect? Are

[51] "To explain" something or "explanation" (*Erklärung*) are technical words for Kant, so we have to use them accordingly. For Kant, to explain something "means to derive from a principle, which one must therefore cognize distinctly and be able to provide" (KU, AA V, 412). As Kreines clearly puts it: "Explaining something must always involve some way of getting at why it is as it is, or why it happens as it does—some way of getting at the real underlying causes or determining factors" (2005, 272). For enlighten accounts of "explanation" in Kant, see Kreines (2005), and Van Den Berg (2014).

> we in a position to say: Give me matter and I will show you how a caterpillar can be created? Do we not get stuck at the first step due to ignorance about the true inner nature of the object and the complexity of the diversity contained in it? It should therefore not be thought strange if I dare to say that we will understand the formation of all the heavenly bodies, the cause of their motion, in short, the origin of the whole present constitution of the universe sooner than the creation of a single plant or caterpillar becomes clearly and completely known on mechanical grounds (*Allgemeine Naturgeschichte*, AA I, 230).

This quotation is somewhat curious, not just because in this work Kant was to some extent quite committed to the mechanistic explanation of the universe, but also because this passage is similar enough to the following words taken from the Antinomy of the Teleological Power of Judgment (at least regarding mechanical explanation of living organisms):

> For it is quite certain that we can never adequately come to know the organized beings and their internal possibility in accordance with merely mechanical principles of nature, let alone explain them; and indeed this is so certain that we can boldly say that it would be absurd for humans even to make such an attempt or to hope that there may yet arise a Newton who could make comprehensible even the generation of a blade of grass according to natural laws that no intention has ordered; rather, we must absolutely deny this insight to human beings (KU, AA V, 400).

Despite the notorious changes Kantian philosophy underwent in its transition to the Critical period, we can notice the fact that, with regard to the mechanistic explanation of organisms, this assertion remains the same in both periods. That is to say, Kant thinks (and actually asserts with certainty) that living organisms (even the simplest ones) are mechanically inexplicable, no matter how far mechanical explanation can be developed.

In the third *Critique*, the term "mechanism" appears in different names, senses and contexts[52], and Kant does not give us a clear and unified definition of what he understands by mechanical explanation. Nonetheless, we can understand this last in a

[52]The term "mechanism" or "mechanical" appears throughout the third *Critique* in different ways, for instance, as mechanical in opposition to the technique of nature; mechanism as opposed to organism; mechanism of matter, mechanism of nature, blind mechanism; mechanical laws, mechanical causes, etc. For an accurate account of the term "mechanism" throughout Kant's writings and the third Critique, see Ginsborg (2001).

broad (and provisory) sense, namely, as a non-teleological causality[53]. This latter sense, in addition to being broader, is closer to the main aim of the "Critique of the Teleological Power of Judgment"—in short, to address the question: how can we understand some kind of natural products, such as organic beings, when the mechanical-physical explanation of them seems to be insufficient to give a satisfactory answer about their arrangements and internal structure? How can we explain these natural products, when their form and internal constitution seem to be completely contingent with respect to mechanical laws of nature?

Throughout the "Critique of the Teleological Power of Judgment", Kant states that the explanation by efficient causes is the mechanical explanation of nature (KU, AA V, 390, 417). Nevertheless, equating the concept of mechanism with mere efficient causes does not differ from the concept of "mechanism of nature" as it is described in the first and second *Critiques*, that is, "mechanism of nature" as a synonym of natural causation.[54] Hannah Ginsborg states that this sense of mechanism is derived from the principle of causality just as it is defined in the Second Analogy of the first *Critique*: "Kant identifies the mechanism of nature with nature's conformity to the causal principle established in the Second Analogy" (Ginsborg 2001, 239). In the Second Analogy of Experience, Kant explains the principle of temporal sequence by the law of causality, which means the conformity of nature to the causal principle. The Second Analogy establishes that "[a]ll alterations occur in accordance with the law of the connection of cause and effect" (KrV B 232). For Kant, all alteration and succession of the appearances must be under the law of causality, since without this law the experience itself cannot be enabled. Kant goes even further when arguing that the objects of experience can only be possible according

[53] This classification not only has textual support within the third *Critique*, but also some commentators agree with it. See, for instance, Ginsborg (2001), Allison (2003), McLaughlin (1990, 2003), Lenoir (1983). Allison, for example, points out that the concept of mechanism in the Teleological Judgment "encompasses any mode of causality that operates non-purposively" (Allison 2003, 222) or, in other words, that does not operate teleologically.

[54] McLaughlin establishes an accurate account of the equation of natural causation with mechanism of nature: "[t]he term 'mechanism' plays no relevant role in the first edition of the *Critique of Pure Reason* (1781); it occurs occasionally but only in the sense of "machine" or 'system'. In the presentation of the antinomy of freedom, for instance, it is not used at all. The terms 'mechanism' and 'causality' are neither equated nor distinguished. Kant introduced the equation in later writings and used it systematically. In the new preface to the second edition of the *Critique of Pure Reason* (1787) Kant recapitulates the Third Antinomy as an opposition between freedom and the "mechanism of nature" (Bxxvii-xxx). And in the *Critique of Practical Reason* (1788) he almost always says "mechanism" when he means natural causality. Thus, it could be objected, if we want to see a development in Kant's thought during the 1780's, then this development is towards a systematic identification of mechanism and causality and not towards their differentiation" (McLaughlin 1990, 154-55).

to the law of causality, that is, it is only through the causal principle that an object can be constituted as an object properly speaking. Now, what does the principle of causality establish? This principle states that:

> [e]very apprehension of an occurrence is therefore a perception that follows another one. […] I also note that, if in the case of an appearance that contains a happening I call the preceding state of perception A and the following one B, then B can only follow A in apprehension, but the perception A cannot follow but only precede B (KrV A 192/ B 237).

Kant emphasizes that if there is an occurrence that follows another one, this latter occurrence necessarily precedes the former one, and this relation is established in accordance with a rule that provides necessity to the sequence of the appearances[55]. That is to say, the appearances in their succession are always determined by a precedent state, by a necessary rule of the understanding, which is called the law of causality. Only by this law is it possible to accomplish an experience of something that *happens*[56].

In the Analytic of the second *Critique*, Kant explicitly equates the terms causality and mechanism of nature: "all necessity of events in time according to the natural law of causality can also be called the mechanism of nature even though one does not mean by this that things that are subject to it must be actual material machines" (KpV, AA V, 97). The mechanism of nature is, therefore, the way in which the objects of experience are determined by the law of causality and gain thus objective validity[57]. All the objects of experience are determined by the mechanism of nature, that is, by the concatenation of

[55] "This rule for determining something with respect to its temporal sequence, however, is that in what precedes, the condition is to be encountered under which the occurrence always (i.e., necessarily) follows. Thus the principle of sufficient reason is the ground of possible experience, namely the objective cognition of appearances with regard their relation in the successive series of time" (KrV A 201/ B 246). In the *Groundwork of the metaphysics of morals*, Kant provides a clearer and more accurate definition of causality: "the concept of causality carries with it that of laws in accordance with which must be posited, through that which we call a cause, something else, namely its result" (GMS, AA IV, 446). Or as Kant explains in the §53 of *Prolegomena*: "In the realm of appearance every effect is an event, something that happens in time; so according to the universal law of nature it must be preceded by a cause, some state of which leads to the event according to a constant law" (*Prolegomena*, AA IV, 344).

[56] Nevertheless, it is impossible to determine a priori what cause is the one that determines an occurrence, since the causal law only provides a rule for possible experience, that is, for the *form* of any experience. As Allison points out: "it must be insisted that the Second Analogy supposedly provides us with a warrant to search for the cause of any event and, therefore, for the causal law under which it may be subsumed. But it does not determine what the cause is or guarantee that we shall be able to discover either it or the relevant causal law" (Allison 2004, 258).

[57] "[T]he principle of causality, and hence the mechanism of nature in determining causality, would be valid of all things in general as efficient causes" (KrV B XXVII).

efficient causes[58].

However, it is relevant to notice that the concept of mechanism in the third *Critique* is a special type of natural causality, but it is not the same. In addition to the *nexus effectivus* that the concept of mechanism of nature carries with it, there is another peculiarity of the term mechanism as it is developed in the third *Critique*, namely, the relation of the parts to whole[59]. This peculiarity or specification of the concept of mechanism throughout the third *Critique* has been pointed out especially by McLaughlin (1990) and he characterizes this peculiarity as a kind of explanation that reduces a material whole to its independent parts. As McLaughlin suggests:

> Mechanism has a determination that natural causality as such does not have. This *differentia specifica* is to be found in the special relation of parts to whole: in mechanism the parts determine the whole; the whole cannot determine the parts (McLaughlin 1990, 152).[60]

This line of interpretation is also followed by Allison (1991) and Guyer (2006), and consists in regarding mechanism (or mechanical explanation) to a material whole which is explained by the constitution and interaction of its independent parts, that is, the whole *is caused* by the parts. However, this line of interpretation is contrasted with the one given by Ginsborg (2001, 2004), who explicitly states that the concept of mechanism in the third *Critique* has nothing to do with a particular species or specification of the principle of causality. For Ginsborg, the concepts of mechanism and mechanical explanation in the "Critique of the Teleological Power of Judgment" is directly related to the attractive and repulsive forces of matter as it is described in Kant's *Metaphysical Foundations of Natural Science* (*Metaphysische Anfangsgründe der Naturwissenschaft,* 1786). As Ginsborg says about mechanical explanation: "we explain something mechanically when

[58] "Understanding belongs to all experience and its possibility, and the first thing that it does for this is not to make the representation of the objects distinct, but rather to make the representation of an object possible at all" (KrV A 199/B 244-45). The law of causality, as one of the concepts of the understanding, is a synthetic a priori principle that constitutes experience, as Kant states in the Prolegomena: "[a]ll synthetic a priori principles are simply principles of possible experience; they can never be applied to things in themselves, but only to appearances as objects of experience" (Prolegomena, AA IV, 313).

[59] It is important to highlight this peculiarity of the term mechanism in the third *Critique* with respect to the causality and mechanism of nature of the first two *Critiques*, because the former is, in the context of the Teleological Judgment, regulative for the reflective power of judgment, while the latter is constitutive for experience (in fact, without the concept of causality—or mechanism of nature—it is impossible to achieve any possible experience).

[60] Allison describes this feature of mechanism in a similar way: "Mechanism, in the main sense in which it is used here, refers to the explanation of wholes solely in terms of the causal interaction of their component parts" (Allison 2003, 221).

we explain its production as a result of the unaided powers of matter as such" (2004, 42). And as she concurrently says about mechanical inexplicability: "[t]o say that something is mechanically inexplicable is to deny that it can be explained in terms of the powers of the matter from which it comes to be" (2006, 462)[61].

Even though Ginsborg offers good arguments to link mechanism in the third *Critique* with the narrow concept of mechanism as the universal and necessary laws of matter and motion, I think that her interpretation is incomplete inasmuch as she leaves out the causal relation of the parts and the whole, which is crucial for understanding a material natural whole as such[62]. That is to say, I agree with her in that we have to pay attention to the moving forces of matter when interpreting "mechanism" in the context of the Teleological Judgment, since Kant is very explicit in this regard[63]. Nevertheless, he is also very explicit in stating that the *causal* relation of the parts with respect to the whole is the important point here.

For that reason, I follow Breitenbach (2006, 2008, and 2011) and Zuckert (2007) in their attempt to reconcile the interpretations of both McLaughlin and Ginsborg[64].

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[61] Steigerwald argues something similar to Ginsborg, in the sense of relating "mechanical explanation" with the narrow concept of "mechanism" of the *Metaphysical Foundations*. As Steigerwald states: "Kant's discussion does not make explicit is that he understood conceptions of mechanical causality utilized in scientific explanation as distinct from the concept of causality constitutive of experience and thus of nature as an object of all possible experience. The transcendental causal principle, derived from the category of causality as an a priori concept of the understanding, makes possible the determinative judgment of any objective temporal order of events. The mechanical causality is a further conceptual construction, such as Kant detailed in his 1786 *Metaphysical foundations of natural science*, which makes possible explanations of certain changes in material objects. Mechanical causality is thus a particular form of causality, and for Kant to deny that we can explain the organized and self-organizing features of organisms through mechanical causality is not to deny that the category of causality plays a role in our cognition of organisms" (Steigerwald 2006, 721).

[62]That is to say, Ginsborg omits a crucial point in Kant's argument, namely: the contrast between mechanical explanation as a kind of efficient causation and teleological principles. As Breitenbach points out: "If the mechanical laws of the *Critique of judgment* can be identified with empirical instantiations of the pure mechanical laws of the *Metaphysical foundations*, what is the relationship of these mechanical laws with the principle of causality? It seems that the contrast between mechanical explanations dealing with efficient causation and teleological considerations concerned with final causation is central to Kant's argument in the *Critique of judgment*. How is this to be understood if mechanism is not, as Ginsborg argues, a form of causality in the sense in which we commonly know it from Kant's writings?" (Breitenbach 2006, 704).

[63] See, for instance, KU AA 5: 408.

[64] For instance, Breitenbach says: "How do these approaches [McLaughlin and Ginsborg] to mechanism relate to one another? Can all three of them be taken as contributing to an understanding of mechanical laws and mechanical explanations in Kant's Critique of judgment or do the different accounts exclude each other? In the present section, I argue that we should understand Kant's mechanical laws in the light of all three approaches. I thus aim to give an account of Kant's conception of mechanism by reference to considerations of causality, material forces and the relationship of parts and wholes." (2006, 706). Nevertheless, for Breitenbach, even if we reconcile both readings, the result is incomplete, since we need, according to her, a third element, namely, mechanism as a particular species of empirical causal laws. "I would thus like to suggest that both Ginsborg's and McLaughlin's readings offer only a partial characterization of mechanism in the third Critique. If, on an alternative reading, parts of their approaches

Though Kant is somewhat ambiguous in offering a clear determination of what he is understanding by mechanical explanation in this context, I suggest that it is highly probable that the concept of mechanism in the Teleological Judgment is a combination of two components: on the one hand, "mechanism" as a specification of the transcendental law of natural causation, in which the parts are the efficient cause of the material whole; and, on the other hand, "mechanism" as the metaphysical laws of matter and motion, as it is described in the *Metaphysical Foundations of Natural Science*, but here applied to the empirical-particular phenomena. Therefore, mechanism—or mechanical explanation of living organisms—reduces the whole to the properties of the moving (mechanical) forces of the parts. That is to say, the parts and their properties can subsist without the whole, but the whole can only be formed through the combination of the parts. As Kant states: "if we consider a material whole, as far as its form is concerned, as a product of the parts and of their forces and their capacity to combine by themselves (including as parts other materials that they add to themselves), we represent a mechanical kind of generation" (KU, AA V, 408). A mechanical material whole is only possible through the combination and interactions of the parts, that is, this kind of material thing is a *product* or exists *because of* the parts. In other words, the parts are the efficient cause of the whole, in so far as the parts have to be previously given and interact between themselves in order to produce the whole. In fact, the only *possibility* to conceive a material whole by merely mechanical terms is through the aggregation of the given parts and their moving forces. The inverse relation (the whole as the cause of the possibility of the parts) is absolutely at odds with the concept of mechanism that is at stake in the *Critique of the Power of Judgment*. As Kant emphasizes:

> Now since it is entirely contrary to the nature of physical-mechanical causes that the whole should be the cause of the possibility of the causality of the parts, rather the latter must be given first in order for the possibility of a whole to be comprehended from it" (KU, AA 20: 236).

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are combined, we can understand mechanical laws more satisfactorily as referring to the causal processes of matter. Mechanical laws will thus turn out to be a particular species of empirical causal laws" (706). And Zuckert states: "Like Ginsborg, I take Kant's conception of mechanism to be crucially connected to his conception of matter and the universal, necessary laws (of physics) governing motion. As I shall argue in a moment, however, I take these laws to entail explanation of wholes by independent parts (as McLaughlin argues, and against which Ginsborg argues), and also, contra Ginsborg, believe that one must identify some such further meaning of mechanism (beyond the laws governing matter) to explain how Kant can conceive of ''mechanism'' as a regulative principle, for the laws of physics are constitutive principles of matter as such." (2007, 101-02 note).

Nevertheless, it is impossible to attain in this kind of mechanical explanation an understanding of the generation, internal structure and workings of some kind of natural products, such as organic beings. This insufficiency of mechanical explanation to fully explain organisms can be called "mechanical inexplicability" of organisms[65]. Broadly speaking, this insufficiency consists in conceiving the organism not as a whole as such, but rather as a mere aggregate of its independent or autonomous parts[66]. That is to say, a mechanical account conceives natural wholes as an aggregate of the interaction of its independent parts and their moving forces.

But a mere aggregate of independent parts is far from our conception of a whole such as an organism, in which the very idea of the whole seems to precede its components parts. The mechanical explanation of nature is incapable of providing an account of the peculiarity of organisms seen as natural ends, in which the causal relation of the whole to its parts seems to be not reducible to the efficient causes of the parts, but rather to a reciprocal and purposive causality. And it is in view of this insufficiency of the mechanical explanation that is necessary to use another kind of principle for reflecting on organisms, namely, a teleological one. As Fricke puts it: "[b]ut why then do humans judge such objects to be purposive? According to Kant, humans judge objects of this type to be purposive precisely because they appear accidental in the light of the laws of nature"

[65] For instance, Hannah Ginsborg states that it is because the mechanical inexplicability of organisms that Kant uses another kind of principle to reflect on them, namely, the concept of natural purpose. "The mechanical inexplicability of organisms poses a difficulty, not only for explaining the origin of organisms, but also for investigating their structure and workings. It is in view of this difficulty, I now want to claim, that Kant takes the concept of purpose to be required for biological investigation. Initial support for this claim can be found in several passages indicating that it is precisely in order to understand organic phenomena as lawlike or necessary—despite their contingency with respect to mechanical laws—that we must regard organisms as purposes." (Ginsborg 2001, 248). Guyer, on the other hand, states: "Kant's claim is that we cannot understand such organic processes on our ordinary, mechanical model of causation, where the character of a whole is determined entirely and only by the character of its parts, and that in these cases we must also see the character of the parts as dependent on the character of the whole" (Guyer 2006, 240). McLaughlin appeals to the same point: "Here we are dealing with things whose form cannot be explained according to mechanical laws; the 'contingency' of such things, i.e. their underdetermination by empirical laws of nature, compels us to assume an additional causality according to concepts" (McLaughlin 1990, 44). Zammito, on the other hand, indicates the same argument: "Kant insisted that mechanical accounts failed to make sense of organic form, and that consequently, at some point in the most mechanical explanation of organic life some originating and non-mechanical cause would need to be invoked" (Zammito 1992, 215). Quarfood (2006), Breitenbach (2006), Steigerwald (2006), among others, state the same argument. This dissertation, of course, will follow this line of interpretation.

[66] As Rachel Zuckert suggests: "For explanation in accord with the mechanical principle does not explain parts as dependent on the whole but vice versa, and thus does not –a fortiori- explain the special character of an organism, […] for this consists precisely in unity […] if one explains a whole mechanically, this whole will be understood as an "aggregate" (of independent parts), not as a unity of internally related parts, or a true whole" (Zuckert 2007, 103-04).

(Fricke 1990, 53)[67]. And as Kant puts it in a remarkable example:

> For if one adduces, e.g., the structure of a bird, the hollowness of its bones, the placement of its wings for movement and of its tail for steering, etc., one says that given the mere *nexus effectivus* in nature, without the help of a special kind of causality, namely that of ends (*nexus finalis*), this is all in the highest degree contingent: i.e., that nature, considered as a mere mechanism, could have formed itself in a thousand different ways without hitting precisely upon the unity in accordance with such a rule (KU, AA V, 360).

According to this quote, some natural forms and their internal arrangements (e.g., the peculiar constitution of a bird that invites us to judge its very form through the function of flying) appear to us in a way that is completely contingent with respect to natural laws (KU, AA V, 246), that is, with respect to causal-mechanical explanation. For that very reason, we need to appeal to another kind of principle in order to judge these kinds of natural products. And this principle is a teleological one, which conceives some natural products as if they were produced by the conception of final causality. Accordingly, we must proceed as far as possible with the principle of mechanism when investigating nature, since without this principle there can be no proper cognition of nature at all (387); but we need the teleological maxim, because without the latter we cannot even begin to grasp a natural thing as organized and self-organizing (which is the starting point to study a living organism).

2.3. - A preliminary distinction: *Zweck*, *Zweckmäßigkeit*, and *Zweckmäßigkeit ohne Zweck*

Before elucidating the reflective concept of *Naturzweck*, it is necessary first to connect this concept to others that play an important role within the third *Critique*, such as "end" (*Zweck*), "purposiveness" (*Zweckmäßigkeit*), and "purposiveness without an end" (*Zweckmäßigkeit ohne Zweck*). Such concepts are indispensable for the understanding of *Naturzweck* as a key term in the Teleological Judgment, since this reflective term is formed by the concepts of both *Zweck* and *Zweckmäßigkeit* (and *Zweckmäßigkeit ohne*

67 Steigerwald highlights this argument in a very similar way: "It is because organisms appear contingent with regard to the mechanisms of nature, or, more generally, because they cannot be determined through the concepts of nature developed by theoretical reason, that Kant introduced the concept of natural purpose" (2006, 724).

Zweck). In §10 ("On purposiveness in general"), Kant briefly defines these three key concepts in relation to purposiveness. Kant begins by defining the concept of "end" (*Zweck*) by "transcendental determinations", that is, by determinations that do not depend on empirical considerations, like the feeling of pleasure. This transcendental definition states that an end is "the object of a concept insofar as the latter is regarded as the cause of the former" (KU, AA V, 220). That is to say, a *Zweck* is an object whose cause is the very concept of the object, since the real ground of the possibility of the object is the concept. The key aspect of this transcendental definition of "end" is that the very representation of the effect is the determining ground of the cause of this object called end. As Kant adds: "Thus where not merely the cognition of an object but the object itself (its form or its existence) as an effect is thought of as possible only through a concept of the latter [effect]" (220). "Purposiveness", in turn, is defined by Kant as *forma finalis*, that is, as "the causality of a concept with regard to its object" (220). The crucial point for Kant here is stated a couple of lines later when he defines the concept of purposiveness (*Zweckmäßigkeit*), namely, the representation of a kind of purposiveness without the representation of a determinate end (*Zweckmäßigkeit ohne Zweck*). As Kant explains:

> An object or a state of mind or even an action, however, even if its possibility does not necessarily presuppose the representation of an end, *is called purposive merely because its possibility can only be explained and conceived by us insofar as we assume as its ground a causality in accordance with ends [Kausalität nach Zwecken], i.e., a will [einen Willen] that has arranged it so in accordance with the representation of a certain rule. Purposiveness can thus exist without an end*, insofar as we do not place the causes of this form in a will, but can still make the explanation of its possibility conceivable to ourselves only by deriving it from a will (V, 220, my emphasis).

According to this quote, we can judge some things as purposive without the representation of a determinate end—or rather, without placing the cause of this purposiveness in a will. That is to say, we can judge some products of nature as if they were purposive, but the representation of the cause of this purposiveness cannot be attributed to a will—i.e., to a causality that proceeds in accordance with ends. In other words, we judge some natural products *as if* (*als ob*) they were purposive and *as if* their very *possibility* (*Möglichkeit*) were derived from a will[68], but this kind of judging is only a product of our reflection,

[68] It can be even said that purposiveness without an end is thought *in analogy with* a purposiveness that the representation of its cause is determined by a will.

that is, of our reflective power of judgment. "Thus we can at least observe a purposiveness concerning form, even without basing it in an end (as the matter of the *nexus finalis*), and notice it in objects, although in no other way than by reflection" (220). For instance, our aesthetic judgments of taste are purposiveness of this sort—without an end—, as well as our teleological judgments of some natural products, such as organic beings. For Kant, we judge organic beings as if they were purposive, that is, by analogy with our causality in accordance with ends (i.e., a rational "will" in the broadest possible sense)[69]. Organic beings judged *as if* they were purposive are called by Kant *Naturzwecke*. Accordingly, the reflective concept of *Naturzweck* is a concept of the reflective power of judgment, and it is derived from the very peculiar principle of the reflective power of judgment: purposiveness of nature (*Zweckmäßigkeit der Natur).* In what follows, therefore, I shall explain in a provisionary way what *Naturzweck* is, and examine what judging organic beings as *Naturzwecke* consists in.

2.4. - The conception of organized being judged as *Naturzweck*: a preliminary account of its main features and peculiarities

In the passages that Kant devotes to elucidating what a natural end is (mainly in §64-§65), he offers a "provisional"—fundamental as well—definition of this kind of natural product: a natural end (*Naturzweck*) is cause and effect of itself (KU, AA V, 371). That is to say, some natural products exist as if they were not only possible by natural causation (by a descendent *nexus* of efficient causes), but also by the representation of final causes (or as a causal *nexus* that can be descendant as well as ascendant). I have to emphasize that the representation of final causes in the context of the "Critique of the Teleological Power of Judgment" is described by Kant as a mutual or reciprocal causality. That is to say, each part of an organism must be regarded as cause and effect of itself, because the whole forms the parts and the parts constitute their form and the whole in a mutual relation. But, in addition to this reciprocal-final causation that *Naturzwecke* seem to possess, there is another relevant feature that distinguishes *Naturzwecke* from a mere end (*Zweck*). This feature is the *internal* purposiveness in contradistinction to the *external* purposiveness that we can find, for example, in products of art, such as an artifact or a hexagon drawn in the

[69] I shall offer a detail analysis of this analogy in 5.2 and 5.3, and I shall show how it is better construed the term "causality in accordance with ends" with technical reason.

sand. Kant gives us an illustrative example of these latter products caused by a rational being:

> If someone were to perceive a geometrical figure, for instance a regular hexagon, drawn in the sand in an apparently uninhabited land, his reflection, working with a concept of it, would become aware of the unity of the principle of its generation by means of reason, even if only obscurely, and thus, in accordance with this, would not be able to judge as a ground of the possibility of such a shape the sand, the nearby sea, the wind, the footprints of any known animals, or any other non-rational cause, because the contingency of coinciding with such a concept, which is possible only in reason, would seem to him so infinitely great that it would be just as good as if there were no natural law of nature, consequently no cause in nature acting merely mechanically, and as if the concept of such an object could be regarded as a concept that can be given only by reason and only by reason compared with the object, thus as if only reason can contain the causality for such an effect, consequently that this object must be thoroughly regarded as an end, but not a natural end, i.e., as a product of art (*vestigium hominis video*) (KU, AA V, 370).

This quote is enlightening because it shows us how different it is to conceive something as a mere *end* (like a product of art of any sort) with respect to a *natural* end. The former, according to Kant, is only possible by means of a cause that is external to the product itself (in this particular example, its causality depends on a rational being outside of it, who designs by means of its reason the form of a hexagon over the sand), whereas the latter is cause and effect of itself, that is, it possesses an internal and reciprocal purposiveness. In other words, the cause that is responsible for the form and the very possibility of a *Naturzweck* is internal to it, and it does not depend on a rational cause outside of it[70]; and that is the very reason we judge these products as *natural* ends (because the end does not depend on reason) instead of a mere end[71].

Kant offers a celebrated example that can be useful for understanding how a natural product can be considered cause and effect of itself: the example of a tree and the three organic processes it carries out (just like every organic being), i.e. reproduction,

[70] Angelica Nuzzo explains the real challenge that a natural end represents for our theoretical knowledge: "The real theoretical challenge, however, is presented precisely by those natural products that can be neither explained by mechanical laws of nature nor traced back to human reason's technical causality. Since such an object cannot be explained mechanically, it is called *Zweck*; since it is not a product of art, it is '*Naturzweck*'. It is in this case that we meet the specific *objective internal* purposiveness of natural purposes" (2005, 334).

[71] The distinction between natural end and an end (such as a machine or artifact) will be carried out in detail in chapter 4 of this dissertation.

growth and regeneration. As Kant illustrates in the §64:

> [A] tree generates another tree in accordance with a known natural law. However, the tree that it generates is of the same species; and so it generates itself as far as the species is concerned, in which it, on one side as effect, on the other as cause, unceasingly produces itself, and likewise, often producing itself, continuously preserves itself, as species (KU, AA V, 371).

This first part of the example illustrates the organic process of reproduction as containing a reciprocal causation: a tree is the cause—produces—another tree but, at the same time, is the effect of the species of the tree, because it is a product of another individual of the same species. But the tree not only generates itself as species, but also as individual: "This sort of effect we call, of course, growth; but this is to be taken in such a way that it is entirely distinct from any other increase in magnitude in accordance with mechanical laws, and is to be regarded as equivalent, although under another name, with generation" (KU, AA V, 371). Accordingly, the second peculiar feature of organized beings is the organic process of growth, which is, according to Kant, completely different from any mechanical increase in magnitude: "This plant first prepares the matter that it adds to itself with a quality peculiar to its species, which could not be provided by the mechanism of nature outside of it, and develops itself further by means of material which, as far as its composition is concerned, is its own product" (371).[72] The tree grows because it has to prepare—transform, generate—the matter that then it adds to itself in order to achieve its own growth. In other words, the tree is the cause of its own nourishment, development and survival. And, finally, we have the third feature, which is the reciprocal relation of the parts and their relation to the preservation of the whole (that is, the process of regeneration): "one part of this creature also generates itself in such a way that the preservation of the one is reciprocally dependent on the preservation of the other" (371). This latter idea shows us how a natural end "is cause and effect of itself", because each part of the tree is dependent on the other in a mutual relation, each part of the tree is cause and effect of the whole, and the whole is cause and effect of the parts of the tree. As Kant puts it in his example: "the leaves are certainly products of the tree, yet they preserve it in turn, for repeated defoliation

72 Kant even adds that this capacity for growth and self-development is peculiar to such a high degree that it overcomes any product of art: "in the separation and new composition of this raw material there is to be found an originality of the capacity for separation and formation in this sort of natural being that remains infinitely remote from all art when it attempts to reconstitute such a product of the vegetable kingdom from the elements that it obtains by its decomposition or from the material that nature provides for its nourishment." (371)

would kill it, and its growth depends upon their effect on the stem" (372). That is to say, the parts of the tree (the leaves) are not only *caused by* the whole (the tree), but also, they are the *cause* of the maintenance and survival of the whole.

According to this latter idea, the reciprocal causality of *Naturzwecke* is indissociable to the notion of a whole. Kant asserts that for a natural product to also be able to be regarded as an *end*, it is necessary "that its parts (as far as their existence and their form are concerned) [be] possible only through their relation to the whole" (373). Nevertheless, as mentioned above, Kant makes a reservation regarding this latter idea: this definition of a whole as the cause of its parts is the description of an artifact (or any work of art, such as the production of a rational being that is outside of its product). Accordingly, there should be another peculiar feature of the parts/whole relation in order to conceive organisms as a natural end (*Naturzweck*) and not merely as an end (*Zweck*). This peculiar feature is, therefore, the idea of reciprocal causality by means of an internal end: each part is cause and effect of their form and, also, of the functioning and maintenance of the whole (373)[73]. In other words, natural ends involve the idea of a whole but, unlike a mere artifact (or some product of a rational being)[74], the idea of the whole does not configure and determine the parts in a unidirectional causal relation, but rather each part reciprocally causes and produces the other parts, and the concept of the whole determines the parts in a mutual and self-organizing relation[75]. As Kant explains:

[73] Steigerwald explains this mutual relation in very straightforward words: "in order for us to judge a body as a natural purpose not only is it necessary that we conceive the possibility of its parts as dependent for their existence and form on their relation to the whole, but also that all the parts through their own causality reciprocally produce one another as regards their form and combination and in this way produce a whole. Each part exists not only as a result of and for the sake of all the rest and the whole, but also reciprocally produces the other parts and the whole, so that the organism is thus 'both cause and effect of itself ' (ibid., p. 370)." (Steigerwald 2006, 717).

[74] The contrast between organized beings and artifacts will be analyzed in more details in chapter 4.

[75] Kant illustrates this by comparing a watch with an organized being (or the distinction between a machine and an organism). This example serves not only to understand organisms as having reciprocal causality, but also to understand the difference between the idea of an end as a product of a rational being (or a designer or artisan) and the peculiar causation that this kind of natural product seems to have according to the reflective power of judgment. I quote the entire passage of the example: "In a watch one part is the instrument for the motion of another, but one wheel is not the efficient cause for the production of the other: one part is certainly present for the sake of the other but not because of it. Hence the producing cause of the watch and its form is not contained in the nature (of this matter), but outside of it, in a being that can act in accordance with an idea of a whole that is possible through its causality. Thus one wheel in the watch does not produce the other, and even less does one watch produce another, using for that purpose other matter (organizing it); hence it also cannot by itself replace parts that have been taken from it, or make good defects in its original construction by the addition of other parts, or somehow repair itself when it has fallen into disorder: all of which, by contrast, we can expect from organized nature. – An organized being is thus not a mere machine, for that has only a motive power, while the organized being possesses in itself a formative power, and indeed one that it communicates to the matter, which does not have it (it organizes

> In such a product of nature each part *is conceived as if* it exists only through all the others, thus as if existing for the sake of the others and on account of the whole (*des Ganzen*), i.e., as an instrument (organ), which is, however, not sufficient (for it could also be an instrument of art, and thus represented as possible at all only as an end); rather it must be thought of as an organ that produces the other parts (consequently each produces the others reciprocally), [...] only then and on that account can such a product, as an *organized and self-organizing being [als organisiertes und sich selbst organisierendes Wesen]*, be called *a natural end* [*Naturzweck*] (KU, AA V, 373-74, my emphasis).

An organic being (*organisches Wesen*), considered as a natural end, cannot be merely judged as a whole that determines and combines its parts in accordance with a rational design, which is external to it, since this would be the case of a work of art or artifact. In a *Naturzweck*, by contrast, each part exists in a reciprocal relation to the others and to the whole; that is, each part is conceived for the sake of the other, since each part is cause and effect of the others. Each part of a natural end not only *exists through* the others (as an effect), but also is *cause* of the other parts, and in this mutual relation the whole can be conceived as an "organized and self-organizing being" ("*organisiertes und sich selbst organisierendes Wesen*").

For Kant, a living organism (judged as a *Naturzweck*) is, as mentioned above, an organized and self-organizing being (374), which means that it is not only an organized product which is arranged by the previous conception of a designed whole (like an artifact does), but rather it is a *self-organizing* being. That is to say, every part that forms the whole is conceived as a *product* as well as a *producer* of the others, each part (as well as the whole) organizes itself by means of an internal (not external) end[76]. In other words, an organic being has a *formative power*[77] (*bildende Kraft*, and not merely a mechanical power of motion [*bewende Kraft*], 374) which enables the reciprocal self-organization of the parts and the whole. Accordingly, it can be said that an organized being judged as a *Naturzweck* seems to possess an end-directed and self-organizing character.

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the latter): thus it has a self-propagating formative power, which cannot be explained through the capacity for movement alone (that is, mechanism)" (V, 374). In chapter 4 of this dissertation, I will return to this quotation in order to analyze it in more detail.

[76] As Zumbach accurately suggests, the notion of internal end is crucial to define what a natural end is: "Kant's conception of internal purposiveness reflects what he considers to be the content of the judgment that something is a living organism" (Zumbach 1984, 19)

[77] For an interesting account of the concept of "formative power" in Kant's philosophy, see Ina Goy, "Kant on Formative Power" (2012).

In sum, these are the peculiar features that living organisms seem to possess and which leads us to judging them in accordance with teleological considerations (that is, in accordance with the reflective concept of *Naturzweck*). As Kant says:

> Organized beings are thus the only ones in nature which, even if considered in themselves and without a relation to other things, must nevertheless be thought of as possible only as its ends, and which thus first provide objective reality for the concept of an end that is not a practical end but an end of nature, and thereby provide natural science with the basis for a teleology, i.e., a way of judging its objects in accordance with a particular principle the likes of which one would otherwise be absolutely unjustified in introducing at all (V, 375-76).

Therefore, organized beings are the only natural products that must be considered (or judged) as if they were natural ends, that is, by means of a "maxim" of the reflective power of judgment that guides our inquiry of nature and its products (376). This reflective maxim is an indispensable guideline for investigating nature, but it does not determine nature or any of its products (as a constitutive principle of the determining power of judgment would). That is to say, this maxim only serves to reflect on nature and its products, for orienting our investigation of nature, but not for *explaining* it.

2.5. – The Antinomy of the Teleological Power of Judgment

As Allison accurately asserts in his "Kant's Antinomy of the Teleological Judgment", this section of the KU is "deeply puzzling" (Allison 2003, 219). It is puzzling not only because Kant does not seem to justify the antinomy itself, but also because he offers a series of considerations about our discursive understanding and the necessity to appeal to a supersensible ground, which makes the whole section somewhat obscure. Despite this apparent obscurity, this section contains some of the most fascinating and richest passages in the whole third *Critique*. Many commentaries have been written about this section; and yet, the wide-ranging diversity of interpretations among scholars makes it exceptionally easy to get lost in these commentaries. In this sense, the scholarly literature on this topic is more confusing than illuminating, not only due to the breadth of the scholarship concerning to this antinomy, but also and mainly because the interpretations—or

misinterpretations—often contradict each other[78].

Nevertheless, two dominant discussions can be distinguished, namely, i) whether the antinomy is based on a conflict between two constitutive principles of the determining power of judgment or between two maxims of the reflective power of judgment; ii) whether there is a proper antinomy or rather there is only an *appearance* [*Anschein*] of an antinomy. However, these two main discussions are closely related: if we assume that the conflict arises from two constitutive principles, then the antinomy disappears when replacing these constitutive principles by reflective maxims[79]. Nevertheless, this last interpretation leaves out the Kantian assertion that the conflation of constitutive principles with reflective maxims corresponds to the "preparation for the resolution" of the antinomy, not to the resolution itself (that is to say, the mere appearance of an antinomy, as it seems to arise from conflating both kinds of principles, does not *prima facie* justify a dialectical conflict). On the other hand, if we state that the dialectical conflict is between two maxims of the reflective power of judgment, then we do have a real conflict or antinomy of the power of judgment[80]. Furthermore, this latter interpretation, in addition to justifying the antinomy itself, is closer to the development of the argument that Kant stresses throughout the antinomy: why the use of teleological principles is necessary for us—i.e. humans with limited and discursive understanding—when investigating nature; and, at the same time, why we cannot abandon the principle of mechanism when *explaining* nature and its products. Accordingly, this section will follow the latter line of interpretation: namely, there is a justified conflict or antinomy between two maxims of the reflective power of judgment, which are the maxims of mechanism and teleology. Moreover, Kant indeed offers a satisfactory resolution to this conflict.

The first requirement of any antinomy is to have an autonomous faculty (i.e., a faculty capable of providing principles of its own), whose principles contradict or conflict with each other. As McLaughlin explains: "[a]n antinomy in Kant's system is a conflict of laws, and only a faculty that gives itself laws, i.e. that is autonomous, can be involved in an antinomy" (McLaughlin 1990, 128). The first thing that Kant calls attention to is that our determining judgments are not in danger of falling into dialectical reasoning (like

[78] Despite this endless and confusing literature, we can find good account of this antinomy with some revealing interpretations in: Allison (1991, 2003), McLaughlin (1990), Watkins (2009), Breitenbach (2008), and Quarfood (2015).
[79] See, for instance, Butts (1990) and Allison (1991).
[80] For instance, McFarland (1970), McLaughlin (1990), and Breitenbach (2008).

an antinomy), because such judgments are only subsumed under concepts given elsewhere—through the understanding, in this case—and do not have internal principles that might conflict with each other. The reflective power of judgment, on the contrary, has to subsume the particular under a law that is not given yet, so it has to serve as a principle for itself[81]. That is to say, this principle "can serve as a *merely subjective principle* for the purposive use of the cognitive faculties, namely for reflecting on one kind of objects. In relation to such cases, the reflective power of judgment therefore has its *maxims* [...] for the sake of the cognition of natural laws in experience" (KU, AA V, 385-86, my emphasis). Between these maxims, there may indeed arise a conflict or an antinomy. So, according to Kant, we must pay attention to these maxims of the reflective power of judgment which may ground a natural dialectic.

From the great heterogeneity, contingency and diversity of the particular laws of nature, the reflective power of judgment sets out from two subjective principles—or maxims—in order to attain the interconnected empirical laws of nature. These are the maxims of mechanism[82] and teleology; the former is provided by the understanding *a priori*, and the latter "is suggested by particular experiences that bring reason into play in order to conduct the judging of corporeal nature and its laws in accordance with a special principle" (KU, AA V, 386). Apparently, these two maxims contradict each other, and hence a dialectic may result between these two seemingly conflicting subjective principles. The maxim of mechanism is, according to Kant, the thesis, and the antithesis corresponds to the teleological maxim:

> The first maxim of the power of judgment is the *thesis*: All generation of material things and their forms must be judged [*muß… beurteilt werden*] as possible in accordance with merely mechanical laws [*bloß mechanischen Gesetzen*]. The second maxim is the

[81] What Kant calls *heautonomy*, which is the peculiar legislation of the reflective judgment: "the power of judgment does not give the law to nature nor to freedom, but solely to itself" (KU, First Introduction, AA XX: 225).

[82] I call the first maxim of the reflective power of judgment "mechanism" in order to simplify the kind of explanation this maxim carries with it, namely, the mechanical explanation of nature (or natural products), which conceives a material whole only by means of the aggregate and interaction of its constituent parts. For more details of this type of explanation, see section 3.3. I am aware that the use of the term "mechanism" can be to some extent ambiguous, because Kant uses this term in the first and second Critiques as a synonym of natural causality (that is, as temporal succession by means of efficient causes as it was described in the Second Analogy of Experience). Nevertheless, I think that both senses of the term "mechanism" can coexist prior distinction of its peculiarities and specifications (i.e., "mechanism of nature" as synonym of natural causality, and "mechanism"—or mechanical explanation—as a specification of natural causality in the explanation of material wholes by means of the *nexus effectivus* and the moving forces of the parts). McLaughlin (1990) also terms "mechanism" to this maxim of the reflective power of judgment.

> *antithesis*: Some products of material nature cannot be judged as possible according to merely mechanical laws (judging them requires an entirely different law of causality, namely that of final causes [*Endursachen*]) (387, my emphasis).

If we transform these subjective principles or maxims into constitutive principles for the determining power of the judgment concerning the possibility of the objects *themselves*, the thesis and antithesis would be: "Thesis: All generation of material things is possible in accordance with merely mechanical laws. Antithesis: Some generation of such things is not possible in accordance with merely mechanical laws" (387). According to Kant, these objective principles of the determining power of judgment do contradict each other, so one of them must be necessarily false. Furthermore, as Kant states, in this case we would face an antinomy of the legislation of reason and not of the power of judgment itself. But reason can prove neither the thesis nor the antithesis, because the possibility of things cannot be determined *a priori* through merely *empirical* laws of nature (387). Therefore, this second formulation of the antinomy (i.e., between two constitutive principles of the determining power of judgment) is finally ruled out by Kant, since it does not meet the requirements for producing an antinomy of the power of judgment.

Now, in the case of the first formulation (i.e., of the two maxims of the reflective power of judgment), Kant states that when judging nature, we ought to proceed by means of two maxims of the reflective power of judgment. These two maxims operate as guidelines or heuristic strategies in the study of nature. Furthermore, there is no contradiction whatsoever between these two maxims, according to Kant. And that is because

> For reflection in accordance with the first maxim [mechanism] is not thereby suspended, rather one is required to pursue it as far as one can [...]. It is only asserted that human reason, in the pursuit of this reflection and in this manner, can never discover the least basis for what is specific in a natural end, although it may well be able to discover other cognitions of natural laws; in which case it will remain undetermined whether in the inner ground of nature itself, which is unknown to us, physical-mechanical connection and connection to ends may not cohere in the same things, in a single principle: *only our reason is not in a position to unify them in such a principle*, and thus the power of judgment, as a reflecting (on a subjective ground) [...], is forced to think of another principle than that of the mechanism of nature as the ground of the possibility of certain forms in nature (388, my emphasis).

When investigating nature, we must proceed as far as possible with the maxim of mechanism because, as Kant states, without this principle there is no proper cognition of nature at all. But because of the peculiar constitution of our reason, mechanism will never be capable of discovering the specific ground that constitutes a *Naturzweck* as such. In other words, in a natural thing, the maxims of mechanism and teleology must cohere in a single (and higher) principle, but our reason "is not in a position to unify them", so our reflective power of judgment is constrained to think another principle beside mechanism as the ground of the possibility of such a thing. Accordingly, there is no real opposition between mechanism of nature and teleology, but now Kant has to show in which sense there is no real contradiction between both subjective principles and, most importantly, how both maxims could cohere in a single principle.

In §71, Kant states that all appearance or resemblance (*Anschein*) of an antinomy between these maxims rests on confusing a subjective principle of the reflective power of judgment with a constitutive principle of the determining power of judgment (389). That is to say, the contradiction emerges when one treats the concept of a technique of nature (or the principle of purposiveness) *dogmatically*, rather than *critically*. Such dogmatic treatment would amount to considering a concept as contained under another concept that constitutes a principle of reason, and we determine the former in accordance with the latter. This type of treatment is lawful for the determining power of judgment. Contrarily, the treatment that is lawful for the reflective power of judgment is the critical one. Critical treatment would amount, in turn, to considering a concept "only in relation to our cognitive faculties, hence in relation to the subjective conditions for thinking it, without undertaking to decide anything about its object" (395). Before explaining this, Kant states that those systems that have treated the concept of the purposiveness of nature (or the "technique of nature" [*Technik der Natur*], that is, the teleological maxim) dogmatically have failed to account for it, be this from the standpoint of Realism (objectively positive purposiveness) or that of Idealism (objectively negative purposiveness).[83] The reason for this failure rests on the fact that the concept of "objective purposiveness in nature" (or "technique of nature") "cannot be drawn from experience and is not requisite for the

[83] "The systems with regard to the technique of nature, i.e., of the idealism or of the realism of natural ends. The former is the assertion that all purposiveness in nature is unintentional, the latter that some purposiveness in nature (in organized beings) is intentional, from which there can also be inferred as a hypothesis the consequence that the technique of nature is also intentional, i.e., an end, as far as concerns all its other products in relation to the whole of nature" (391).

possibility of experience its objective reality cannot be guaranteed by anything" (397). Or, in other words, this concept cannot be treated dogmatically because it is a maxim of the reflective power of judgment for *orienting* our investigation of nature, but never for *explaining* it as a constitutive principle would do. That is to say, all these systems have tried to explain the purposiveness of nature (*Zweckmäßigkeit der Natur*) as if it were a constitutive principle of the determining power of judgment rather than what it is, namely, a subjective principle for reflecting upon nature and its products, as a heuristic tool for guiding our research into nature.

After rejecting any dogmatic treatment of the concept of the purposiveness of nature comes probably the most puzzling part of the Antinomy of the Teleological Power of Judgment, namely, the paragraphs 75-78, and the whole disquisition about our discursive understanding in contrast to intuitive (or archetypical) understanding (and the appeal to a supersensible ground in order to unify the maxims of mechanism and teleology). Despite the obscurity that these sections seem to possess, §§ 76-77 are by far one of the most interesting passages of the whole third *Critique,* and they are also the part where the resolution of the antinomy is finally carried out. The following passage offers a good entry point into these puzzling sections:

> To say that the generation of certain things in nature or even of nature as a whole is possible only through a cause that is determined to act in accordance with intentions is quite different from saying that *because of the peculiar constitution of my cognitive faculties* I cannot judge about the possibility of those things and their generation except by thinking of a cause for these that acts in accordance with intentions [*die nach Absichten wirkt*] (397-98, my emphasis).

The main point of this passage rests on Kant's conception of the "peculiar constitution" of our cognitive faculties, which cannot judge such natural things (i.e., *Naturzwecke*) without the subjective and regulative presupposition that these things are only possible by a cause that acts in accordance with ends (or *intentions*). Nevertheless, as Kant warns us, this kind of judging is a peculiarity of our *discursive* understanding (*diskursiver Verstand,* i.e., a faculty of concepts), and not a property of the things in themselves. This *discursive understanding* is the one that we finite rational beings are allowed to possess. That is to say, according to Kant it is impossible for our cognitive faculties to get some insight into these kinds of natural products without presupposing an *intention* (that is, an

end) that underlies their generation and internal possibility[84]. Moreover, as mentioned earlier, natural ends are mechanically inexplicable, therefore, the only possibility for conceiving the self-organizing character of an organized being is in relation to our cognitive faculties, that is, only subjectively. And according to the peculiarities of our cognitive faculties, there is no other way to judge these natural products but by means of the teleological maxim. Let us analyze this argument further.

According to Kant, for our human-discursive understanding the distinction between the possible (*Möglichkeit*) and the actual (or the real, *Wirklichkeit*), or between the possibility and the actuality of things is absolutely necessary (V, 401). And the cause of this distinction lies in the cognitive faculties of the subject, which requires two heterogeneous sources (concepts and intuitions) in order to constitute an object in general. This distinction between the possible and the actual is only subjectively valid for our human-discursive understanding, and not to the things considered in themselves. For that reason, our human understanding goes from the universal (the concepts) to the particular (intuitions), and the power of judgment only applies the general rule (the concept) to the particular case (intuition). In these cases, we have a determining function of the power of judgment (that is, the power of judgment only subsumes the particular given under a universal rule of the understanding). Nevertheless, in some cases we do not have the general or universal rule to subsume some particular natural things (like organized beings), or, in Kant's words, "the particular, as such, contains something contingent with regard to the universal" (404). In such cases, the power of judgment becomes reflective and it produces the universal according to its own principle, which is the purposiveness of nature (*Zweckmäßigkeit der Natur*). Even though this principle or maxim is necessary for our human power of judgment in order to attain the connection of particular laws of nature (404), it is, however, only valid subjectively for our power of judgment. That is to say, it does not determine the object (in this case, an organized being) at all.

It is at this point of the Kantian argument where §77 appears ("On the special character of the human understanding, by means of which the concept of a natural end is

[84] "For it is quite certain that we can never adequately come to know the organized beings and their internal possibility in accordance with merely mechanical principles of nature, let alone explain them; and indeed this is so certain that we can boldly say that it would be absurd for humans even to make such an attempt or to hope that there may yet arise a Newton who could make comprehensible even the generation of a blade of grass according to natural laws that no intention has ordered; rather, we must absolutely deny this insight to human beings" (KU, AA V, 400).

possible for us"), which contains the reason why the use of the concept of natural end is unavoidable for our power of judgment when judging living organisms. Kant highlights that we have to pay attention to the special relation of our understanding and the power of judgment, and to the very fact "that we have to seek a certain contingency [*Zufälligkeit*] in the constitution of our understanding in order to notice this as a special character of our understanding in distinction from other possible ones" (406). This *contingency* is found in the particular, which must be subsumed under the universal (the concept). Accordingly, our discursive understanding "in its cognition, e.g., of the cause of a product" proceeds from the analytical-universal (concepts) to the particular (the given empirical intuition). Now, as Kant suggests, we can conceive an intuitive understanding (at least negatively or in opposition to our discursive one), which proceeds from the synthetically-universal (from the intuition of a whole as such) to the particular. That is to say, this understanding goes from the whole to the parts in its cognition of a natural whole (407). By contrast, our discursive understanding must progress from the parts to the whole, that is, a natural whole must be regarded by our understanding only as the effect of the moving forces of the parts. However, as Kant asserts, the latter representation is a mechanical conception of a natural product, and does not properly account for the possibility of an organized and self-organizing being:

> Now if we consider a material whole [*Ganzes der Materie*], as far as its form is concerned, as a product of the parts and of their forces and their capacity to combine by themselves [*als ein Produkt der Teile und ihrer Kräfte und Vermögen, sich von selbst zu verbinden betrachten*] (including as parts other materials that they add to themselves), we represent a mechanical kind of generation [*eine mechanische Erzeugunsart*]. But from this there arises no concept of a whole as an end, whose internal possibility presupposes throughout the idea of a whole on which even the constitution and mode of action of the parts depends, which is just how we must represent an organized body [*organisierten Körper*] (408).

According to Kant, we must represent an organized body or a living organism by means of the idea of an end. Thus, it is also a peculiarity of our discursive understanding that we represent some products of nature as possible in accordance with final causality, and not just with the causality of the natural laws of matter (that is, the moving forces of the parts as the efficient cause of the whole). That is to say, we represent a natural whole as the effect (the product), whose representation is the cause of its possibility; in other words,

we represent these products as an end: the product of a cause whose determining ground is the representation of the effect. Nevertheless, as mentioned some sections before, the end does not lie outside the product itself, rather it is internal to it, and for this reason these products are called natural ends, instead of ends *simpliciter*.

Thus, we can say that our discursive understanding has two ways of representing natural wholes: on the one hand, by means of the maxim of mechanism, whose limitation consists in reducing the whole to a mere aggregate of the moving forces of its parts. On the other hand, through the teleological maxim: the whole contains the ground of the very possibility of its parts, that is, we represent the whole as an end. This last representation of natural wholes is the only one that makes possible the representation of a whole such as a living organism, because it enables the very possibility for conceiving an organism as an organized and self-organizing being. In other words, it is due to our limited-discursive understanding that the use of teleological principles is necessary for us when reflecting upon living beings (even though we cannot *explain* them by teleological considerations).

At this point of the argument, Kant raises the question whether it is possible to unify both maxims of mechanism and teleology into a single higher principle. In the first place, Kant warns us that both principles cannot be unified if they were constitutive and dogmatic principles for explanation (*Erklärung, Deduktion*) of things in nature. That is to say, these two principles cannot cohere in a single principle if they were principles of the determining power of judgment (KU, AA V, 411), because one type of explanation excludes the other one. Accordingly, Kant argues that the unification of mechanism and teleology "cannot rest on a ground for the explanation ([*Erklärung*], explication [*Explication*]) of the possibility of a product in accordance with given laws for the determining power of judgment, but only on a ground for the elucidation ([*Erörterung*], exposition) of this for the reflecting power of judgment" (412). That is to say, this higher principle of unification is a subjective-heuristic one that orients our investigation of nature, but which does not determine or explain it at all.

This higher principle is, according to Kant, the supersensible (*das Übersinnliche*), which resides outside both mechanism and teleology, and also, outside nature; but, at the same time, is the foundation of nature "as phenomenon". Nevertheless, the problem with this principle is that it cannot be explained:

> Now, however, the common principle of the mechanical derivation on the one side and the teleological on the other is the supersensible [*das Übersinnliche*], on which we must base nature as phenomenon. But from a theoretical point of view, we cannot form the least affirmative determinate concept of this. Thus how in accordance with this, as a principle, nature (in accordance with its particular laws) constitutes a principle for us, which could be cognized as possible in accordance with the principle of generation from physical as well as from final causes, *can by no means be explained* [*läßt sich keineswegs erklären*](412-13, my emphasis).

As Kant says, we cannot form any positive and determinate concept of this principle; we can only have an undetermined concept of a ground that enables the judging of nature in accordance with empirical laws. Therefore, we can explain neither this supersensible ground nor how this unification operates, but we must presuppose this unifying principle in order to attain some insight into nature and its products. Although we cannot explain this supersensible principle of unification, it is necessary for guiding our experience of nature as a system of empirical laws, and, specifically, for grounding our teleological judgments of nature.

On the other hand, Kant argues that one of these two maxims of reflection (i.e., mechanism and teleology) must be subordinated to the other. Due to the constitution of our discursive understanding, the only way in which we can conceive something as *organized* is by means of the conception of an end (i.e., by means of teleological principles), so the maxim of mechanism has to be subordinated to teleology. As Allison accurately clarifies: "since mechanism cannot be eliminated, while teleological reflection is required if one is even to begin to conceptualize biological phenomena (grasp them as organized), the only alternative is to subordinate the mechanistic to the teleological principle" (Allison 2003, 231). Without mechanism we cannot attain any scientific cognition of nature at all[85], but we have "never to lose sight of the fact that those which, given the essential constitution of our reason, we can, in spite of those mechanical causes, subject to investigation only under the concept of an end of reason, must in the end be subordinated to causality in accordance with ends" (415). Therefore, both maxims of the reflective power of judgment do not contradict each other, and they can actually operate

[85] In fact, we have the obligation to try to explain mechanistically all natural events and things as far as our cognitive faculties can: "[n]ow on this is grounded the authorization and, on account of the importance that the study of nature in accordance with the principle of mechanism has for our theoretical use of reason, also the obligation to give a mechanical explanation of all products and events in nature, even the most purposive, as far as it is in our capacity to do so" (415).

together, according to Kant. We must proceed as far as possible with the principle of mechanism, since it is entirely unrestricted for explaining nature and natural products (387); but mechanism must be subordinated to the teleological maxim, since without this maxim we cannot even to begin to conceive a natural thing as organized and self-organizing.

2.6. - Methodology of the "Critique of the Teleological Power of Judgment"

The last part of the "Critique of the Teleological Power of Judgment" (and of the third *Critique* as a whole) is called "Methodology of the Teleological Power of Judgment", and it is also an Appendix of the book. This appendix is basically a question about the role or use of teleology for theoretical inquiry into nature. However, even though this part of the book raises the question about the role of natural teleology for our research into nature, this Appendix is more concerned with moral-practical philosophy than to theoretical philosophy (unlike the Analytic and Dialectic of the Teleological Judgment, which both have epistemological implications). In this section of the chapter, I will offer a very condensed synthesis of the Methodology, just to highlight those aspects I consider are worthwhile to bear in mind in light of the preceding sections. In order to do so, this section has ordered the Methodology into three main topics: namely, i) the role of natural teleology and the necessary subordination of the principle of mechanism to the maxim of teleology; ii) the question of final ends (*Endzwecke*) in nature; and iii) the question concerning the supreme cause of nature viewed as a system of ends.

i) Kant states throughout the Methodology that teleology has only methodological considerations for our theoretical approach to nature ("[teleology] has at least a negative influence on procedure in theoretical natural science" KU, AA V, 417), but it does not offer empirical knowledge of nature. Now, Kant must ask whether teleology pertains to the doctrine of nature or to theology. Kant will assert that teleology pertains to none of them: "[t]eleology, as a science, thus does not belong to any doctrine at all, but only to *critique*, and indeed to that of a particular cognitive faculty, namely that of the power of judgment" (417, my emphasis). As Wick explains in a very straightforward way:

> Teleology does not itself provide any empirical knowledge, even though it is necessary for knowing nature scientifically. Neither does it prove God's existence with metaphysical certainty. Its main purpose is to guide scientific inquiry and the suggestion that God exists arises only in relation to the subjective need for a scientific guide (Wick 2007, 233).

Therefore, teleology is necessary for investigating nature (i.e., as a guideline), but it does not provide empirical knowledge of nature and its products. Accordingly, teleology does not pertain to the doctrine of nature, but it can nonetheless provide *guidance* to theoretical natural science, and also, it can offer some reflections about our moral-practical destination. On the other hand, teleology cannot be treated as a part of theology either, but it can be regarded as a propaedeutic for it.

In §§80-81, Kant addresses the methodological significance of subordinating mechanism to teleology when judging something as a natural end (*Naturzweck*). As he has already stated in the Antinomy, we must proceed as far as possible with the mechanistic explanation of nature, since the authorization (*Befugnis*) to seek mechanical explanation of nature and its products is unrestricted (417). Nevertheless, the mechanical explanation of natural products is certainly quite limited due to the peculiar constitution of our understanding, which conceives these natural things as natural ends (that is, by means of teleological considerations). Accordingly, "our judging of them [natural things] must always be subordinated to a teleological principle as well" (417). The mechanistic explanation of nature is insufficient for thinking the very possibility of something as organized and self-organizing, therefore, this principle must be subordinated to teleological principles in order to even start thinking these natural products as organized. However, without the principle of mechanism we would not have natural science strictly speaking (and we would not have the chance to even start explaining organic beings), and furthermore these organized beings (judged as natural ends) would not be considered *natural* products (422). Therefore, even though the principle of mechanism must be subordinated to teleology, it is absolutely unavoidable for natural science in its investigation of nature and its products.

ii) Now, if we judge some natural things in nature as *Naturzwecke*, then we must also consider the possibility of asking about a final end in nature "in relation to which all other natural things constitute a system of ends in accordance with fundamental principles of reason" (429). That is to say, judging something as a *Naturzweck* leads us necessarily

to the question of the "ultimate end" (*letzten Zwecke*) and "final end" (*Endzwecke*) in nature as well as to the idea of the whole nature viewed as a system of ends (*System von Zwecken*). The ultimate end in nature is, according to Kant, the human being. The end that can be promoted through the connection of human being to nature is either happiness or human culture. But, as Kant says, in order to "discover where in the human being we are at least to posit that ultimate end of nature, we must seek out that which nature is capable of doing in order to prepare him for what he must himself do in order to be a final end [*Endzwecke*]" (431). Happiness is an end that can be fulfilled in nature, but happiness does not prepare the human being to be a final end, unlike culture which is, for Kant, "[t]he production of the aptitude of a rational being for any ends in general (thus those of his freedom)" (431). Only culture can be an ultimate end of nature in regard to the human being, because culture is the human production of that formal-subjective condition (or the aptitude) for setting ends in general and achieving them. Accordingly, only culture can be considered an ultimate end in nature, because it prepares the human being to be an *Endzwecke*. Now, the question of the final end (*Endzwecke*) arises.

Kant begins §84 ("On the final end of the existence of a world, i.e., of creation itself") by defining *Endzweck* as an end that does not require another one as a condition for its possibility, that is, a final end is unconditioned (or an end in itself). That kind of unconditioned end cannot be found or produced in nature, because "there is nothing in nature (as a sensible being) the determining ground of which, itself found in nature, is not always in turn conditioned" (435). Accordingly, we must ask what an end in itself might be, i.e. unconditioned, which "without him the chain of ends subordinated to one another would not be completely grounded" (435). Kant states that the only being that can be an end in itself is the human being as the rational subject of morality. Morality teaches us how a rational being can be an unconditioned end, an end in itself and also capable of being a final end[86]. The human being, as the subject of morality, is the only being capable of being a final end, in which nature as a whole is teleologically subordinated (436).

iii) Now, the problem of the final end leads us to the question of the supreme cause of nature as a system of ends. Kant distinguishes and contrasts two attempts of reason for inferring the supreme cause of nature (that is, the existence of God), namely, physicotheology and ethicotheology. The former "is to infer from the ends of nature

[86] "The moral laws, however, have the unique property that they prescribe something to reason as an end without a condition, thus do exactly what the concept of a final end requires" (KU, AA V, 449).

(which can be cognized only empirically) to the supreme cause of nature and its properties" (436); the latter is the attempt to infer this supreme cause from the moral ends of human rational being in nature ("which can be cognized a priori" 436). Even though the former "naturally" precedes the latter, physicotheology cannot reveal to us anything related to the final end, because it cannot even pose the question about the final end of creation (437) and the supreme cause of nature, i.e. God's existence. The reason for this limitation rests on the fact that no physical proof can demonstrate something that lies beyond nature (that is, that lies in the supersensible sphere). That is to say, it is impossible to demonstrate the existence of God as the supreme cause of nature by the merely theoretical principles of reason.

It is only in morality where the concept of *Endzweck* makes any sense; hence ethicotheology (or moral teleology) can determine its object (God) by means of the moral argument. This argument starts from practical freedom and the consciousness of the moral law in us, that is to say, this argument starts from a supersensible standpoint that can account for God's existence (at least from a practical substratum). "Now since we recognize the human being as the end of creation only as a moral being, we have in the first place a ground, at least the chief condition, for regarding the world as a whole interconnected in accordance with ends and as a system of final causes" (444). Accordingly, it is impossible for the regulative idea of nature as a system of ends to be attained from a merely physical-natural standpoint (like physicotheology), since an end in itself (unconditioned) has only practical-moral validity (in a rational-moral subject, like the human being). Thus, we can think nature as an interconnected system of ends, but only in regard to the moral-practical sphere. In other words, "we must assume a moral cause of the world (an author of the world) in order to set before ourselves a final end, in accordance with the moral law; and insofar as that final end is necessary, to that extent [...] is it also necessary to assume the former, namely, that there is a God" (450).

This last idea leads us to a recurrent topic in Kant's Critical philosophy, namely, God's existence as a matter of faith or belief (*Glaubenssachen*). Matters of faith are "[o]bjects that must be conceived a priori in relation to the use of pure practical reason in accordance with duty (whether as consequences or as grounds) but which are excessive for its theoretical use" (469). This idea was already addressed by Kant in the Canon of Pure Reason of the first *Critique* and in the Postulates of Pure Practical Reason of the second *Critique*. The central point of this idea is that faith is the way in which we can

"assume as true" ("*als wahr anzunehmen*") God's existence[87]. That is to say, God's existence is the object of an authentic practical faith, not the object of mere opinion nor a matter of fact. We can only have opinions about objects susceptible to an experiential cognition, and God's existence clearly exceeds the sphere of sensible experience. Therefore, "[o]bjects of mere ideas of reason, which cannot be represented for theoretical cognition in any sort of possible experience at all [...], one cannot even have an opinion, because to have an opinion a priori is absurd on its face and is a straight road to pure figments of the brain" (467). On the other hand, the matters of fact are "[o]bjects for concepts the objective reality of which can be proved" either by means of pure reason (either practical or theoretical) or through experience, "but in all cases by means of intuitions corresponding to the concepts" (467). Once again, God's existence (and the corresponding concept of final end) is not able to be presented as an intuition, so it is not a matter of fact[88].

In conclusion, the regulative concepts of final end and God's existence only have validity in practical reason, not in theoretical reason. "[A] final end is merely a concept of our practical reason, and can neither be deduced from any data of experience for the theoretical judging of nature nor be derived from any cognition of it" (454). That is to say, these two practical concepts (final end and God's existence) are necessary only with respect to practical reason, but they do not expand our theoretical knowledge of nature and its products. Therefore, these two practical concepts do not amplify or extend our cognition of nature; they do not give any clue at all for our theoretical research into nature. But they do represent a necessary subjective presupposition in regard to morality. As Kant says at the end of the third *Critique*:

> If one asks why it is so important to us to have a theology at all, then it becomes clear that it is not necessary for the expansion or improvement of our knowledge of nature and, in general, for any sort of theory, but is necessary in a subjective respect strictly for

[87] "Faith (as *habitus*, not as *actus*) is reason's moral way of thinking in the affirmation of that which is inaccessible for theoretical cognition. It is thus the constant fundamental principle of the mind to assume as true that which it is necessary to presuppose as a condition for the possibility of the highest moral final end, on account of the obligation to that" (KU, AA V, 471).

[88] The only concept of reason that can be considered as matter of facts is freedom: "But what is quite remarkable, there is even one idea of reason (which is in itself incapable of any presentation in intuition, thus incapable of theoretical proof of its possibility) among the facts, and that is the idea of freedom, the reality of which, as a particular kind of causality (the concept of which would be excessive from a theoretical point of view) can be established through practical laws of pure reason, and, in accordance with these, in real actions, and thus in experience. – It is the only one among all the ideas of pure reason whose object is a fact and which must be counted among the *scibilia*" (KU, AA V, 468).

> religion, i.e., for the practical, that is, the moral use of reason [*dem praktischen, namentlich dem moralischen Gabrauche der Vernunft*] (482).

This chapter has introduced a general overview of Kant's "Critique of the Teleological Power of Judgment", especially in relation to the main concept that is at stake in it, namely, the reflective concept of *Naturzweck*. However, key to understanding the Kantian notion of a natural end is Kant's conception of analogy, since Kant develops the notion of *Naturzweck* by analogy with our causality in accordance with ends (or with our technical-practical reason). For this reason, to fully understand what a natural end is, it is necessary to understand, first, what concept of analogical reasoning Kant has in mind when developing the "Critique of the Teleological Power of Judgment", and, second, what is the best way to construe the very analogy that Kant invokes between the living organism and our technical reason.

Chapter 3: Kant's Critical Concept of Analogy

As mentioned at the end of chapter 2, Kant's "Critique of the Teleological Power of Judgment", and more specifically, Kant's concept of natural end (*Naturzweck*), can only be fully understood by means of the analogies—and disanalogies—invoked by Kant throughout the second part of the *Critique of the Power of Judgment*. Before interpreting and systematizing the role of analogical reflection for the formation of the concept of *Naturzweck*, it is indispensable to determine, in the first place, what Kant understands by analogy, and what kind of analogies he distinguishes; and, in the second place, what kind of conception of analogy operates within the "Critique of the Teleological Power of Judgment". Analogy is indeed a technical term within Kantian philosophy and, as such, it has its special functions and peculiarities, as well as its own distinctions and different uses. For that reason, this chapter is devoted to distinguishing the different types of analogy that we can find in Kant's critical writings and especially in the "Critique of the Teleological Power of Judgment".

Even though "Kant is merely following a tradition that viewed analogy as a valid (though limited) means of inquiry and discovery"[89], there is no doubt that Kantian theory of analogy provided an interesting and novel account, at least regarding the Analogies of Experience and symbolic representation. That is to say, he is more or less following the tradition when he bases the philosophical analogy on the mathematical analogy of proportion, or when he groups analogy as a form of inferior inference of the reflective power of judgment[90]. But he is also elaborating a new way of thinking analogy when he

[89] "Kant on Analogy" (Callanan 2008, 749). In this paper, Callanan states (with good reasons) that this tradition has its root in Aristotelian logic, and that Early Modern philosophers and scientists explicitly related analogy to induction, that is, as a way to move from the particular to the universal. As Callanan explains: "Induction and analogy had been traditionally pained within Aristotelian logic and Bacon is the first to recover the notion within the 'new' science. In book II of the *Novum Organum* he states: 'Substitution by analogy is certainly useful but less sure, and therefore must be used with some discretion. It occurs when a non-sensible thing is brought before the senses, not by sensible activity on the part of the insensible substance itself, but by observation of a related sensible body'" (2008, 749). Newton and Locke also recover analogy as a form to improve and extend our knowledge, but they both state that analogy must be used with caution and discretion. The works of Mary Hesse (1966) and Daniel Whistler (2013) are also very enlightening for the accounting of analogy in both Modern philosophy and science.

[90] One can even state that Kant is ambivalent regarding analogy (at least in its logical use), since he understands analogy as a form of inferior reasoning of the reflective power of judgment, but, at the same time, he highlights its relevance for extending our empirical cognition. As Nassar clearly says: "After all, Kant was not entirely critical of analogy, and often emphasized its significance. Not only in his precritical *Universal Natural History and Theory of the Heavens* (1755), but also throughout his lectures on logic (1770-1800) and the three *Critiques*, Kant uses analogy and describes it as a necessary for the 'expansion' of cognition. Thus, although Kant expressed caution toward analogy, he was also aware of its usefulness,

introduces symbolic representation as a form of analogical procedure, by which we can indirectly present the supersensible ideas of reason. Symbolic representation (or symbolic analogy) is, perhaps, the major contribution of Kant's theory of analogy as a form of indirect presentation (*Darstellung*)[91]. Accordingly, this chapter will mainly be a systematization of Kant's Critical different conceptions of analogy, in order to clarify what kind of analogical procedure is at stake throughout the Teleological Judgment. To carry this out, this chapter is divided into five sections.

The first section (3.1) consists in a brief account of the first distinction to bear in mind when studying Kant's conception of analogy, namely, that between mathematical and philosophical analogy. This distinction is crucial, because even though philosophical analogies are based on the mathematical analogy of proportion, Kant emphasizes that philosophical analogy represents something completely different from mathematical analogy (KrV, A179/B222). Moreover, Analogies of Experience as well as symbolic representation are derived from philosophical analogies. Therefore, the distinction between mathematical and philosophical analogies is ineludible as a first stage of Kant's theory of analogy.

The second section (3.2) explores one of the most relevant aspects of Kant's *Critique of Pure Reason*, namely: Analogies of Experience. This section, therefore, is a brief account and description of those three analogies of experience. Analogies of Experience, as a type of philosophical analogy, are crucial for the Kantian system, inasmuch as they provide a necessary unity of our perceptions in time, something indispensable for enabling possible experience. The analogies of experience, however, represent only a part—although extremely relevant—of Kant's conception of philosophical analogy; the other two philosophical analogies are analogy as a mode of inference of the reflective power of judgment and symbolic analogy. Accordingly, section

indeed of its necessity. As he puts it in the 'Hechsel Logic', without analogy, 'what are we do?'" (2015, 242). A recent account of the role of analogy for natural science can be found in van den Berg (2017). Van den Berg states that Kant has a critical view of the use of analogy for science and biology, a view that was justified for a long-standing modern tradition critical of the role of analogy in science: "Kant stemmed from a tradition that did not assign analogical arguments an important justificatory role in natural science. According to this tradition, analogy should be used sparingly in science and is subordinated to proper scientific explanations conceptualized as deductive (syllogistic) demonstrations from fundamental principles" (2).

[91] One may say that Analogies of Experience are the main philosophical contribution of Kant regarding analogy. But whereas Analogies of experience are crucial for the Kantian Critical system inasmuch as they constitute experience itself (KrV, B219), symbolic analogy is relevant for bringing to presentation (at least indirectly) what lies beyond experience, i.e. ideas of reason.

three of this chapter (3.3) deals with analogy as a mode of inferior reasoning (or inference), which, together with induction, pertains to the reflective power of judgment. In his lectures on logic, Kant states that analogy is a mode of inference that proceeds from the particular to universal in order to expand our empirical cognition. In this sense, analogy is a very useful tool for extending our cognition by experience, but Kant warns us that we must use analogical inference with caution and care (Logik, AA IX, 133). On the other hand, the fourth section (3.4) is devoted to symbolic representation, a type of analogical procedure that Kant introduces in §59 ("Beauty as a symbol of morality") of the Aesthetic Judgment in the third *Critique*. As mentioned above, symbolic representation is, maybe, the most interesting Kantian contribution regarding analogy. This section will describe and analyze the role of the symbol for presenting in an indirect manner what lies beyond any intuition, namely, the ideas of reason. Finally, the fifth section (3.5) of this chapter is about the type of analogy that is at stake in the Teleological Judgment. That is to say, this last section will mainly be an answer to the question: What kind of analogical thought is operating when Kant invokes a "remote analogy" in order to illuminate the concept of natural end? Is it a symbolic analogy, just as it is described in §59 of the Aesthetic Judgment? At the end of this chapter, we would be able to better understand not only Kant's conception of analogy and its different features, but most importantly, the type of analogical reflection that Kant uses throughout the Teleological Judgment.

3.1. - Mathematical analogy and philosophical analogy

Even though analogy is present throughout Kantian writings, his conception of analogy has a richer development starting from his critical period, especially in his lectures on logic (1770s-80s), the *Critique of Pure Reason*, the *Prolegomena* and the *Critique of the Power of Judgment*. In these writings, Kant develops his technical conception of analogy by means of a capital distinction, namely, Analogies of Experience and symbolic representation (or symbolic analogy[92]). The most general definition of analogy that we can find in Kant's critical works is present in the *Prolegomena*, where Kant defines

[92] The name "symbolic analogy" is not specifically used by Kant for referring to symbolic representation, but I will use the expression because it condenses in a very clear way one of the types of reasoning that the reflective faculty of judgment has. Moreover, it is used by some commentators, such as Pringe (2007, 2014), and Di Sanza (2010).

analogy as "a perfect similarity between two relations in wholly dissimilar things" (*Prol*. AA IV, 357-8). This definition of analogy rests, in turn, on a previous differentiation of two forms of analogy, which correspond to mathematical and philosophical analogies. Both types of analogy offer different forms of identity between a relation of four members, where three of them are already given and the fourth is missing or unknown. The difference between these two forms of identity is crucial for Kant, because "[i]n philosophy analogies signify something very different from what they represent in mathematics" (KrV, A179/B222). This difference consists in two aspects: i) mathematical analogies have a quantitative relation of identity, whereas philosophical analogies have a qualitative relation of identity; and ii) the mathematical analogies are constitutive, whereas philosophical analogies are always regulative. Let us see in what this twofold difference consists, which is the starting point for understanding Kant's conception of philosophical analogy.

Mathematical analogies "are formulas that assert the identity of two relations of magnitude, and are always constitutive, so that if three members of the proportion are given the fourth is also thereby given, i.e., can be constructed" (A179/B222). This definition of mathematical analogy correspond to the mathematical relation of proportion, e.g., a:b::b:x, in which we must *construct* the fourth unknown member, that is, "x". In this operation, the unknown member "x" is, according to Kant, *constituted a priori* by construction. Moreover, the relation in mathematical analogy is quantitative, which means that the different members of the analogy are to some extent homogeneous to each other and the relation can be thus constructed (and constituted[93]) *a priori*.

Philosophical analogy, however, has a qualitative nature, that is, a relation between elements that are heterogeneous to each other. As Kant puts it: "[philosophical] analogy is not the identity of two quantitative but of two qualitative relations, where from three given members I can cognize and give a priori only the relation to a fourth member but not this fourth member itself" (A179-80/B222). That is to say, philosophical analogy

[93] Callanan explains why some principles of the understanding are actually constitutive unlike regulative principles: "Constitutive principles of the understanding are therefore those rules of combination of the manifold by composition (composition), in that they are based on the basic uniformity and homogeneity of all appearances in their characteristics (of extensive and intensive magnitude). One reason why they can be called 'constitutive' is that, as will be seen, they are the fundamental rules of the *construction* of the possibility of appearances; that is, when appearances are considered at their most basic level of uniformity" (2008, 758). Even though this explanation is referred to constitutive principles of the understanding, we can apply it to mathematical analogies inasmuch as they construct a *constitutive* relation of things.

does not construct *a priori* the unknown member of the relation, but rather it provides "a rule for seeking it [the unknown member] in experience and a mark for discovering it there" (A179-80/B222).

In short, whereas mathematical analogies have a *constitutive* role that determines the unknown member, philosophical analogies have a *regulative* role for unifying the manifold and to discover (or to infer) the missing member in experience. As Dalia Nassar suggests: "in philosophy, analogy is useful for discovering the fourth [unknown] element, while in mathematics analogy can construct it. The philosophical use of analogy thus specifically pertains to the empirical work of investigating, rather than deriving from *a priori* principles" (2015, 244). This empirical work of inferring or discovering the unknown element is crucial for understanding the Kantian conception of philosophical analogy in both its versions: analogies of experience and symbolic representation (or symbolic analogy).

3.2. - Philosophical Analogies of Experience

Kant's conception of analogy contains not only the distinction between mathematical and philosophical analogies (that is, the distinction between quantitative and qualitative relations, respectively), but also a crucial distinction within philosophical analogy itself, namely, analogies of experience and symbolic analogy. We can find in both forms of philosophical analogies the distinctive contribution of the Kantian theory of analogy. The main difference between both types of philosophical analogies is quite relevant though, and it lies in asking whether the fourth member of the relation can be considered an object of possible experience[94] or not. The analogies of experience can be grouped as a relation of identity in which the fourth unknown member is an object of possible experience (i.e., it can be intuited); a symbolic analogy, however, represents a relation in that the fourth member lies beyond possible experience.

Kant's treatment of analogies of experience is specially carried out in the *Critique of Pure Reason*, in the section called, precisely, "Analogies of Experience". For Kant, an

[94] As Pringe clearly points out: "If the fourth term of the proportion can be intuited, then the analogy will be an analogy of experience. If, on the contrary, the fourth term cannot be intuited, the analogy will be symbolic" (2007, 13).

analogy of experience is "only a rule in accordance with which unity of experience is to arise from perceptions […], and as a principle it will not be valid of the objects (of the appearances) constitutively but merely regulatively" (A180/B222-23)[95]. Even though these analogies operate as a regulative principle, they are absolutely necessary for constituting possible experience, since they give a necessary unity (or connection) to our perceptions in time. According to Kant, "[e]xperience is an empirical cognition, i.e., a cognition that determines an object through perceptions" (B218). Nevertheless, our perceptions "come together only contingently", therefore we cannot extract from them an evidence of their necessary connection, "since apprehension is only a juxtaposition of the manifold of empirical intuition" (B219). Accordingly, we must seek an *a priori* and objective principle that serves as a necessary rule for unifying and connecting this manifold of perceptions in time, since otherwise we would be incapable of enabling experience itself[96].

There are three *modi* of time (persistence, succession, and simultaneity), and the three analogies of experience will adopt one of these three *modi* respectively; thus, they will enable possible experience by connecting perceptions in time under necessary rules of the understanding. As Kant puts it:

> Hence three rules of all temporal relations of appearances [persistence, succession, and simultaneity], in accordance with which the existence of each can be determined with regard to the unity of all time, precede all experience and first make it possible (A177/ B219).

These three analogies of experience, as mentioned above, make experience itself possible, because they provide a necessary connection of appearances "in accord with an analogy with the logical and general unity of concepts" (B224). Analogies of experience, therefore, operate by means of an analogy with the concepts of the understanding (categories) and the way in which they unify (synthetize, categorize) the manifold of our intuitions (phenomena) in the process of schematization. The three analogies of experience are: persistence of substance, succession (temporal sequence) according to the

[95] Or as Kant introduces the function of these analogies at the beginning of this section: "Experience is possible only through the representation of a necessary connection of perceptions" (B218).
[96] "[T]he determination of the existence of objects in time can only come about through their combination in time in general, hence only through *a priori* connecting concepts. Now since these always carry necessity along with them, experience is thus possible only through a representation of the necessary connection of the perceptions" (B219).

law of causality, and simultaneity according to the law of community. Let us examine briefly each of them.

The principle of the first analogy (persistence of the substance) is the following: "In all change of appearances substance persists, and its quantum is neither increased nor diminished in nature" (B224). Kant starts his argumentation by stating that all "appearances are in time", and only by means of it we can represent both simultaneity and succession; that is to say, only by means of time can we represent all changes in appearances (B224-25). Time, on the other hand, endures and does not change, but we cannot perceive it by itself. Accordingly, Kant explains, "it is in the objects of perception, i.e., the appearances, that the substratum must be encountered that represents time in general and in which all change or simultaneity can be perceived in apprehension through the relation of the appearances to it" (B225). In other words, we must be able to find the substratum which represents time as *something permanent* that grounds the change amongst our perceptions, and the "substratum of everything real" is substance (B225), that is, something that endures and persists. Kant highlights that only in what persists (i.e., in a substance) are temporal relations possible, since "[s]ubstances (in appearance) are the substrata of all time-determinations" (B231). The first analogy of experience, therefore, is crucial for enabling possible experience, because it grounds persistence as a necessary condition to determine appearances "as things or objects" (B232), that is to say, as substances in which each change and temporal relation may be perceived.

The second analogy of experience is, without a doubt, the most commented of the analogies of experience and the one that has given rise to innumerable debates and discussions[97]. It is also the largest in length and the most important for Kant, since it establishes the law of natural causation. As mentioned above, our perceptions ("the apprehension of the manifold of appearance") are always successive, so Kant raises the

[97] In light of the purpose and scope of this dissertation, I cannot examine the development and details of this relevant discussion, but some thorough commentaries can be found here: Guyer (1987), Friedman (1992), Melnick (1973), Buchdahl (1992), Lewis White Beck (1973, 1978, 1981), Allison (1983), Watkins (2005), Nagel (1983), Thöle (1998), amongst others. Neither can I introduce one of the most relevant debates regarding the Second Analogy, namely: the so-called debate of the weak and strong reading of this analogy. According to the former reading, the Second Analogy only establishes that in an event there must be a preceding condition (a cause), that is to say, to every event there must be some cause that produces and antecedes the aforementioned event. Lewis White Beck and Allison follow this line of interpretation. The strong reading, on the other hand, goes a step further in stating that the Second Analogy not only establishes that every event has a cause, but, in addition to this, that the same types of effects have been produced by the same type of causes. Friedman and Guyer support this latter reading. Though I cannot dig into this debate, I agree with the weak reading of the Second Analogy, since it has stronger textual support.

question whether we can represent an objective temporal sequence, that is to say, whether our perceptions can be connected and ordered by the law of causality (i.e., by a necessary and objective rule of the understanding). Kant formulates the principle of the second analogy as follows: "All alterations occur in accordance with the law of the connection of cause and effect" (B232). The principle of natural causality establishes that "[e]very apprehension of an occurrence is therefore a perception that follows another one" (B237). So, if I perceive "an appearance that contains a happening, I call the preceding state of perception A and the following one B, then B can only follow A in apprehension, but the perception A cannot follow but only precede B" (B 237). Temporal sequence must follow, therefore, a necessary order in the succession of perceptions, in which the cause must necessarily precede the perception of the effect, just as the effect necessarily follows the cause[98].

The principle of causality, just as it is described in the second analogy, not only provides an order to the sequence of our representations, but also it assigns an objective significance to them. The causal principle of the understanding supplies a necessary order to the combination of our representations and thus makes possible the constitution of an object of experience. As Kant explains:

> Thus the relation of appearances (as possible perceptions) in accordance with which the existence of that which succeeds (what happens) is determined in time necessarily and in accordance with a rule by something that precedes it, consequently the relation of cause to effect, is the condition of the objective validity of our empirical judgments with regard to the series of perceptions, thus of their empirical truth, and therefore of experience. Hence the principle of the causal relation in the sequence of appearances is valid for all objects of experience (under the conditions of succession), since it is itself the ground of the possibility of such an experience (B 247).

The law of causality is, according to Kant, the condition of experience, since the relation of cause to effect is the principle that provides objective validity to our empirical representations in time. Natural causation is the principle that can constitute an object for our experience and, hence, the rule that enables experience itself.

[98] "This rule for determining something with respect to its temporal sequence, however, is that in what precedes, the condition is to be encountered under which the occurrence (i.e., necessarily) follows" (B246).

The third analogy of experience is the principle of simultaneity in accordance with the law of community or interaction. This principle states that "[a]ll substances, insofar as they are simultaneous, stand in thoroughgoing community (i.e., interaction with one another)" (B256). Kant defines simultaneity as "the existence of the manifold at the same time": things can be represented as simultaneous in the extent that the perception of one can follow the perception of the other and vice versa (B257). Nevertheless, perceptions themselves are juxtaposed, and time itself cannot be perceived, hence we cannot "derive from the fact things are positioned at the same time that their perceptions can follow each other reciprocally" (B257). Accordingly, a concept of the understanding is required in order to represent simultaneity as objective[99], and such a concept is the law of community or interaction amongst substances in space (or amongst appearances in space). Without this principle "every perception […] is broken off from the others, and the chain of empirical representations, i.e., experience, would have to start entirely over with every new object" (B260-61). In other words, without the principle of community, the empirical relation of simultaneity could not be achieved in experience.

These three analogies of experience, as mentioned above, enable *a priori* the unity of experience and its objects[100]. That is to say, these analogies make possible experience itself by *a priori* connecting the existence of the appearances in time, according to the three *modi* of time (persistence, succession, and simultaneity). Moreover, these three analogies *exhibit* the unity of nature, if we understand by nature, as Kant does, "the combination of appearances as regards their existence, in accordance with necessary rules, i.e., in accordance with laws" (B263). When these laws are *a priori*, then they make possible nature (and experience) itself; empirical laws, by contrast, can only be found in experience. Even though these three analogies of experience are merely regulative principles, experience itself could not be enabled without them, since they establish the *a priori* connection of appearances in time. However, the analogies of experience represent only a part of Kant's conception of philosophical analogy. The other part, i.e. symbolic representation, consists in a relation of identity in which the fourth unknown member,

[99] "Consequently, a concept of the understanding of the reciprocal sequence of the determinations of these things simultaneously existing externally to each other is required in order to say that the reciprocal sequence of perceptions is grounded in the object, and thereby to represent the simultaneity as objective" (B257).

[100] "Thus together they [the three analogies of experience] say: All appearances lie in one nature, and must lie therein, since without this a priori unity no unity of experience, thus also no determination of the objects in it, would be possible" (B263).

unlike analogies of experience, is beyond possible experience. But before thematizing symbolic analogy, it is important to explain another form of philosophical analogy, which is neither an analogy of experience (that is, an indispensable principle for enabling possible experience), nor a symbolic representation properly speaking. This type of philosophical analogy is analogical inference, which is essential for extending our cognition by experience.

3.3. - Analogical inference, or analogy as a mode of inference of the reflective power of judgment

In his "Lectures on Logic"[101], especially in the "Jäsche Logic" and the "Hechsel Logic", Kant introduces the function of inference (*Schlüss*) in general. He defines inference as a "function of thought whereby one judgment is derived from another. An inference is thus in general the derivation of one judgment from the other" (Logik, AA IX, 114). As we have seen in Chapter 1, Kant distinguishes two kinds of judgments: determining judgments (which proceed from the universal to the particular) and reflective judgments (which proceed from the particular to the universal). The reflective power of judgment has only subjective validity, since the universal that is inferred from the particular "is only empirical universality –a mere analogue of the logical" (IX, 132). Empirical universality is contrasted with rational universality, which is a strict universality in the sense that what can be attributed to the "concept universally actually does belong to all the things without exception" (IX, 109). This is not the case in empirical universality, which is a kind of broad and uncertain universality (that is, a "mere analogue" of rational universality). The inferences of the reflective power of judgment "are certain modes of inference for coming from particular concepts to universal ones" (IX, 132), and these modes of inference are induction and analogy. Both modes of inferences proceed, therefore, from the particular to the universal, and this universal is found not *a priori*, but rather empirically, that is, from experience (IX, 132).

[101] What is known as the "Lectures on Logic" (or "Logic") is a compilation of the lectures given by Kant about logic, but this compilation was not written by Kant himself, but by his student Gottlob Benjamin Jäsche. For an interesting account of the genesis and development of this work, see Terry Boswell, "On the textual Authenticity of Kant's Logic", in *History and Philosophy of Logic* 9, 1988, 193-203.

Even though both forms of inferences proceed empirically from the particular to the universal, they exhibit some differences. While induction "infers […] from many to all things of a kind"[102], analogy infers "from many determinations and properties, in which things of one kind agree, to the remaining ones, insofar as they belong to the same principle"[103] (IX, 132). Kant adds that induction proceeds in accordance with the principle of *universalization*, whereas analogy with the principle of *specification*. As Kant says: "Induction extends the empirically given from the particular to the universal in regard to many objects, while analogy extends the given properties of one thing to several [other properties] of the very same thing" (IX, 133, note). Moreover, these inferences are, as Kant says, only "logical presumptions". This latter point is relevant to highlight: considering that these modes of inferences are made empirically, the validity of this kind of judgments is not objective in the extent that they do not "yield necessity" as an inference of reason does. That is to say, these inferences are prone to fail. As Callanan clearly points out: "[b]oth induction and analogy, then, are forms of reflective judgment that allow us to draw only general and thus fallible judgments" (2008, 751).

With respect to analogy, Kant emphasizes that "identity of the ground (par ratio) is not required" (IX, 133). With analogy, we only need an identity in the *relation* of the properties of the objects that obtains in the analogy. To use a Kantian example, we can infer by analogy that the inhabitants of the moon are *rational* beings, but not *human* beings. That is to say, if the properties of the moon we have discovered so far are the same as some properties of the earth, we can infer by analogy that the remaining properties of the moon are similar to the earth[104].

Analogical inferences, therefore, are "useful and indispensable for the sake of the extending of our cognition by experience" (IX, 133). Nevertheless, by the very fact that they only provide "empirical certainty, we must use them with caution and care" (133), since they might mislead us. Despite that, one might even say that, ultimately, Kant is here more concerned with underscoring the usefulness and necessity of analogical

[102] Or as Kant puts it in his "Hechsel logic": "We infer per *inductionem* when we take it as a basis that what belongs to many things of the genus belongs to the remaining things of that genus" (IX, 109).
[103] As Kant also adds in the "Hechsel logic": "I infer according to analogy thus: when two or more things from a genus agree with one another in as many marks as we have been able to discover, I infer that they will also agree with one another in the remaining marks that I have not been able to discover" (IX, 109).
[104] "The moon has mountains and valleys, day and night, our earth has day and night and so forth; since the moon has much similarity with our earth, I will attribute to it many of the properties of the earth" (IX, 110).

inferences for expanding our empirical cognition than merely offering a warning us to be cautious when using them.[105]

3.4. - Symbolic representation or symbolic analogy

In symbolic analogy we find what is perhaps Kant's main contribution regarding analogy as a form of indirect presentation (and as a form of philosophical analogy). Symbolism, as a form of analogy, is thematized by Kant mostly in §59 of the *Critique of the Power of Judgment*, whose title is "Beauty as a Symbol of Morality". Some years after the publication of the third *Critique*, Kant addresses again the topic of symbolic representation in his *On the Progress of Metaphysics since Leibniz and Wolff*. In both writings, however, Kant uses the expression "symbolic representation" or "symbol" as a presentation (*Darstellung*) by analogy. Or as he defines it in *On the Progress of Metaphysics*: "The symbol of an idea is a presentation [*Darstellung*] of the object by analogy" (AA XX, 279). In this light, symbolic representation is the analogical procedure by means of which we can access what lies beyond possible experience (i.e., ideas of reason). And this procedure is carried out by the power of judgment and it can be seen as *analogous* with schematization.

While introducing symbolic representation, Kant faces the problem that ideas of reason cannot be exhibited by any possible intuition (i.e., ideas cannot be schematized), so we must seek another kind of presentation, and this other kind of presentation is the symbol. As Kant explains it:

> To demonstrate the reality of our concepts, intuitions are always required. If they are empirical concepts, then the latter are called *examples*. If they are pure concepts of the understanding, then the latter are called *schemata*. But if one demands that the objective reality of the concepts of reason, i.e., of the ideas, be demonstrated, and moreover for the sake of theoretical cognition of them, then one desires something impossible, since no intuition adequate to them can be given at all (V, 351).

[105] "Induction and analogy are inseparable from our cognitions, and yet errors for the most part arise from them. We are always acquainted only with something in things, and we infer that here it will be as nice as it is in other things. Since we cannot do without a crutch for the human understanding, we must pay heed to whether a mistaken inference is made here" (IX, 110)

Intuitions are called *examples* when they demonstrate the objective reality of our empirical concepts; in the case of categories (i.e., pure concepts of the understanding), intuitions are denominated *schemata*; in the case of our ideas of reason, however, no intuition can be given in order to represent them, so we cannot demonstrate the objective reality of the concepts of reason. Nevertheless, we can *indirectly* make present the *relation* that these ideas have by means of symbolic analogy. Since symbolic representation has an analogous procedure to that of schematism, let us first examine the differences between the processes of schematization and symbolization.

Kant states that in order to make something sensible (*Versinnlichung*) we need the process of *hypotyposis*, and this process can be carried out in a twofold manner: either by schematizing the concept, that is to say, "where to a concept grasped by the understanding the corresponding intuition is given *a priori*"[106]; or by symbolizing the concepts of reason, that is, where to an idea of reason, "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" (V, 351)[107]. In this latter process,

[106] Schematization is the process that makes possible the application of the pure concepts of the understanding (categories) to appearances. In the "Analytic of the Principles" of the first *Critique*, Kant says that the process of subsumption presupposes a level of homogeneity between the object subsumed and the concept. Nevertheless, "pure concepts of the understanding, in comparison with empirical (indeed in general sensible) intuitions, are entirely unhomogeneous, and can never be encountered in any intuition. Now, how is the subsumption of 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?" (KrV, B 176-77). This subsumption is carried out by the process of schematization. As Angelica Nuzzo clearly describes: "Schematism is the procedure followed by the imagination under the rule of understanding in order to produce knowledge. The schema solves a problem of determination. It is the means through which the category is applied to appearances. The schema bridges the heterogeneity of sensible intuition and concept" (2005, 321). Now, how is schematization carried out?: "pure concepts a priori, in addition to the function of the understanding in the category, must also contain a priori formal conditions of sensibility (namely of the inner sense) that contain the general condition under which alone the category can be applied to any object. 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 the pure understanding" (B 179). Nassar explains the process of schematization as follows: "While the categories and intuitions are indeed heterogeneous with regard to content, they are homogeneous with regard to form. They share the form of time. Intuitions are implicitly temporal, and it is their temporality that makes them commensurable with the categories. The schemata make this implicit temporal form explicit, and thus enable the subsumption of an intuition under a concept. In this way, the schemata bring categories to presentation in intuition" (2016, 63).

[107] In *On the Progress of Metaphysics*, Kant states: "[T]o represent a pure concept of the understanding as thinkable in an object of possible experience is to confer objective reality upon it, and in general to present it. Where we are unable to achieve this, the concept is empty, i.e., it suffices for no knowledge. If objective reality is accorded to the concept directly (*directe*) through the intuition that corresponds to it, i.e., if the concept is immediately presented, this act is called schematism; but if it cannot be presented immediately, but only in its consequences (*indirecte*), it may be called the symbolization of the concept. The first occurs with concepts of the sensible, the second is an expedient for concepts of the super-sensible which are

the power of judgment proceeds only by applying the mere rule of the procedure of schematizing, that is, it proceeds only by the "form of reflection, not the content, which corresponds to the concept" (351). As Nassar clearly puts it: "Ideas for which there is no adequate intuition can be brought to presentation in a manner analogous to (but different from) the work of schematizing" (2016, 63). In the case of schematization, we have direct (i.e., intuited) presentations of the concept, whereas in symbolization we merely have an indirect presentation of the corresponding ideas of reason, since these ideas cannot be given in intuition. Kant adds that the former carries this process out demonstratively, whereas the latter do this by means of an analogy[108].

The procedure of symbolic analogy is carried out in a double fashion: first, it applies the concept of the object of a sensible intuition, in order to apply, then, "the mere rule of reflection on that intuition to an entirely different object, of which the first is only the symbol" (352). In the procedure of symbolization, we have, therefore, a first moment of schematization by means of a direct intuitive representation; and then we have a second moment when the process of symbolization is performed, i.e., when an indirect presentation of the ideas of reason is produced. It is only by means of symbolization that we can *indirectly* exhibit in intuition what lies beyond possible experience, that is, that we can *indirectly* present to intuition the concepts of reason.

Let us examine a Kantian example in order to clarify the procedure of symbolization. Kant takes the example of a constitutional monarchy contrasted with an absolute monarchy: the former is represented by an organized body, whereas the absolute monarchy is represented by a mere machine, such as a handmill. In both cases, Kant tells us, we have a symbolic or indirect similarity between the relation of these two objects whose concepts radically differ to each other, but whose *rule for reflecting* on them is quite similar. As Kant explains: "[f]or 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

therefore not truly presented, and can be given in no possible experience, though they still necessarily appertain to a cognition, even if it were possible merely as a practical one" (XX, 279-80).

[108] Dalia Nassar straightforwardly explains the notion of symbolic analogy, which she calls "analogical reflection": "In the third *Critique*, Kant notes that there are ideas for which 'absolutely no intuitions can be given that would be adequate to them' (AA 5: 251). That is to say, there are ideas which cannot be schematized –ideas that are thought outside of temporal conditions. For this reason, he goes on, these ideas can only be brought to presentation 'in a way merely analogous to the procedure [judgment] followed in schematizing'. In other words, in a manner analogous to but different from the work of schematizing, ideas for which there is no adequate intuition can be brought to presentation. Analogical reflection, then, is a 'carrying over' of a rule of reflecting on one object to reflecting on a second object, which is itself not presented in intuition" (2015, 249-50).

causality" (V, 352).[109] That is to say, between a machine and a despotic monarchy (as well as between an animate body and a constitutional monarchy) we do not have any direct similarity, since the objects are of entirely different kinds. Nevertheless, we can represent a sort of similarity between both objects, at least with regard to the consequences that can be ascribed to them. In the case of the despotic monarchy, the whole state is governed by an absolute will that prescribes from outside the law, whereas in a machine we have a rational designer that commands from outside the ends this machine must carry out (accordingly, the element that is similar in both concepts is an external law or end). In the case of the constitutional monarchy, on the other hand, the state is governed by internal popular laws, whereas in an animate body there is an internal purposiveness that makes possible the self-organization of the aforementioned body (the common trait in both concepts is, therefore, an internal law or end).

This Kantian example illuminates, thus, the very procedure of symbolization, where the similarity of the elements of the analogy is only possible by means of an indirect presentation, i.e. a symbol, which represents the similarity in the relation of the symbolized object (i.e., the ideas of reason or the supersensible) with the object given in intuition. In the *Prolegomena*, Kant not only offers a clear and general definition of analogy, but also he describes it in almost the same terms as symbolic representation. He calls this mode of analogy "symbolic anthropomorphism", which refers to the similarity

[109] Then Kant adds: "Our language is full of such indirect presentations, in accordance with an analogy, where the expression does not contain the actual schema for the concept but only a symbol for reflection. Examples are the words ground (support, basis), depend (be held from above), from which flow (instead of follow), substance (as Locke expresses it: the bearer of accidents), and innumerable other nonschematic but symbolic hypotyposes and expressions for concepts not by means of a direct intuition, but only in accordance with an analogy with it, i.e., the transportation of the reflection on one object of intuition to another, quite different concept, to which perhaps no intuition can ever directly correspond" (V, 352-53). Or as he puts it in the *Prolegomena*: "Such is an analogy between the legal relation of human actions and the mechanical relation of
moving forces: I can never do anything to another without giving him a right to do the same to me under the same conditions; just as a body cannot act on another body with its motive force without thereby causing the other body to react just as much on it. Right and motive force are here completely dissimilar things, but in their relation there is nonetheless complete similarity. By means of such an analogy I can therefore provide a concept of a relation to things that are absolutely unknown to me. E.g., the promotion of the happiness of the children = a is to the love of the parents = b as the welfare of humankind = c is to the unknown in God = x, which we call love: not as if this unknown had the least similarity with any human inclination, but because we can posit the relation between God's love and the world to be similar to that which things in the world have to one another" (Prolegomena, AA IV, 358). Nuzzo clarifies better this symbolic procedure by means of the Kantian example of the constitutional monarchy and the animate body: "What is similar in this case is not directly the animate body and the constitutional monarchy, but indirectly the relation between whole-parts in the symbol, the intuition that would immediately correspond to the concept of animate body takes the place of the intuition that we lack in the case of the concept of constitutional monarchy" (2005, 322).

in the *relation* of the objects, but not in the similarity of the objects themselves. Kant offers an example:

> If I say that we are compelled to look upon the world as if it were the work of a supreme understanding and will, I actually say nothing more than: in the way that a watch, a ship, and a regiment are related to an artisan, a builder, and a commander, the sensible world (or everything that makes up the basis of this sum total of appearances) is related to the unknown—which I do not thereby cognize according to what it is in itself, but only according to what it is for me, that is, with respect to the world of which I am a part (IV, 357).

Symbolic anthropomorphism allows us to judge the relation that the world may have with respect to the Supreme Being that lies beyond all the possible knowledge that experience can supply. That is to say, in the same way that an artisan is related to her artifact, we can attribute that the Supreme Being is related to the world in a way analogous to the objects known by us (i.e., the artisan and her artifact). Thus, symbolic anthropomorphism posits a "perfect similarity [*Ähnlichkeit*] between two *relations* of things in wholly dissimilar things [as dissimilar as can be the sensible objects with respect to the supersensible ones]" (IV, 357). This procedure described in the *Prolegomena* is quite the same as the symbolic representation (or symbolic analogy) of the third *Critique*: by the symbol we can indirectly exhibit (or present) in intuition what lies beyond possible experience, that is, we can indirectly present the supersensible concepts of reason, such as God.

Symbolic representation, as a peculiar procedure of the power of judgment, makes it possible to present indirectly in intuition an idea of reason which otherwise could not be presented, since this sort of concept cannot be intuited. The point that I would like to emphasize here is that symbolic representation (or symbolic analogy) is a typical procedure of reflection, that is to say, of the reflective power of judgment (in its aesthetic as well as teleological use). In other words, symbolic analogy is the typical procedure of the reflective power of judgment, and the third *Critique* itself is full of symbolic analogies. In this light, we can raise the question whether or not the analogies invoked in the Teleological Judgments are of the same kind of symbolic representation.

3.5. - Analogy as the very procedure of reflection

Analogy is present from the beginning of the *Critique of the Power of Judgment*, since the very principle of the purposiveness of nature (*Zweckmäßigkeit der Natur*) is thought by means of an analogy with purposiveness in its practical sphere[110]. In fact, the prevalence of "as if" (*als ob*) language in the third *Critique* is noteworthy in this regard, given that this kind of language is eminently analogical.[111]Both the principle of purposiveness and analogy share the privilege (or the condemnation) of being considered as a heuristic-regulative tool for orienting us in the act of thinking and researching. Reflective judgment, as the type of judgment that has an *a priori* principle and thus justifies a "critique", follows the logic of analogy to the extent that it is a subjective-regulative procedure that proceeds from the given particular to the unknown universal. Therefore, it is possible to trace out a type of convergence between the concepts of reflective judgment and analogy, in the sense that reflective judgment operates analogically. As Angelica Nuzzo points out in her outstanding *Kant and the Unity of Reason*: "Kant recognizes that analogy is the way in which the faculty of judgment is at work in the most different spheres" (2005, 323)[112]. Accordingly, it can be said that the

[110] "The purposiveness of nature is thus a special a priori concept that has its origin strictly in the reflective power of judgment. For we cannot ascribe to the products of nature anything like a relation of nature in them to ends, but can only use this concept in order to reflect on the connection of appearances in nature that are given in accordance with empirical laws. This concept is also entirely distinct from that of practical purposiveness (of human art as well as of morals), although it is certainly conceived of in terms of an analogy with that" (KU, AA V, 181).

[111] An excellent and classical work on the as-if formula in philosophy can be found in Vaihinger, *The Philosophy of 'As if': A System of the Theoretical, Practical and Religious Fictions of Mankind* (1968). In this work, Vaihinger analyses the fictional character of the Kantian formula "as if" as a mere "heuristic fiction". The as-if language represents mere fictions, since they "are rational concepts without objectivity, mere thought-entities that simply serve to guide our reason in certain respects" (1968, 283). Vaihinger recognizes that "fictions or, at least, many of them, are based on analogy. This view plays, as we shall see, a great part in Kant"; and, in fact, he contributes to giving a place to the as-if formula as a relevant—although sometimes overlooked—aspect of Kant's critical philosophy. Most of his Kantian analyses are focused on the problem of the regulative ideas, such as God, the immortality of the soul, and freedom, and the role they play in our moral actions. However, he barely analyses the as-if formula in the KU, let alone the role this formula plays in the Teleological Judgment or in the concept of *Naturzweck*. This is a pity, since in the third *Critique* this formula is used extensively by Kant, since it shows how our reflective judgment conceives nature as if it were commensurable with our cognitive faculties. Furthermore, the "Critique of the Teleological Power of Judgment" is full of this formula, since the very way we make sense of organisms is by means of an analogy with our technical reason, as if organisms possess self-organization or self-determination. A more detailed examination of the as-if formula in the Teleological Judgment (especially in the Analytic of the Teleological Judgment) would have improved further the outstanding interpretation of Vaihinger.

[112] In fact, Nuzzo is more emphatic later when she states that the logic of the reflective judgment *is* the analogical logic: "Kant suggests that the logic of the reflective faculty of judgment is the logic of analogy. Analogy designates the heuristic procedure followed by reflection. It provides a method for searching for what can be neither constructed a priori nor known a posteriori, Analogy is the as-if procedure whereby judgment explains the way in which judgment itself works" (2005, 319). Even though Nuzzo stresses the

very procedure of reflection (or of the reflective judgment) is analogy, but then a question emerges: What kind of analogy is precisely at work in the "Critique of the Teleological Power of Judgment"?

In §90 ("On the kind of affirmation involved in a moral proof of the existence of God") of the Teleological Judgment, Kant takes up analogy as a type of inference of the reflective power of judgment when he says: "One can, of course, think of one of two dissimilar things, even on the very point of their dissimilarity, by means of an analogy with the other; but from that respect in which they are dissimilar we cannot draw an inference by means of the analogy" (V, 464). Then, in a footnote that follows the latter quotation, Kant defines analogy in a very similar way as in the *Prolegomena*, but now emphasizing the similarity in the relation of cause and effects:

> An analogy (in a qualitative sense) is the identity of the relation between grounds and consequences (causes and effects), insofar as that identity obtains in spite of the specific difference between the things or those of their properties that contain in themselves the ground for similar consequences (i.e., their difference outside of this relation) (V, 464).

This quotation shows that this kind of analogy is produced while attributing an identity (*Identität*) to the relation of cause and effect, but not between the properties of these dissimilar things. Accordingly, we have now a new specification of analogical inference in this passage of the KU, which stresses a relation of identity between grounds and consequences. The examples that Kant offers in order to illuminate this kind of analogical inference are, in turn, very similar to those offered in symbolic representation and symbolic anthropomorphism. For instance:

> Thus, in analogy with the law of the equality of effect and counter-effect in the mutual attraction and repulsion of bodies, I can also conceive of the community of the members of a commonwealth in accordance with rules of justice, but I cannot transfer the specific determinations of the former (the material attraction and repulsion) to the latter and attribute them to the citizens in order to conceive of a system which is called a state. Likewise, we can very well conceive of the causality of the original being with regard to the things in the world, in analogy with an intelligence as the ground of the forms of certain products that we call artworks, as natural ends […]; but from the fact that among

role of analogical procedure in the KU, she does not develop further the role of the analogy with our causality in accordance with ends in the Teleological Judgment, which is key for understanding and representing the very concept of *Naturzweck* (as I will emphasize in Chapter 5).

> beings in the world the cause of an effect that is judged as artistic has to be attributed to intelligence we can by no means infer by an analogy that the very same causality that we perceive in humans must also pertain to the being who is entirely distinct from nature in regard to nature itself (V, 464-65).[113]

That is to say, what is homologized in these analogies is the relation between certain grounds with their corresponding effects or consequences, but not the similarity between the objects themselves or between their properties, because in the latter lies the very heterogeneity of these objects. Therefore, we can conceive the causality of God with respect to the things in the world (i.e., natural ends) in analogy with the causality of an artisan with regard to her artifact; however, we cannot determine by analogy that the type of causality that the artisan has is of the same kind as that of God.

At this point of the analysis, it is possible to determine the type of analogy that is operating throughout the "Critique of the Teleological Power of Judgment". As just mentioned above, Kant gives in §90 a definition of analogy that is very close to symbolic representation and to analogical inference as a logic procedure of the reflective power of judgment (with the specification of emphasizing the identity in the relation between grounds and effects). This passage of §90 is key for understanding the type of analogy that operates in the Teleological Judgment. I suggest that the type of analogy that works in teleological judgments is, precisely, a conjunction of those two forms of analogies, namely, symbolic representation and analogical inference (especially in the relation of grounds and consequences). In the "Jäsche Logik", Kant states that the inferences of the reflective power of judgment (induction and analogy) only have subjective validity, since the universal toward which these forms of inference can aspire is only an "empirical universality" (Logik, AA IX, 132). For this reason, these inferences do not determine the

[113] Or as he also puts it in the already quoted footnote: "Thus, in comparing the artistic actions of animals with those of human beings, we conceive of the ground of the former, which we do not know, through the ground of similar effects in humans (reason), which we do know, and thus as an analogue of reason, and by that we also mean to indicate that the ground of the artistic capacity in animals, designated as instinct, is in fact specifically different from reason, but yet has a similar relation to the effect (comparing, say, construction by beavers with that by humans). – Yet from the fact that the human being uses reason in order to build, I cannot infer that the beaver must have the same sort of thing and call this an inference by means of the analogy. Yet from the comparison of the similar mode of operation in the animals (the ground for which we cannot immediately perceive) to that of humans (of which we are immediately aware) we can quite properly infer in accordance with the analogy that the animals also act in accordance with representations (and are not, as Descartes would have it, machines), and that in spite of their specific difference, they are still of the same genus as human beings (as living beings)" (V, 464n).

object itself, but rather they only indicate the mode in which we must reflect on the aforementioned object.

So far, analogical inference seems to qualify as the type of analogical reflection that is at stake in the Teleological Judgment, but: does the concept of *Naturzweck* extend our empirical cognition of nature[114]? The Kantian answer to this question is, without a doubt, negative. But even though the concept of *Naturzweck* does not extend our empirical cognition of nature, one of the main claims of this concept is visible in the sphere of empirical investigation as a "heuristic tool": *Naturzweck* serves, and Kant is very emphatic in this regard, as a guideline (*Leitfaden*) for our investigation of nature (KU, AA V, 375, 76). However, one point is still missing: What is the role that symbolic representation play in Teleological Judgment?

An insightful interpretation of this point is made by Angela Breitenbach in her paper "Biological Purposiveness and Analogical Reflection". In fact, she states that analogical inference plays a *partial* role in the Teleological Judgment, insofar as they only provide a heuristic-methodological device for our empirical research into nature. But another type of analogical reflection is indispensable for indirectly presenting the "objective purposiveness in biological objects": "It is thus crucial that, in the CPJ, Kant presents a different characterization of the role of analogies as providing not [just] a heuristic tool for empirical investigation, but [also] an indirect, symbolic representation of concepts that cannot be represented directly" (2014a, 140-41, my adds). As Breitenbach suggests, since the concept of an objective purposiveness in nature cannot be directly presented, we need a symbolic representation in order to bring it to presentation and to make "the representation of something as a living being possible" (142)[115]. Therefore, Breitenbach maintains that the analogical character of teleological judgment has two functions: analogical inference "as heuristic tool for the study of nature", and "symbolic representations that constitute a reflective representation of parts of nature as natural ends" (146).

[114] One of the main functions of analogical inference is extending our empirical cognition of nature (Logik, AA IX, 133).

[115] Nassar, following the line of Breitenbach, explains this process of symbolization as follows: "In other words, ideas for which there is no adequate intuition can be brought to presentation in a manner analogous to (but different from) the work of schematizing. This is exactly what takes place in the case of a symbol. It involves analogical reflection to 'carry over' a rule of reflecting on one object to reflecting on a second object, which is itself not presented in intuition. The organism is, according to Kant, one such object" (2016, 63).

I follow the line of Breitenbach in trying to unify these two functions of analogical reflection in the Teleological Judgment: as a heuristic device for investigating nature, and as a symbolic representation for indirectly exhibit the concept of *Naturzweck*. However, I do not ascribe a merely heuristic role to analogical inference, since the procedure it carries out also contributes to conceive the concept of *Naturzweck*. By means of an analogical inference (particularly, in the relation of identity between grounds and consequences) we can make sense of the seemingly purposive self-organization of this concept. Accordingly, I argue that in the "Critique of the Teleological Power of Judgment" we have symbolic representation that operates in conjunction with analogical inference (which is one of the peculiar inferences of the reflective power of judgment). This operation consist in i) indirectly presenting the concept of *Naturzweck* in intuition (the process of symbolic representation), and in ii) elucidating and making sense of the purposive self-organization of *Naturzweck* (by applying an analogical inference, which establishes a relation of identity between grounds and consequences). Once elucidated the concept of *Naturzweck*, we can use it as a heuristic tool for guiding our investigation of nature's organization.

In conclusion, it can be inferred that the typical logic or procedure of reflection (or of the reflective power of judgment) is not only induction but also analogy[116], since the *a priori* principle of the reflective judgment is the purposiveness of nature (*Zweckmäßigkeit der Natur*), which is a regulative-heuristic tool for guiding our investigation of nature and its empirical-particular laws. I have stated that analogical reflection in the "Critique of the Teleological Power of Judgment" is based on two main analogical resources: a specification of analogical inference (i.e., an identity in the relation of grounds and consequences), and symbolic representation. The synthesis of both forms of analogy operates by indirectly exhibiting the concept of *Naturzweck* and making sense of it, in order to guide our empirical investigation of nature when the principle of mechanism seems to be insufficient for accounting for the organized products of nature. Having said that, it is possible to analyze the analogies—and disanalogies—invoked by Kant throughout the "Critique of the Teleological Power of Judgment", and

[116] Rudolf Makkreel also states something similar in his *Imagination and Interpretation in Kant: The Hermeneutical Import of the Critique of Judgment*, (Chicago: University of Chicago Press, 1994), where he emphasizes the relevance of both induction and analogy as forms of reflective power of judgment's inferences, and this relevance is worth stressing not only in the context of the *Logik*, but also in the third *Critique*.

the role they play in understanding and making sense of the reflective-analogical concept of *Naturzweck*.

Chapter 4: Two Analogies—or Disanalogies—Invoked by Kant for Understanding the Concept of *Naturzweck*: Their Contributions and Limits

In §65 of the *Kritik der Urteilskraft*, Kant not only defines and describes what is an organized being judged as natural end, but he also uses a series of analogies in order to clarify this concept. Although they are not clearly introduced—let alone further analyzed—by Kant, they still represent a quite useful tool for distinguishing and describing the concept of *Naturzweck*. In fact, and as I have argued in the previous chapter, one of the very procedures of the reflective power of judgment is analogy, and the Teleological Judgment is full of analogical expressions typical of reflection—i.e., as a combination of an inference of the reflective judgment and symbolism. As I shall argue in the last chapter of this dissertation, we can only gain intelligibility of the concept of *Naturzweck* by an analogy with our own technical-practical reason. Therefore, an analysis of the main analogies invoked by Kant in the second part of the KU is a good strategy for gaining a better comprehension of what the crucial concept of *Naturzweck* means in this context.

The main analogies invoked by Kant in the second part of the KU are three: i) the analogy between organisms and artifacts—or rational design; ii) the analogy between organisms and life; and, finally, iii) the analogy with our own rational causality—i.e., with our own reason in its technical use. Nevertheless, not all of these analogies have the same value for Kant. To be more accurate, some of them can be considered, ultimately, as examples of disanalogy[117] rather than analogy, properly speaking. This is the case with the analogy with artifacts and—to a lesser extent—the analogy with life. The analogy with our rational causality, however, seems to have a major value for Kant's argument, even though he is not so explicit in this regard and sometimes he seems to diminish the relevance of this analogy. In any case, before thematizing and analyzing this latter analogy—that is, the one that seems to play an indispensable role within the Teleological Judgment—, I must analyze, first, the other two analogies used by Kant. The relevance

[117] By "disanalogy", I mean a sort of negative-ambivalent concept of analogy. It is not entirely negative—i.e., there is not a complete dissimilarity between the terms that compound the "analogy"—, since there is a degree of identity between the elements of the disanalogy, but they are related in an ambiguous and certainly inconsistent way. Therefore, a disanalogy—in this context at least—stresses the relation of dissimilarity between the elements of the comparison more than the relation of identity (but it still exhibits a certain relation of similarity).

of this examination is, on the one hand, to emphasize the role of analogical reflection within the Analytic of the Teleological Judgment, and, on the other hand, to clarify the very concept of *Naturzweck* by means of these (dis)analogies.

In order to do so, this chapter will be divided into two parts. The first one (4.1) consists in analyzing the first analogy that Kant uses, namely: the analogy between artifacts—or machines—and organized beings. As I will claim throughout this section, this analogy will turn—in the end—into a disanalogy, since the elements that compose the analogy highlight the differences between organisms and artifacts more than their similarities. For the analysis of this (dis)analogy, this section will be divided into two sub-sections: the first one (4.1.1) is a brief account of the argument from design—especially as presented in Modern Philosophy—since the very analogy with artifacts is derived from the analogy with intelligent design. The second one (4.1.2) is exclusively devoted to analyzing the analogy with artifacts and to emphasizing the shortcomings and limitations of this analogy. The second section of this chapter (4.2), on the other hand, thematizes the analogy between life and organized beings. This section is also divided into two parts: the first one (4.2.1) consists in an overview of Kant's conception of life, since different uses and meanings of the concept of "life" can be found throughout Kant's critical writings. For that reason, it is necessary to frame the analysis of the analogy with life by giving a determinate concept of it. Once this account of Kant's concept of life is introduced, it is possible to discuss, in the second part (4.2.2), the analogy with life, which—unlike the disanalogy with artifacts—can be considered an analogy, properly speaking. At the same time, Kant is cautious to stress the risks this analogy carries with it.

4.1. – Analytic of Teleological Judgment, organism, and the analogy with artifacts

As mentioned before, Kant defines and describes the reflective concept of natural end (*Naturzweck*) in the Analytic of the Teleological Judgment. In order to do so, Kant invokes some analogies for illuminating the properties and main features that natural ends seem to possess. Some of these analogies, however, can finally be considered as disanalogies instead of analogies properly speaking, since they highlight more dissimilarities than similarities between the elements that compound the analogy. The

first analogy invoked by Kant in the Analytic of the Teleological Judgment is between human art (such as an artifact or a machine, like a watch) and organized beings judged as natural ends. That is to say, the analogy is between a technical end (the product of human art) and a *natural* end (a product of nature that is judged as if it possesses internal purposiveness). In this section of the chapter, therefore, I shall introduce and analyze this first analogy used by Kant. As will be seen in what follows, I claim that this first analogy is more properly a disanalogy, since it underlines a sort of insurmountable dissimilarity between natural ends and a mere end (such as a watch), which is the relation of internal and external purposiveness, respectively.

However, in order to analyze this first analogy invoked by Kant in the Analytic of the Teleological Judgment and then justify why this analogy can be regarded, in the end, as a disanalogy, this section will be divided into two parts: in (4.1.1), I shall briefly introduce the analogy with intelligent design, at least with respect to the Modern philosophical interpretation of this analogy. The analogy with intelligent design can be identified with the argument from design (or the so-called "teleological" proof for the existence of God). A rough overview of the analogy with intelligent design in Modern Philosophy is necessary in order to understand the first analogy invoked by Kant when describing the features of a *Naturzweck*. In (4.1.2), I shall describe and analyze the analogy between the human art and natural ends carried out by Kant, in order to emphasize the shortcomings and limitations of this particular analogy.

4.1.1. - Analogy with intelligent design: a brief account

It can be argued that final causes, natural teleology and the argument from design were practically eliminated from modern natural sciences and from a considerable part of Modern Philosophy[118]. The scientific revolution of the seventeenth century left

[118] See, for instance, this historical account of McFarland: "It is one of the commonplaces of histories of science that in the seventeenth century final causes were eliminated from natural science. Scientists focused their attention on how nature works, on discovering the laws which govern natural phenomena; they ignored altogether any possible purpose which God or nature might have, the reason why nature behaves as it does. Such purposes might indeed exist, but they were considered to have no scientific value, and it was felt that the scientist should not attempt to discover them. Francis Bacon, for example, emphatically asserts that the introduction of final causes 'rather corrupts than advances the sciences, except such as have to do with human action'. Descartes is equally definite: '… the species of cause termed final, finds no useful employment in physical [or natural] things; for it does not appear to me that I can without temerity seek to investigate the [inscrutable] ends of God'. And Galileo, in the *Dialogue Concerning the Two Chief World*

practically no room for the question of final causes in the investigation of nature, since the mathematic-mechanical laws of matter ruled the whole natural world, including living organisms. Nevertheless, discussions of the argument from design and the analogy between organisms and artifacts were still a commonplace amongst some Modern philosophers—be it in rejection of or support for such arguments. Even though final causes were in the process of being exiled from philosophy and natural science, when observing the functioning and arrangements of living organisms, philosophers still viewed the latter beings as analogous to artifacts or machines (i.e., products of intelligent design). That is to say, some philosophers consider that the mere mechanical explanation of nature was insufficient for accounting for the way nature and its products organize themselves[119].

It can be claimed that the analogy of nature—or organized natural products—with intelligent design has two levels of interpretation: according to the strong interpretation, the analogy with intelligent design corresponds to the so-called "argument from design". The argument from design is one of the three arguments for the existence of God, and it consists in considering nature as if it were designed by a rational-omnipotent designer, just as a watch or any artifact is designed by a human-rational designer. On the weak interpretation, the analogy with intelligent design entails a merely metaphorical use of the design-analogy in order to make sense and describe the "purposive" organization of nature and its products. Anyway, both of these levels of interpretations of the analogy with intelligent design are useful in order to understand the analogy—or disanalogy—invoked by Kant between organisms and artifacts. That is to say, we can find these two

System, says that '… it is brash for our feebleness to attempt to judge the reason for God's actions…' The scientific world-picture, after the elimination of final causes, was of a universe of particles of matter moving in accordance with precise mathematical laws." (McFarland 1970, 43-44). Or as Mayr states: "For the Cartesians any invoking of teleological processes was utterly unthinkable. Coming from mathematics and physics, they had nothing in their conceptual repertory that would permit them to distinguish between seemingly end-directed processes in inorganic nature, and seemingly goal-directed processes in living nature. They feared, as shown particularly clearly by Nagel, that making such a distinction would open the door to metaphysical, nonempirical considerations" (Mayr 1992, 120). Or as McLaughlin summarizes it in his *What Functions Explain. Functional Explanation and Self-reproducing Systems*: "Final causes in the stricter sense were banished from science in the seventeenth century by the philosophers of the Scientific Revolution rather by the scientists themselves" (2003, 20). See also: Ayala (2007, 8567-68); Underhill (1904); and Zammito (1992), Nagel (1961).

[119] As Ina Goy and Eric Watkins maintain: "Whereas early modern advocates of experimental philosophy, Cartesian mechanism, and Newtonian mathematical physics avoided positing final causes and teleological explanations, many philosophers and natural researchers in the seventeenth and eighteenth centuries believed that efficient causes and non-teleological explanation were insufficient to explain the processes that regularly occurred in nerve and muscles, and in plant and animal generation, and thus tried to reinstate final causes and teleological explanations" (2014, 1).

senses of intelligent design in the analogy invoked by Kant in §65 of the KU. Accordingly, this sub-section will provide a rough overview of the analogy of intelligent design especially in Modern Philosophy, in order to place the artifact-organism analogy used by Kant in the Analytic of the Teleological Judgment in its historical and philosophical context (before analyzing it in further detail).

The analogy with intelligent design can be largely identified with the argument from design (also known as the physicotheological proof of the existence of God), which has "a long tradition in the history of ideas" (Goy 2014, 203)[120]. Together with the ontological and cosmological arguments, the argument from design is one of the main arguments (or proofs) for the existence of God. Put in very rough terms, its proceeds from an analogy between the following elements: an artifact (the dominant example is a watch) and its producer or designer (in this particular example, a watchmaker), and an organic being (such as a plant or animal) and its creator or designer (God, for instance). The crucial point here is that organic beings (their own organization) are seen as designed, just like any sophisticated artifact is designed by an artisan or designer. That is to say, such natural products (organic beings) seem to exhibit common features to any designed objects, such as works of art or artifacts. The main common characteristic these products (artifacts and organic beings) seem to share is end-directedness, that is, the idea that these products were produced for the sake of accomplishing some determined purpose. To put it in other words, in the analogy from design, nature and some natural products seem to exhibit indications of design, therefore, these natural products are analogically considered as designed by a divine designer.

This is, roughly speaking, the argument from design. However, in Modern Philosophy (especially during the eighteenth century), this analogy with design varied according to its scope and strength: one the one hand, it was seen as an argument for proving the existence of God, and on the other, as a weaker, merely metaphorical comparison, useful for making sense of nature and its products. McFarland clearly explains the changes that the argument from design suffered in the eighteenth century:

[120] In fact, Ina Goy (2014) carries out an accurate overview of the argument from design taking into account from the old traditions of theistic religions (such as the *Old Testament* and the *Koran*) to Ancient Greek Philosophy (such as Plato and Aristotle), Medieval Philosophy (such as Thomas Aquinas in his *Summa Theologiae*), and Modern Philosophy (with Hume's Cleanthes character in the celebrated *Dialogues Concerning Natural Religion*, and Paley's "watchmaker analogy" in his *Natural Theology*). In all of these works, we can find traces of the argument from design.

> It is important to emphasize that the argument from design, as it existed in the eighteenth century, was not a version of an Aristotelian type of teleological argument. It did not, in other words, assert or imply that nature is directed toward some end or purpose having value; rather it depended upon an alleged analogy between certain apparently purposive things and arrangements to be found in nature and things produced by human technique (McFarland 1970, 47-48).

What McFarland is illustrating in this quote is the appearance of a novel and modern form of the argument from design. As mentioned in the Introduction of this dissertation, during the seventeenth century, final causes and natural teleology were practically eradicated from natural science. Spurred by the discovery and formulation of the mathematical-mechanical laws on the part of Copernicus, Galileo, and Newton, appeals to teleology quickly lost clout in the new scientific worldview[121]. Nevertheless, during the seventeenth and eighteenth century the argument from design appeared in its strong form again, but this time what is highlighted is not only the alleged proof of the existence of God, but also the very analogy between works of art (that is, any artifact designed by human beings) and organized natural beings. The "watchmaker analogy"[122] of Durham and Paley

[121] As Ayala clearly summarizes: "[t]he discoveries by Copernicus, Kepler, Galileo, Newton, and others, in the 16th and 17th centuries, had gradually ushered in a conception of the universe as matter in motion governed by natural laws. It was shown that Earth is not the center of the universe but a small planet rotating around an average star; that the universe is immense in space and in time; and that the motions of the planets around the sun can be explained by the same simple laws that account for the motion of physical objects on our planet […]. These and other discoveries greatly expanded human knowledge. The conceptual revolution they brought about was more fundamental yet: a commitment to the postulate that the universe obeys immanent laws that account for natural phenomena. The workings of the universe were brought into the realm of science: explanation through natural laws. All physical phenomena could be accounted for as long as the causes were adequately known" (2007, 8567-68). For another accurate account of the overly-mechanical worldview of the sixteenth and seventeenth centuries and its influence in Kant, see Zammito (1992).

[122] William Durham published a series of works (from 1696 to 1730) devoted to the teleological argument (or argument from design) in combination with insightful scientific observations and research. His most significant conclusion in all of his books was that nothing proves better the existence of God than the perfect design that we can see throughout nature and its products. Nearly a century after the publication of these books, William Paley published his *Natural Theology* (1802), which contains the celebrated "watchmaker analogy": "In crossing a heath, suppose I pitched my foot against a stone, and were asked how the stone came to be there: I might possibly answer, that […] it had lain there for ever […]. But suppose I had found a watch upon the ground, and it should be inquired how the watch happened to be in that place; I should hardly think of the answer which I had before given […]. There must have existed, at some time, and at some place or other, an artificer or artificers who formed [it]. […] Every indication of contrivance, every manifestation of design, which existed in the watch, exists in the works of nature; with the difference, on the side of nature, of being greater and more, and that in a degree which exceeds all computation" (Paley 1819, 1-16). Or as McFarland states: "It seems almost inevitable that thinkers who believed that the laws of nature were mechanical throughout, when confronted with what they took to be obvious elements of design and purpose in nature, vegetable and animal organisms, and other natural arrangements, should view the latter as analogous to machines like the watch or clock. For, while principles of such machines are entirely mechanical, the machines themselves are nonetheless designed for a particular purpose" (1970, 48).

is, perhaps, the most paradigmatic example of this variation of the argument from design during the eighteenth century (and which will last until the beginning of the nineteenth century). For this "new" version of the argument from design, there is an undeniable resemblance between organisms and mechanical artifacts, a resemblance that lies in the character of apparent design and purposiveness that organisms seem to possess[123]. This analogy has also been extended to a larger scale, whereby nature is understood as analogous to a great machine[124], such as a sophisticated and complex clock.

However, the validity of analogy with intelligent design (or the analogy between artifacts and organisms) will be put into question in the second half of the eighteenth century especially by Hume and Kant, since they both deem that this analogy falls short in providing an account of the self-organization organisms seem to possess, which cannot be reduced to the external rational purposiveness that artifacts or works of art have as the cause of their design. Nevertheless, both Hume and Kant do not fully reject this analogy (rather they weaken the value of it), and they both have, in fact, a sort of ambivalent view thereof.

Let us see why. In his celebrated *Dialogues Concerning Natural Religion* (1779), Hume created four characters who discuss different philosophical arguments for the existence of God. The ontological, cosmological and teleological arguments are discussed in these dialogues. Nevertheless, there are two characters, Cleanthes and Philo, who discuss the teleological argument (or argument from design) and each of which represent an opposed view about the aforementioned argument. On the one hand, Cleanthes is a fervent proponent of the argument from design, a theist who sees traces of design in nature as the most irrefutable proof of the existence of God[125]. Philo, on the other hand, asserts exactly otherwise: the argument from design does not prove the existence of God, but

[123] For instance, Tim Lewens calls this comparison between artifacts and nature the "artifact model". The artifact model is, simply put, "the approach to the organic world that treats it as though it were designed" (Lewens 2004, 39).

[124] "Early modern scientists and philosophers often spoke of the world as the *machine mundi*, and scarcely anyone who was anyone between Descartes and Kant neglected to compare the system of the world with a clock" (McLaughlin 2003, 21).

[125] "Look around the World: Contemplate the whole and every part of it: You will find it to be nothing but one great machine, subdivided into an infinite number of lesser machines, which again admit of subdivision, to a degree beyond what human senses and faculties can trace and explain. […] The curious adapting of means to ends, throughout the whole nature, resembles exactly, tho it much exceeds, the productions […] of human design. […] Since therefore the effects resemble each other, we are lead to infer, by all the rule of analogy, that the causes also resemble; and that the Author of nature is somewhat similar to the mind of man […] By this argument a posteriori […] do we prove at once the existence of the Deity, and his similarity to human mind and intelligence" (Hume 1976, 161-62).

rather it only confirms our strong anthropomorphism when observing nature and its organized products. Our human-limited reason, Philo would assert, is in the highest degree inadequate for proving any assumption about God, except from a "remote analogy to human intelligence" (Hume, D 227). At least in what concerns the argument from design, it is somewhat clear that Philo represents Hume's view[126]. That is to say, Hume does think that there is a "remote" analogy between the whole order of nature and human intelligence in the way it produces its artifacts, but this neither proves the existence of God (in fact, for Hume-Philo this argument proves nothing whatsoever) nor exhausts the purposive character that nature and its organized products seem to exhibit. As McFarland suggests, it is likely that Hume prefers the analogy between the human mind and organisms over that between artifacts and organisms because the former highlights the internal purposiveness and self-organized character of both elements, whereas the latter underscores dependence on an "external source or organization" (1970, 53)[127] as the cause of their design and purpose. Kant, in turn, would assert something very similar when invoking the analogy—or disanalogy—between organisms and artifacts in the Analytic of Teleological Judgment. In what follows, I shall introduce and analyze this particular analogy used by Kant.

4.1.2.-The analogy with Artifact in Kant's Teleological Judgment

The Analytic of Teleological Judgment contains not only a definition and a description of our teleological judgments on nature, but also an analysis of the reflective concept of natural ends (*Naturzwecke*). This latter analysis is mainly concentrated in §§64-66; nevertheless, it is in §65 ("Things, as natural ends, are organized beings") where Kant develops a further elucidation of natural ends by means of three analogies—as mentioned before, I will claim that some of them can be deemed to be disanalogies more than analogies—namely, with human art (i.e., artifacts or works of art), with life, and with our own causality in accordance with ends in general. In what follows, I shall focus my analysis on the first analogy invoked by Kant (i.e., with human art). This analogy—or

[126] See McFarland (1970), Crouch (2007), and Noonan (2007).
[127] McFarland continues his description of how Hume distinguishes external from external purposiveness: "Thus experience itself gives us every reason for drawing a clear distinction between what might be called 'external' and 'internal' purposiveness. The purposiveness found in a watch or house is of the first sort, since their organization and design are imposed from without; but the purposiveness found in an animal or vegetable is internal, since it springs from an inner, although unknown, source" (1970, 53).

disanalogy—seems to concentrate, in fact, more attention on the analysis carried out by Kant, and it serves to stress the peculiar character of organized beings seen as natural ends.

Kant begins his analysis of §65 by distinguishing two kinds of causalities: namely, efficient-natural causality (*nexus effectivus*) and final causality (*nexus finalis*). The former is the type of causation conceived by the understanding, in which we have a descendent (irreversible) concatenation of causes and effects. The latter, on the other hand, is the type of causality conceived by reason, in which the series can be descendant as well as ascendant, that is to say, "in which the thing which is on the one hand designated as an effect nevertheless deserves, in ascent, the name of a cause of the same thing of which it is the effect" (KU, AA V, 372). Kant states that this latter causation is typical of art (or art's products), such as a house ("the house is certainly the cause of the sums that are taken in as rent, while conversely the representation of this possible income was the cause of the construction of the house" [V, 272]). This distinction between efficient and final causes is made in order to introduce the idea of an end in general (that is, a thing that possesses final causation), which is the first requirement, so to speak, to start thinking of something that is judged as a *Naturzweck*. This first requirement is that the parts of a natural end "are possible only through their relation to the whole" (373). Here we must conceive the whole as comprised of an idea (or concept) which determines *a priori* what is contained inside of it (in this case, the parts of this whole). Nevertheless, Kant warns us that something so conceived is just an end, i.e., a work of art (such as an artifact). That is to say, a mere end is something that is determined by a rational idea which lies outside the product itself (or, in Kant's words, "the product of a rational cause distinct from the matter [the parts]" [V, 373]). For that reason, something else is required in order to conceive a natural thing not just as an end (*Zweck*), but as a natural end (*Naturzweck*).

As mentioned in the second chapter of this dissertation, Kant defines the reflective notion of natural ends (*Naturzwecke*) by saying that such a natural product "is cause and effect of itself" (V, 370-71), and then he describes how a natural being can be cause and effect of itself through the three main organic processes that a tree carries out: reproduction, growth and regeneration of its parts. These three organic processes are quite crucial not only for understanding the peculiarities that natural ends seem to possess, but also for highlighting the distance between a natural end and a mere end (such as an

artifact). In turn, these peculiarities turn the analogy with human art into a disanalogy. Let us see why.

In the first place, a mere end has external purposiveness, that is to say, the end lies in a rational agent which is outside the product itself (or, in other words, the cause of its purposiveness lies in a rational agent different from the product). A natural end, on the contrary, seems to possess internal rather than external purposiveness; that is to say, the purposiveness of a natural end does not lie in a rational cause outside the natural product, since a natural end contains "in itself and its internal possibility a relation to ends" (373). And, in the second place, a natural end, unlike a mere end such as a machine, requires that "its parts be combined into a whole by being reciprocally the cause and effect of their form" (373). In other words, what is secondly required in order for something to be considered a natural end is that its parts must be regarded as the product as well as the *producer* of the other, in a mutual-causal relation. That is to say, each part not only exists through (*durch*) or thanks to the other parts as well as for the sake of them and "on account of the whole", but also (and most importantly) each part is mutually *producer* of the other parts and of the whole, "which cannot be the case in any instrument of art" (374). Accordingly, in such a natural product, we have not only the feature of being an "organized" thing (in which case any product of art would meet the requirement), but also a "self-organizing" character, in which each part is *caused* by the others and, at the same time, it is the *cause* of the others. This last feature is not shared with any artifact or machine (or any product of human art), and hence it is what distinguishes any organized natural being from a mere machine.

In order to illustrate this main difference between natural ends and artifacts, Kant introduces a sort of comparison between a watch and an organized being. The choice of a watch (or clock) in Kant's argument is not incidental. The analogy between a watch and an organism was widely invoked throughout Early Modern Philosophy and Early Modern Science. The analogies between a great machine and nature as well as the analogy between watches and organisms were practically a commonplace in Modern Philosophy. It is clear, therefore, that Kant is calling into question here the very value of this early modern analogy. In a watch, a part can be conceived as the cause of the movement of the others, but it cannot be "the efficient cause for the production of the other" (374). That is to say, the productive cause of the watch is not contained in itself, but rather in the idea of a rational agent who designed and then produced the aforementioned watch.

Furthermore, a watch cannot replace its damaged parts by itself and it cannot produce (or reproduce) another watch[128] ("all of which, by contrast, we can expect from organized nature" [374]). Kant then adds that an organized being (insofar as it is judged as a natural end) not only has motive power (*bewegende Kraft*), just like any artifact, but also formative power (*bildende Kraft*), that is, a kind of power that allows it to organize the matter inside and outside itself, a kind of power that "cannot be explained through the capacity for movement alone (that is, mechanism)" (374). This formative power[129] entails, precisely, that a natural end (unlike a mere machine or artifact) has an internal purposiveness and a self-organizing character that cannot be found in the power of motion alone[130]. For that very reason, Kant concludes:

> One says far too little about nature and its capacity in organized products if one calls this an analogue of art: for in that case one conceives of the artist (a rational being) outside of it. Rather, it organizes itself, and in every species of its organized products, of course in accordance with some example in the whole, but also with appropriate deviations, which are required in the circumstances for self-preservation (V, 374).

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[128] "Thus one wheel in the watch does not produce the other, and even less does one watch produce another, using for that purpose other matter (organizing it); hence it also cannot by itself replace parts that have been taken from it, or make good defects in its original construction by the addition of other parts, or somehow repair itself when it has fallen into disorder" (V, 374).

[129] Kant uses the concept of "formative power" in the passage quoted above, yet he does not develop it in the course of the KU or in other published works. In fact, this term appears only two times in the KU (one of them being passage from §65 quoted above). As Ina Goy accurately states in "Kant on Formative Power": "The term 'formative power' (bildende[n] Kraft) appears in fourteen passages within the whole Kantian oeuvre. Only two of those passages belong to Kant's published writings, though only passage CPJ 5:374. 21-6 in §65 refers to Kant's own account, whereas the passage CPJ 5:423.12-424.6 in §81 refers to contemporary positions of Kant's own time, especially Blumenbach's" (2012, 27). It could be inferred that this formative power is responsible for both the end-directedness and self-organization of organisms—especially of the latter. However, this would be rather speculative, given the virtual absence of any development of such a concept in Kant's published works.

[130] In the *Opus Postumum*, however, Kant constantly compares (and equates) organisms with machines. Nevertheless, in the OP Kant changes the conception of motive force of a machine, insofar as its movement is not only mechanical, but also "organic", "productive". In the OP, Kant speaks of "internally moving force", instead of "external" moving force. That is to say, in the OP the very concept of moving force is broader than the concept of moving force of matter traced in the *Metaphysical Foundations of Natural Science*, since the former includes the self-movement of organisms as a type of moving force. Accordingly, it is not absurd that Kant uses the analogy between organisms and machines in the OP, because in this context an organic machine not only has a motive power, but also a formative (internal, self-organizing) power. See, for instance: OP XXI, 211; 212; 190; 197. In this regard, Eckart Förster claims: "What seems important to me in this context [OP] is that is Kant reflections on the ponderability of matter, and on the various mechanical powers, that leads to the inclusion of organic forces into the Elementary System of the Transition. His text, especially in 'A elem. Syst. 1-6', speaks for itself: 'the internally moving forces of matter as machine, that is, as a body that has internally moving force according to the law of mechanics, yields the a priori concept of an organic body whose parts, connected in one system, move each other in accordance with specific laws' (21: 197. 11-15)" (Förster 2000, 21).

According to this last quote, it is pretty clear that Kant finally rejects the analogy with artifacts (or human art), insofar as this analogy does not account for two indispensable features of organized beings judged as natural ends, namely: internal purposiveness and self-organizing character. There is, of course, something that a mere end (such as a watch) and a natural end share: purposiveness. However, a mere purposive character is not enough to narrow the analysis of what a natural end is, because there are other things in the world that have an end, but they are not judged to be natural ends. For that reason, Kant insists on stating that the analogy with human art (which is responsible for the production of machines and artifacts) is, ultimately, a disanalogy inasmuch as it "says far too little about" the organization of some natural products.

The scholarly literature, however, is quite divided about the value of this (dis)analogy. This is certainly understandable due to the ambiguity with which Kant manages the whole argument: at times, he seems to embrace the analogy, but he finally seems to diminish its value. Nevertheless, the literature about this analogy can be grouped, *grosso modo*, into three main interpretations. First (i), there are those who insist on attributing an essential role to this analogy, claiming that Kant is invoking a "strong" artifact model in these passages. This is the dominant and typical interpretation in Kantian studies[131]. Second (ii), there are those who have an ambivalent reading of this analogy, stating that throughout the Teleological Judgment Kant's position regarding the artifact analogy constantly varies[132] according to the argument's progression. This interpretation

[131] For this line of interpretation, see Aquila (1991), Fricke (1990), Guyer (2001, 2006), McFarland (1970), McLaughlin (1990), Zumbach (1984), Zuckert (2007), Lenoir (1982), Van den Berg (2014, 2017), amongst others. These scholars identify—wrongly, as I see it—the analogy from design with the analogy with our own causality in accordance with ends (the analogy finally embraced by Kant, as I shall maintain in Chapter 5). McFarland, for instance, clearly maintains: "It is evident that Kant saw clearly that natural organisms are quite different from machines in so far as they produce themselves, repair their own deficiencies, and so forth. But, at the same time, he was unable to free himself from the watchmaker-watch analogy completely enough to be able to ask whether organisms can be understood in any other way than as if they had been designed" (1970, 139). That is to say, these scholars do not disclaim the shortcomings of this analogy, but they state that Kant does not reject it at all, because, according to their view, it is highly improbable that Kant rule completely out the design analogy, since there was a long philosophical tradition of the argument from design impregnated in Modern Philosophy as well as in Kant himself. For an interesting account of this point, see van den Berg (2017).

[132] See, for instance, the interesting works of Ina Goy (2014) and Suma Rajiva (2009). They both claim that the analogy with the argument from design (and particularly the artifact analogy) varies from practically inexistent in the Analytic to necessary in both the Dialectic and Methodology. "In the Analytic Kant offers an account of biology that makes no use of the argument from design but that would not be inconsistent with it. […] In contrast to the Analytic, in the Dialectic Kant states a version of the argument from design […] without any major criticism. This will change in the Methodology. In this part of the text, Kant gives a version of the argument from design; however, he criticizes it and describes its limitations and shortcomings" (Goy 2014, 207-213). On the other hand, we can place here the analysis of Hannah Ginsborg

is, perhaps, more complex, since it encompasses not only what Kant says in the Analytic with respect to natural ends, but also what he seems to suggest in the Dialectic and the Methodology with respect to our teleological judgments in general. And finally (iii), there are those who underscore the shortcomings of this (dis)analogy, viewing it more so as a tool for differentiating organisms from artifacts than for highlighting their similarities[133].

Either way, I claim that it is clear enough that Kant invokes this analogy in order to further highlight the differences between organized beings and artifacts rather than their similarities. That is to say, and despite the ambiguity of Kant's analysis regarding this specific analogy, what Kant is stressing here in the comparison between organisms and artifacts is the undeniably original character of self-organization and internal purposiveness that living beings seem to possess. For that reason, the analogy turns out to be a disanalogy, that is to say, Kant finally rules out the artifact-organism analogy. There is something in the organization of organized beings that has nothing to do with the type of extrinsic organization we encounter in artifacts or machines, and for that reason this analogy falls short in illuminating the concept of natural ends (in fact, the analogy with artifacts only serves to highlight how they—e.g., a watch and an organism—differ from each other[134]). Thus, the first analogy invoked by Kant is finally ruled out. In fact, there is a stronger analogy that Kant does hold, namely, with our own rational

(2001), who emphasizes the similarities and differences between organisms and artifacts, so there could be, according to her, a sort of analogy-disanalogy operating in the comparison.

[133] Clearly, my position falls on this side of the debate, but we can also find this interpretation in Csssirer (1981), Breitenbach (2009, 2011, 2014), Kreines (2005), Lotfi (2010), Nuzzo (2005), amongst others. For instance, Breitenbach argues: "Many commentators have associated this analogy [with our causality in accordance with ends] with its theological version well rehearsed long before Kant. This is the analogy between nature and design, and between the creator of nature and an intelligent designer […] According to this reading, we only regard living beings as if they were the products of design. In the Critique of Judgment Kant makes it explicit, however, that the analogy with artifacts is ultimately insufficient for an understanding of organic nature" (2014, 22). Or as Kreines explains: "Kant's first requirement is not enough by itself for an analysis of the concept of a *Naturzweck*. For one way this first requirement can be met is the way it is met in the case of artifacts, which are non-natural in that they are the products of our own design. So Kant needs a second requirement in order to rule out artifacts and narrow the analysis. He needs to narrow his analysis of organized beings generally (including those organized by the action of an external designer) to an analysis of naturally 'self-organizing' beings. Or, he needs to narrow this analysis of *Zweck* in general to come up with an analysis of *Naturzwecke* in particular" (2005, 279).

[134] Cassirer also states that Kant finally dismisses the analogy between artifacts and organisms. In doing so, Kant is also dismissing the teleological proof of God: "The world no longer is a clockwork mechanism finding its ultimate explanation in the hidden, divine "watchmaker," for the metaphysical form of the cosmological proof of God's existence is seen to be as fallacious as that of the teleological proof. From now on if the finality of nature is to be discussed, this cannot mean a signpost pointing to an external transcendent ground on which nature depends, but only a reference to its own immanent structure. This structure is purposive-so long as the relative finality for mankind or any other created being is kept clearly separate from inner finality, which possesses no point of comparison other than the appearance itself and the structure of its parts" (1981, 339).

causality. In short, this analogy does not maintain that natural ends are judged as if they were created by the idea or the design of a rational agent, but rather that natural ends are judged by analogy with the technical reason of such rational agents. I shall return to this point in Chapter 5 of this dissertation. Before we turn to that, Kant will offer another—partial—analogy, namely, with life.

4.2.-Teleological Judgment, natural end, and the analogy with life

The second analogy Kant introduces to clarify the concept of natural ends (or of organized beings judged by means of the reflective concept of *Naturzweck*) is the analogy between organisms and life. As just seen in the previous section, Kant finally rejects the analogy with artifacts or rational design, because it "says far too little" about the capacity of self-organization that organisms seem to possess. And it is for that reason that I have argued that this analogy is, indeed, a disanalogy, since its main function is to emphasize the great distance there is between a mere machine and an organism. Nevertheless, Kant introduces a second analogy just after suggesting (and rejecting) the analogy between artifacts and organisms. This analogy, as I said before, is with life. Unlike the case of the (dis)analogy with artifacts, the analogy between life and organisms seems to have more value for Kant, although he has a sort of ambivalent consideration of it. That is to say, this analogy is useful for illuminating the concept of *Naturzweck*, but it has its shortcomings that make Kant use the aforementioned analogy carefully. Thus, in what follows I shall describe and explain this analogy between organisms and life. In order to do so, it is important to introduce, in the first place (4.2.1), Kant's conception about life and to clarify what "life" means in this context—since Kant has different uses and meanings about life. Then, I will be able to analyze, in the second place (4.2.2), the analogy with life in detail.

4.2.1. - Kant's concept of life

The concept of life appears persistently in Kant's works; in fact, it appears throughout his philosophy (in both the pre-critical and critical period) with different meanings and under

different contexts[135]. However, one could dare to say that Kant does not consistently further develop this concept. At most, we can find mentions and some reflections about this concept, but these leave us far from any detailed and thorough analysis of the conception of life in Kantian philosophy, let alone a systematic treatment concerning this concept. In spite of this lack of a systematic thematization of life in Kant's critical philosophy, it is somewhat clear that Kant manages a canonical-narrow conception of life, at least in regard to his critical philosophy. This strong definition of life is directly related to practical philosophy and to the (human) faculty of desire, and it possesses strong metaphysical and practical implications. Nevertheless, a sort of broad sense of life in Kantian philosophy can be sketched out[136], which perhaps does not entail strong metaphysical considerations (at least, not in regard to practical interests). This can then be related to organized beings (or living organisms from the simplest-primary ones to the more complex ones). That is to say, this broader conception of life finds its place at a biological-theoretical level, in order to separate the organic beings from inorganic—lifeless—matter. Although this latter conception of life is more inclusive, it is still too weak in terms of Kantian philosophy and it must be handled with care in order to not transgress the limits of critical philosophy. In what follows, therefore, I shall introduce and explain both senses of life in Kant's philosophy, in order to understand, then, why there may be an analogy (or disanalogy) between life and organisms.

In the first place, there is a narrow-practical conception of life in Kant's critical philosophy, which is directly related to the faculty of desire. This strong definition of life is found for the very first time (at least in Kant's critical period) in a footnote of the Preface of the *Critique of Practical Reason*, and it goes as follows:

> Life is the faculty of a being to act in accordance with laws of the faculty of desire. The faculty of desire is a being's faculty to be by means of its representations the cause of the reality [*Wirklichkeit*] of the objects of these representations. Pleasure is the representation

[135] As Ingensiep clearly points out: "Kant used the term 'life' in different contexts with different meanings. Transcendental, metaphysical, physical, physiological, psychological, anthropological, medical and practical dimensions use of this term can be distinguished" (2006, 75).

[136] Perhaps more acceptations of "life" could be found in Kant's writings, but I believe that these two just mentioned cover a wide enough range. Nevertheless, an interesting account of the different uses of "life" in Kant's critical philosophy can be found in Molina's paper (2011) "Kant and the Concept of Life". Molina identifies, besides the aforementioned two senses, a third broad use of the concept of life, namely, "an aesthetic use, in which Kant deals with the feeling of animation experienced when facing beautiful objects" (2011, 21-22). As fascinating as this latter use of the concept of life is, sadly I cannot develop it further in this work.

> of the agreement of an object or of an action with the subjective conditions of life, i.e. with the faculty of the causality of a representation with respect to the reality of its object (or with respect to the determination of the powers of the subject to action in order to produce the object) (KpV, AA V, 9 [footnote]).

This definition of life is essentially bound to practical philosophy, especially to the faculty of desire as the faculty for being the cause of the reality of the objects of its representations. As Kant states, life is the faculty of a being that, on the one hand, has the faculty of desire and acts according to its laws. In other words, life is the faculty to act in accordance with some peculiar "laws", namely, those of the faculty of desire[137]. And, on the other hand, life is the faculty of a being for representing objects in general and for causing the reality of such objects.

Accordingly, this definition of life—strongly bound to practical philosophy—is directly related to the human faculty of desire, that is, to free choice (that is to say, to the human capacity to act freely or voluntarily).[138] In fact, in a celebrated passage of the *Groundwork for the Metaphysics of Morals*, Kant explicitly identifies the type of causality of (rational) living beings with human will: "Will is a kind of causality that living beings exert if they are rational, and when the will can be effective independent of outside causes acting on it, that would involve this causality's property of freedom"[139] (GMS, AA IV, 446). Furthermore, we can find in his pre-critical *Dreams of a Spirit-Seer* a quote that appears in practically the same terms: "all life consists in the inner capacity of *self-determination* according to *free choice* [*Willkür*]" (TG, AA II, 327, footnote, my

[137] As Ingensiep says: "In this narrow sense of an interpretation of 'life' only an animal rationale would be able to have insights into these 'laws of the ability to desire' but, in general, never an animal" (2006, 75).

[138] In the Introduction of *The Metaphysics of Morals*, however, Kant defines the faculty of desire and life in a slightly broader fashion: "The faculty of desire is the faculty of being, by means of its representations, the cause of the objects of these representations. The faculty of a being to act in accordance to its representations is called life" (MS, AA VI, 211). This "broader" definition of the faculty of desire and life would suggest that animals meet the requirements of this definition of desire and life, inasmuch as animals have the faculty of acting in accordance to representations. In a broad sense, it is clear that animals have a sort of faculty of desire (at least at a low level), which refers to instinct or to some primal feeling such as fear or pain. The question is, therefore, whether instincts and primal feelings qualify to be considered a "desire" in the proper-strong sense of the term or not. Nevertheless, it is quite certain that Kant does not include animals within this narrow definition of life as the capacity to act according to the "laws of the faculty of desire". As Molina states: "At most, this notion of life could be applied to animals were one to grant them the capacity of desire; yet it is evident that Kant is not thinking about this possibility" (2010, 23).

[139] And the quote continues as follows: "just as natural necessity is the property of the causality of all non-rational beings, through which they are caused to act in specific ways by the influence of outside causes" (GMS, AA IV, 446).

emphasis). Again, it is quite clear that Kant is using here a narrow conception of life and life's causality, inasmuch as they only referred to the will of a rational being that can act freely, that is to say, independently of external causes. This rational being that can act freely and with independence of external causes is the human being. For that reason, it can be claimed that, for Kant, the human being is the only natural being capable of having "life"[140], at least in regard to this narrow sense of life that Kant is highlighting here, namely, life as the rational faculty of desire (or life as free will, if we take the argument one step further). This narrow-practical conception of life poses some difficulties for conceiving a more inclusive definition of life (one that may encompass animals and plants, for instance). However, it is evident that Kant uses another conception of life or, at least, it may seem that he is reflecting upon a different understanding of life, which in fact would encompass living beings in general. This conception of life, therefore, has little to do with practical philosophy and the narrow sphere of human will, and it is more related to biological considerations mixed with some "reflective" concepts, such as the *Zweckmäßigkeit der Natur* and natural teleology.

As just mentioned, there is another conception of "life" that can be drawn from Kant's critical writings, namely, a biological one. This sense of life is directly linked with theoretical interests and it is much broader than the strict-practical conception of life we found in Kant's philosophy, and it can be identified with the Kantian theory of organic beings. This broad conception of "life" is thematized mainly in the Teleological Judgment of the third *Critique* in the context of the analysis of the reflective concept of *Naturzweck*, but it can also be found (although in a more dispersed way) in his writings about physics, in order to distinguish organic bodies from inorganic—lifeless—matter. At any rate, both

[140] In some of his writings, however, it seems that Kant is using a broader concept of life as the faculty to act according to the laws of the faculty of desire. For instance, Kant says in his *Reflections*: "Life is nothing but the faculty of desire in its minimal exertion [*in der geringsten Ausübung*]" (Reflexionen 1034, AA XV, 465). Or as he writes in the *Opus Postumum*: "Life in the strictest meaning of the term is the faculty of spontaneity of a corporeal entity [*körperlichen Wesens*] to act in accordance with certain of its own representations" (OP, AA XXI, 566). These quotes suggest that desire can be thought in a broader sense and not just as rational free choice. That is to say, these quotes suggest that desire can be regarded as a lower faculty (like fear, pain, instinct, pleasure, and so forth). As Zammito states: "Kant seemed to be willing to extend at least some measure of desire –action in accordance with representations- to animals, though it is desire driven by pleasure/pain, and not by rational choice" (2006, 763). These inconsistencies throughout Kantian writings demonstrate that Kant actually does not have a systematic treatment concerning the concept of "life"—or, at least, he does have a problematic and unresolved philosophical view on "life". See, for instance, Zammito (2006), and Ingensiep (2004). This can be seen especially in his conception of living beings judged as *Naturzweck*, where his efforts for clarifying *Naturzweck*'s concept by means of analogies and disanalogies seem to be, in the end, ambiguous and problematic—and, at times, almost running into a dead end.

thematizations of organic beings introduce a broad conception of life, certainly more inclusive than the practical one, insofar as they encompass organic beings in general and not just human-rational beings. Let us analyze this broad concept of life by introducing both thematizations of organic beings: as natural ends and as organic bodies in the context of the metaphysical exposition of the objects of outer sense.

In Chapter 2 of this dissertation, I analyzed the conception of organized beings judged as natural ends (*Naturzwecke*). Briefly, organic beings must be judged, according to Kant, by means of a special type of causality, namely, final causality. The features and internal arrangements that organic beings possess lead us to judge them as if they have a sort of causality through ends, and thus they are judged as natural ends. For Kant, the notion of a natural end is a peculiar concept of the reflective power of judgment, which does not determine the object (in this particular case, the organic being) at all, but rather it serves as a guideline in order to reflect and make sense of these natural objects. In this sense, the concept of *Naturzweck* is regulative instead of constitutive. Furthermore, the use of the concept of natural end is, for Kant, absolutely necessary (even though it is regulative), insofar as the mechanical explanation of organic beings seems to be insufficient for accounting for such natural products.

Therefore, life, in this broad sense, refers to the capacity of an organic being (which is judged, in turn, as a natural end) for self-organizing in a manner that is absolutely novel[141], at least in regard to inorganic matter and artifacts or machines (which only have external and not internal purposiveness). Even though the description of organized beings is carried out by Kant in the context of his analysis of the reflective power of judgment and, particularly, of the Teleological Judgment, it is evident that Kant is also discussing here a biological conception[142] of organic beings and hence of life (at least in a broad consideration of life). But this biological conception of life that can be inferred from the KU is not the canonical-narrow conception of life in Kant's critical writings. In fact, he does not even use the term "life" or "living" for referring to organic

[141] And it is this novel manner of self-organization (which entails internal purposiveness, reciprocally causal relations of parts to whole, and so forth) that is judged by us by means of the reflective concept of natural ends. For further analysis of this topic, see Chapter 2 of this dissertation.

[142] In Chapter 5 of this dissertation I will carry out a description and analysis of Kant's reception of the life sciences and the biological theories of his time, and how his thought can be still considered relevant in the context of current biology.

beings judged as *Naturzwecke*, since "life" for him is exclusively allocated to the narrow conception of life as rational free choice.

There is another broad conception of life in Kant's writings. This conception of life is to some extent bound up with the theory of living beings from the third *Critique*, but it appears in a different context, namely, regarding the question of the possibility of natural sciences (such as physics). Unlike the theory of organic beings judged as natural ends, this conception of "life" can be found dispersed throughout the Kantian corpus and hence it is quite difficult to systematize this notion of life into a single and straightforward concept. Anyway, this notion of life—although more obscure than life in both the narrow-practical sense and as organisms seen as natural ends—can be found in the context of Kant's reflections about natural science (especially physics) and the metaphysical laws of matter. In this perspective, life is opposed to lifeless matter, insofar as matter as such is essentially deprived of life since its motion has an external cause (and not an internal cause, as seems be the case in organic beings). In his *Metaphysical Foundations of Natural Science* (1786), Kant offers a definition of what life entails as an activity opposed to matter as such, that is to say, as a substance different from mere matter:

> To say that matter 'has inertia' is just to say that matter in itself is lifeless. For a substance to have life is for it to be able to get itself, through its own inner resources, to act—i.e. to change in some way (for any finite substance) or start or stop moving (for any material substance). Now, the only inner resource we know of through which a substance might change its state is desire, along with its dependents—feelings of pleasure and displeasure, appetite, and will—and the only inner activity that we know of is thought. But none of these causes and activities has anything to do with the representations of outer sense, and so they don't belong to matter as matter (MAN, AA IV, 544).

In this quote, it can be inferred that "lifeless" matter must be understood as a substance that cannot change (i.e., by means of an inner activity) its state by itself, like motion or rest. For Kant, all motion in matter has an external cause that provokes the aforementioned motion (or change of state) in matter. Matter as such is nothing more than the "movable" in space (IV, 480); nevertheless, the source of this motion or change does not lie in matter itself, but outside of it. In other words, matter is what is moved by an external cause, that is, matter lacks an internal principle that determines itself for motion—its motion only depends on external relations or causes. Life, on the other hand and in light of the Kantian analysis of the metaphysical laws of matter, is what has an

inner activity or principle that allows self-determination (such as the movement or change of state of a substance by means of itself). The faculty of a substance for self-determination is what constitutes, according to this passage, the vital principle. Matter as such does not have self-determination, because it is only moved by external causes; and that is why matter is contrasted with life, insofar as life is the capacity for self-determination (that is, self-movement of any kind). For that reason, life must be considered a substance different from mere matter. However, Kant specifies that the only inner principle known to us that allows a substance to change its state is desire "along with its dependents", such as a human will, the feeling of pleasure and displeasure and, more generally, appetite.

It is clear, therefore, that some organic beings can be considered to be a substance with life in this broad sense, at least those that have "desire" (even in a lower level, such as mere "appetite"). For Kant, an "animated" matter is something contradictory, insofar as matter is precisely what is lifeless, inanimate. As he writes in his *Opus Postumum*: "Living matter is a *contradictio in adjecto*: The guiding principle is immaterial"[143] (OP, AA XXII, 481). The conception of life that can be derived from the Kantian analysis of the metaphysical laws or principles of natural science is essential for stressing a concept of matter that can be solely explained by the physical-mechanical laws of motion. That is to say, a complete distinction between matter (i.e., what is merely explained by the metaphysical natural laws of physics) and "living" organic bodies[144] (i.e., what cannot be fully explained by the mechanical laws of matter, because they are substances different from lifeless matter) is crucial for Kant.

These two Kantian conceptions of life I have introduced (i.e., life in its narrow-practical sense as rational desire; life in a broad sense linked to a biological perspective, expressed in both organic beings judged as natural ends and organic beings as a substance different from mere matter) are not reducible to mechanical-natural causality and causal

[143] Or as he states in another fragment of the *Opus Postumum*: "Life, however, stems from a distinct substance, from an *archeus* (animated matter is contradictory)" (XXII, 421). In other passages, Kant states that there is no life in matter, but rather there is life in a *body* (XXI, 65). Unfortunately, I cannot carry out a further analysis of this later conception of "life" in the OP.

[144] Ingensiep argues something very similar: "Kant's intention in this context [*Metaphysical Foundations of Natural Science*] was to specify and clarify the Newtonian approach to an inanimate, lifeless matter. For Kant there is no space for any kind of 'life' in a Newtonian world in traditional sense of anima as a moving principle within or separated from the matter. […] Even the Newtonian notion of inertia, *Trägheit*, is for Kant a concept that is only clear for living beings, not for lifeless matter. Kant is looking for a strong boundary between the anorganic matter and organic 'life'" (2006, 75).

research. According to Kant, life in all of these cases (human will, desire, organic beings, and natural ends) is bound to another kind of causality, namely, final causality. Accordingly, life (in any of its forms) cannot be reduced to natural causality and, therefore, cannot be explained in merely mechanistic-causal terms[145]. Life, according to Kant, seems to have an internal causality, that is, certain power of self-determination (either in the strongest, proper sense of a free will or in the broadest sense of the lower faculty of desire), which cannot be fully explained or understood by mechanism—by merely external causes. For that reason, the only way we can make sense of "life" in the Kantian view is either in narrow sense of the practical sphere, scrutinizing our rational faculty of desire and our voluntary actions; or by means of a peculiar principle of the reflective power of judgment when judging nature and its organized products, namely, by means of the concept of *Naturzweck*; or, finally, by a substance with desire of any kind (such as appetite or even the faculty of desire in its minimum expression, like the primal feelings of pain or fear)[146].

We can summarize Kant's conception of life by stating that there is a narrow concept of life in his critical philosophy, which is bound to practical philosophy and which refers to human-rational faculty of desire, expressed more clearly in our free will (*Wille*). Nevertheless, there is a broad conception of life that refers to Kantian reflections upon living beings. This latter conception can be grouped from two perspectives: i) from a teleological point of view (that is, in Kant's analysis of the reflective concept of natural ends of the second part of the third *Critique*); and ii) from a biological-physical perspective, which is mainly focus on his analysis of natural science and the metaphysical laws of matter. With these two conceptions of life (i.e., a narrow and a broad one)

[145] And this last point is something Kant was aware of even before his critical period. For instance, Kant writes in his *Dreams of a Spirit-Seer*: "But the case is entirely different with the philosophical conception of spiritual beings. It may be complete, but in the negative sense, by fixing with assurance the limits of our knowledge, and convincing us that all that is granted to us is to know the diverse manifestations of life in nature and its laws; but that the principle of this life, i.e., the unknown and only assumed spiritual nature, can never be thought of in a positive way, because for this purpose no data can be found in the whole of our sensations" (*Träume*, AA II, 351-52). Despite the lack of the technical-critical language in this passage, it is clear that Kant thinks that life cannot be explained in our objective knowledge, because the very "principle of life" is something that cannot be found in "sensation" (or given in experience, for using a critical language). For an interesting interpretation of how Kant's conception of life discloses precisely the incapability of biology for explaining and obtaining knowledge of "life", see: Garrido, "A Kantian Account of the Knowledge of life and the life sciences" (2015).

[146] However, this third option can only be inferred in some of Kant's writings, but it is not fully thematized. In the OP, Kant offers a more inclusive conception of life (see notes 138 and 140), unfortunately I cannot further analyze this conception in this dissertation.

distinguished, it is possible to move forward into the analysis of the analogy between life and organized beings judged as natural ends.

4.2.2.-Organized beings and the analogy with life

Right after rejecting the analogy between natural ends and artifacts (because it "says far too little about nature" and its natural products), Kant suggests another analogy. This analogy is with life. Yet, immediately after raising this idea, Kant formulates the limitations it entails. He introduces this analogy as follows:

> Perhaps one comes closer to this inscrutable property [i.e., of organisms judged as an organized and self-organizing being] if one calls it an analogue of life [*Analogon des Lebens*]: but then one must either endow matter as mere matter with a property (hylozoism) that contradicts its essence, or else associate with it an alien principle standing in communion with it (a soul [*Seele*]), in which case, however, if such a product is to be a product of nature [*Naturprodukt*], organized matter as an instrument of that soul is already presupposed, and thus makes that product not the least more comprehensible [*begreiflicher*], or else the soul is made into an artificer of this structure, and the product must be withdrawn from (corporeal) nature (KU, AA V, 374-75).

Something that may seem quite puzzling in this passage is the Kantian assertion that organized beings are, in the end, not completely analogous with "life" (*das Leben*). As Zammito wittily asks: "This [Kant's assertion] seems to a modern reader bizarre: life is what we think organism is already about, so what analogy could be there?" (2006, 762). And the question of "what analogy could be there" is not the only question that the reader may pose, but more importantly: Why does Kant think this is a disanalogy, rather than an analogy properly speaking? Why does he separate life from organized beings in this passage? In order to answer these questions, let us analyze the quoted passage.

In the first place, Kant actually establishes an analogy between life and organized beings (judged as *Naturzwecke*). This analogy is invoked after the rejection of the analogy between organisms and artifacts, and Kant explicitly says that life is at some point analogous with "this inscrutable property [*unerforschlichen Eigenschaft*]" of natural ends: "Perhaps one comes closer to this inscrutable property [i.e., of organisms judged as an organized and self-organizing being] if one calls it an analogue of life [*Analogon des Lebens*]." However, and as mentioned before, Kant has different conceptions of life

throughout his writings, so the first task the reader must carry out is to determine which of these senses of life Kant is using here. It is somewhat clear that here Kant is using the term "life" in its practical-narrow sense, since there would be no analogy—or disanalogy—between two terms that mean almost the same, namely, organism and Kant's broad conception of life (that is, his notion of the living being in its biological dimension)[147]. Accordingly, I propose that Kant is invoking a strong definition of life as the capacity for acting in accordance with the rational faculty of desire (free will), so that the analogy is between rational desire (i.e., human free will) and organic beings seen as natural ends.

As mentioned in Chapter 2 of this work, Kant recognizes in *Naturzwecke* an internal principle that operates *as if* organisms have internal purposiveness, which is displayed in the self-organizing processes organisms conduct, such as reproduction, growth and regeneration. That is to say, organisms must be judged as if they have an inner principle that operates purposively[148]. Likewise, life—in its narrow-practical conception—also has an internal principle; in fact, it is mainly conceived through the internal principle of the self-determination of the will. Therefore, what Kant is stressing here is the inner principle that life and organisms seems to share.

Thus far, it seems that Kant accepts without restraint the analogy between life and organisms. Nevertheless, Kant expresses very soon his reservations regarding this analogy: "but then one must either endow matter as mere matter with a property (hylozoism) that contradicts its essence, or else associate with it an alien principle standing in communion with it (a soul [Seele])". His main reservations about the analogy between life in its practical-strong sense and organisms are, on the one hand, the risk of hylozoism, which consists in endowing matter with a property that does not belong to it (for instance, conceiving an animated, living matter), and on the other hand, conceiving matter in communion with a soul (which is a principle external to the matter itself that operates as an artificer or producer of this matter). For Kant, conceiving matter in communion with a soul poses the same problems that the analogy between artifacts and

[147] For that reason, my suggestion is that Kant is establishing an analogy (or disanalogy) between *Naturzweck* and life in the strongest possible sense, namely, as free will (*Wille)*. But, as I have stated throughout this dissertation, Kant is not clear at all on this point.

[148] However, the purposiveness of a natural end is merely regulative; that is to say, we judge organisms as if they had purposiveness, but such purposiveness is without a determined intention or end (as is the case in the self-determination of the will, which acts with intentions [*Absicht*]).

organisms had faced; namely, in such a case, we judge the organism to be the product of a rational agent which lies outside the product itself, and whose purposiveness is merely external.

In the case of hylozoism, Kant is very emphatic in rejecting it throughout his writings (in both pre-critical and critical period). For instance, in his *Dreams of a Spirit-Seer* (*Träume eines Geistersehers)* he writes: "Hylozoism imputes life to everything; materialism, carefully considered, kills everything" (*Träume*, AA II, 330); or in his *Lectures on Metaphysics*: "hylozoism is the opinion that matter has life—this is the death of all physics" (*Met. Dohna*, AA, XXVIII, 687); or as he states in his *Metaphysical Foundations of Natural Science* (*Metaphysische Anfangsgründe der Naturwissenschaft)*: "Hylozoism is the opposite of this law [inertia], and is therefore the death of all natural philosophy" (*MAN*, AA IV, 544). As it can be seen, Kant is trying to avoid at all costs the belief that matter can be infused with life—that is, the conception that matter is alive—since he strongly believes that matter is lifeless, absolutely devoid of life in its practical sense as rational-free desire. For Kant, physics or natural science must rest in the metaphysical laws of matter as such (or the laws of motion), like inertia, motive power (attraction and repulsion) or external causality. To attribute an inner movable principle to matter is to lose any hope of settling natural science as a proper science[149], according to Kant. In other words, hylozoism is the death of physics or natural science because it escapes the limits of theoretical knowledge—since the very idea of an inner principle of matter cannot be explained within physics—and it would eliminate any pretention for establishing a natural proper science. For that reason, Kant needs to separate life—at least in its practical-narrow dimension—from matter, and organized beings are ultimately *material* natural products (at least, they are to some extent material products subjected to the laws of matter, but they are also organic instead of inorganic matter). Or, put it in simpler words, Kant is trying to differentiate organic life from practical-life, since the simple suggestion that there could be in nature a certain degree of practical freedom (as rational-free desire, as practical life) would imply a major transgression to Critical philosophy.

However, it can be claimed that Kant is ambiguous in his exposition, since at times he argues that organized beings must be *judged* by means of an internal-purposive

[149] I shall offer a definition and analysis of Kant's conception of proper science in 5.4.1.

principle (a principle that can be thought of by analogy with rational practical desire, at least to some extent), but then he claims that the only way we can explain these natural products is through mechanical-physical principles—although this kind of explanation is absolutely insufficient for accounting for organized beings.

Accordingly, the analogy between life (in its practical-narrow sense) and organisms is, at the very least, ambivalent for Kant[150]: on the one hand, he seems to embrace it, at least one "comes closer to this inscrutable property [i.e., inner principle for self-organization]" of natural ends than the analogy with rational design; but, on the other hand, he highlights the risks of the analogy (like hylozoism) for natural science. Unlike the disanalogy with artifacts, the analogy with life stands as an analogy properly speaking, at least in its ambivalent dimension. Nevertheless, and right after suggesting both analogies, Kant writes: "Strictly speaking, the organization of nature is therefore not analogous with any causality that we know"[151] (V, 375). Although both analogies display shortcomings that are difficult to overlook, they are relevant insofar as they reveal the very procedure of the reflective judgment, namely, analogical reflection. Even though the analogy with artifacts is finally dismissed and the analogy with life is accepted with reservations, they both highlight the procedure of the reflective power of judgment when facing nature and some of its—sometimes inscrutable—products. The reflective power of judgment eminently operates by means of analogy, since it is the means by which it can search for systematic unity of the empirical laws of nature.

Nevertheless, and despite the fact that Kant states that the organization of nature "is not analogous with any causality" known to us, there is in fact an analogy that seems to fit better for the understanding of organized beings judged as *Naturzweck* and for the very understanding of the analogical procedure of reflection, namely, the analogy between natural ends and our own causality in accordance with ends (or our own technical reason). In what follows, therefore, I shall introduce and analyze this analogy, which has

[150] It is not surprising to find ambivalent and problematic assertions in Kant's writings. As I have stated in the Introduction of this dissertation (p.6), Kant's "Critique of the Teleological Power of Judgment" is utterly ambiguous and problematic, mainly his elucidation of *Naturzweck* by means of these analogies/disanalogies. At times, he seems to contradict himself when invoking certain analogies for elucidating the concept of *Naturzweck*, but, at the same time, stating that "strictly speaking, the organization of nature is therefore not analogous with any causality that we know." (V, 374-75); and then embracing the analogy with technical reason (with certain restraints that he does not bother to clarify at all), and so forth. As Vaihinger provocatively states regarding Kantian philosophy in general: "Kant, as we know, frequently contradicted himself" (1968, 287).

[151] „Genau zu reden, hat also die Organisation der Natur nichts Analogisches mit irgend einer Causalität, die wir kennen."

fewer shortcomings than the analogies with artifacts and life. This analogy, in fact, will be crucial not only for understanding the concept of *Naturzweck*, but also for enabling us to represent this very concept—as I shall claim throughout the next chapter. Moreover, this analogy will display the original procedure of reflection as such when one judges organized beings.

Chapter 5: The Analogy with our Own Technical Reason and the Formation of our Teleological Judgments of Nature

In the previous two chapters, I have introduced and analyzed, on the one hand, the concept of analogy that operates within the "Critique of the Teleological Power of Judgment"—and I have suggested that analogy is one of the main procedures of the reflective power of judgment[152]. On the other hand, the previous chapter has addressed the role of two analogies introduced by Kant in the "Analytic of the Teleological Power of Judgment", which are the disanalogy between organisms and artifacts—this last understood in connection with the traditional argument from design—and the partial analogy between organisms and life. Even though both analogies are finally ruled out by Kant, they exhibit—as I have anticipated at the end of Chapter 4—the very procedure of reflection, which is essentially analogical. In this chapter, therefore, I shall delve into this last assertion—i.e., analogy as *the* procedure of the reflective power of judgment—in order to stress the role of one particular analogy for understanding the concept of *Naturzweck*. This is the analogy with "our own causality in accordance with ends" (KU AA V, 375). But, how can we properly understand the concept of our causality in accordance with ends in the context of our teleological judgments? What is the very role of this analogy for our teleological judgments about nature? What is the role of *Naturzweck*'s concept for our understanding of living beings and for biology itself? Throughout this chapter, I shall offer an answer to these questions.

This chapter, accordingly, will tackle the very thesis of this dissertation: the reflective power of judgment is essentially analogical in its procedure, and our teleological judgments about nature are, in fact, grounded in an original analogy with our causality in accordance with ends, which I construe as an analogy with our own technical-practical reason. Thus, the analogy that enables us to represent the very concept of *Naturzweck*—from which our teleological judgments about nature come into being—is with our technical reason itself. However, this analogy should not be understood as the traditional analogy from design, that is, organisms should not be judged by analogy with the product of a rational producer, but rather by analogy with the rational producer itself—or with its rational capacity for acting in accordance with ends or aims. Without this

[152] As stated in Chapter 3, in the context of KU analogy corresponds to a synthesis of two Kantian conceptions of analogy, namely, symbolic representation and analogical inference.

analogy, I will claim in this chapter, the very concept of *Naturzweck* could not be represented, and hence our very way of judging and making sense of organic beings could not be possible either.

In order to address and justify in detail these assertions, this chapter will be divided into five sections. The first one (5.1) is devoted to analyzing the crucial role of analogy in the KU. This role is often overlooked by Kantian literature—and by Kant himself—however, it is indispensable for forming two main concepts of the KU, namely, *Zweckmäßigkeit der Natur* and *Naturzweck*. Therefore, this section will address the role of analogy for our reflective power of judgment in general. The second section (5.2) is mainly focused on answering the question: how can we properly construe the concept of our causality in accordance with ends (*unserer Kausalität nach Zwecken*)? This section is fundamental, since I will offer what I deem to be the best interpretation of this obscure concept, and hence, the best way for understanding the analogy between organized beings and our technical-practical reason—i.e., our causality in accordance with ends. With this point clarified, we can understand the role of this particular analogy for our teleological judgments about nature. Accordingly, the third section (5.3) is devoted to underlining the indispensable role of this peculiar analogy for the teleological power of judgment. In this section, I shall begin by questioning the Kantian assertion that this analogy is "remote" (*entfernten*), since, as several passages of the KU seem to suggest, without this analogy *Naturzweck*'s concept could not be indirectly exhibited in intuition, and without this concept, we could not make the representation of something organized and self-developing, like an organism, intelligible to ourselves.

Once the role this particular analogy plays in our teleological judgments about nature's organization is addressed and analyzed in detail, it will be possible to explore the role of this analogy for biology or life sciences—or, at least, the possible role that Kant might have attributed to it. Therefore, the fourth section (5.4) is mainly an analysis of the contribution that the analogical concept of *Naturzweck* represents for biology and the scientific investigation of organic beings. This section will be divided, in turn, into four sub-sections: the first one (5.4.1) is devoted to clarifying Kant's technical concept of proper science, in order to determine whether or not biology can be deemed a proper science according to this narrow Kantian conception of natural science. This sub-section, accordingly, will be an interrogation of the status of biology as a proper natural science. The second part (5.4.2), on the other hand, is an interpretation of the very role of

the analogical concept of *Naturzweck* for biology and the life sciences. The third part (5.4.3), in turn, is devoted to offering an overview of Kant's main debates with the biological theories of his time, especially the debate between preformation and epigenesis, which Kant followed with especial interest. The fourth part (5.4.4) consists in a very brief account of the reception of Kant's teleological conception of organic beings and nature in the German tradition of the first half of the nineteenth century. This sub-section will be mainly focused on two German lines of thought: German biology and *Naturphilosophie*. Finally, the last section of this chapter (5.5) is mainly an exploration of the possible role this analogy may have for the understanding of our own reason.

5.1.-The hidden place of analogy in Kant's *KU* and the role of "analogy" for our reflective judgments in general

As mentioned in Chapter 3 of this work, analogy—together with induction—is one of the main modes of inference of the reflective power of judgment. At least, this is what Kant said in his "Lectures on Logic"[153], where he stated that the inferences of the reflective power of judgment "are certain modes of inference for coming from particular concepts to universal ones" (*Logik*, AA IX, 132). Moreover, he said that both modes of inferences proceed from the particular to the universal that must be found empirically (IX, 132). In these lectures, Kant also stated that analogical inference is "useful and indispensable for the sake of the extending of our cognition by experience" (IX, 133). Given these assertions expressed by Kant in his "Lectures on Logic", one would legitimately expect that in the *Kritik der Urteilskraft* the role of induction and analogy would be pointedly highlighted by Kant. Nevertheless, this is not the case. At most, the relevant role that both modes of inferences play throughout the KU can be *surmised* (particularly the role of analogy in the "Critique of the Teleological Power of Judgment"). In both introductions

[153] Matthew McAndrew highlights an important point in his paper "Kant's Theory of inductive Reasoning: The reflecting power of judgment in Kant's Logic": "Remarkably little has actually been written about the account of the reflecting power of judgment that is found in §§81-84 of the *Logic*. This is surprising given that the reflecting power of judgment is an important development in Kant's later philosophy and it is the basis for his aesthetic theory in the third *Critique*. Although many scholars appeal to the *Logic* for additional insights into this important concept, they typically turn to another section from this textbook; namely §6. […] In any case, the sections of the *Logic* that are explicitly devoted to the reflecting power of judgment (§§81-84) have been largely ignored" (2014, 44 footnote). I completely agree with McAndrew's insistence on paying special attention to these (generally overlooked) sections of the *Logic*, since they provide relevant hints not only for forming a better understanding of Kant's notion of reflective judgment, but especially for elaborating a thorough conception of analogy as a typical procedure of reflection.

of the KU—the First Introduction and the published one—Kant makes allusions to induction—strictly speaking, he makes allusions to the *procedure* of induction (that is, to proceed from the particular to the universal), but not to induction itself—and he mentions analogy as if it were a mere tool of the reflective power of judgment[154], but not the very procedure of reflective judgment. That is to say, Kant does not link induction and analogy as two typical modes of inferences of the reflective power of judgment as he does in his "Lectures on Logic". In the KU, both analogy and induction seem to be mere tools of reflection. Nevertheless, I state that analogy is more than a mere heuristic tool of the reflective power of judgment, since it is one of its main procedures and, indeed, it is *the* procedure and enabler of our teleological judgments about nature. In other words, I propose that our teleological judgments are essentially *based on* analogy.

However, there is a strong ambivalence in Kant's evaluation regarding the methodological role of analogy, especially in its possible scientific function. This ambiguity regarding analogy is not only present in the KU, but also throughout the Kantian corpus. Sometimes, he was quite critical about the excessive use of it for natural history (for instance, in his critical review of Herder's *Ideas for a Philosophy of the History of Humanity*); but he also seemed to embrace analogies in both the pre-critical period (*Universal Natural History and Theory of Heavens*, 1755) and the critical one ("Lectures on Logic", 1770-1800; the *Prolegomena*, the first and third *Critiques*)[155]. As he said in his "Lectures on Logic", analogies are useful and necessary for extending our empirical cognition of nature, but they are "merely crutches of our understanding" (AA XIV, 287). Perhaps Kant never abandoned this ambiguity in his evaluation of the methodological use of analogy for scientific research or for extending our empirical cognition. Thinkers like Reimarus and Wolff highlighted the heuristic role of analogy, especially for the discovery of the new science of nature[156]. Kant emphatically agreed with the heuristic role that analogy plays in our empirical cognition of nature, but he also emphatically disagrees with Herder's use of analogy in natural history, mainly because Herder asserts that all our knowledge is analogical, since analogy provides a constitutive understanding of our scientific concepts and objects[157]. Kant could not agree with that

[154] See, for instance, EE, AA 20, 201; 232.
[155] For an interesting and accurate account of Kant's evaluation of analogy and his dispute against Herder, see Dalia Nassar (2015).
[156] See Reimarus (1776, 291-292), or the interesting paper of Van den Berg (2017, 3).
[157] See Herder (1778, 3-4). As Nassar clearly explains: "Herder's claim is not simply that analogical inference provides insight by which to grasp an already given object; rather, his claim is that our very

assertion, since he constantly distinguishes between regulative and constitutive principles, and analogy is essentially heuristic (that is, regulative). Accordingly, can we ascribe to analogy more than a mere heuristic role throughout the third *Critique* and the Teleological Judgment? My answer is affirmative, since I propose that the very role of analogy in the "Critique of the Teleological Power of Judgment" is not just limited to serving as a heuristic guideline for the investigation of nature[158], but most importantly, to enabling us to represent and making sense of the very concept of *Naturzweck*—by analogy with our technical reason, which is the base of our teleological judgments on nature.

In spite of Kant's ambiguity regarding the role of analogy in the KU—and particularly in the "Critique of Teleological Power of Judgment"—recent literature has pointed out the relevance of analogy in Kant's reflections on biology[159]. This particular topic has not been sufficiently addressed by Kantian scholars, with the exception of this new group of publications in the last five years, which expressly thematizes the role of analogy for biology in the context of Kant's critical philosophy. Nevertheless, the study of analogy as the *enabler* of our teleological judgments about nature remains somehow unexplored. Therefore, one can dare to say with no fear of being considered presumptuous that this particular role of analogy in Kant's "Critique of the Teleological Power of Judgment"—and its implications for biology— is still a barely addressed subject within Kantian studies[160], despite its relevance for understanding this whole section of the KU.

In the third *Critique*, Kant himself is not very explicit in pointing out what is the very procedure of the reflective power of judgment, but it is somewhat clear when reading the book that the procedure of reflection is both induction and analogy. Induction

cognition is analogical. That is to say, it is only through seeing *one thing through or as another* that something becomes an object of knowledge for us at all" (2015, 246).

[158] Breitenbach (2014b) also states that analogy plays more than a mere heuristic role in Kant's Teleological Judgment (see section 3.5 of this dissertation).

[159] See, for instance, Breitenbach (2014a, 2014b), Nassar (2015, 2016), and van den Berg (2017). See also, Angelica Nuzzo (2005), who highlights the role of analogy in Kant's KU not only for biology, but also for the reflective power of judgment in general. However, Nuzzo does not carry out a further analysis of the role of analogy for enabling our representation of *Naturzweck*. In fact, she even omits the analogy between technical-practical reason and the organism, since she thinks that Kant only invokes two analogies for understanding the concept of natural ends, namely, the analogy with art (artifacts) and the analogy with life. Thus, she concludes in this regard—and quoting Kant—that "the organization of nature has nothing analogous to any causality known to us" (336-337). Accordingly, even though Nuzzo contributes to highlighting the role of analogy in the KU, she does not pursue key aspects of the role of analogy in the "Critique of the Teleological Power of Judgment", nor how we ought to construe the analogy with our causality in accordance with ends—which is indispensable for understanding this section of the KU.

[160] Breitenbach and Nassar are, perhaps, one of the exceptions to this rule. See, for instance, Breitenbach (2009b, 2014a), and Nassar (2016).

is one of the ways in which the reflective power of judgment proceeds when searching for the systematic unity of empirical laws of nature (that is to say, induction proceeds from the particular to the universal—which is not yet given—by the principle of *universalization*). Analogy, on the other hand, is another procedure of the reflective power of judgment; in fact, the entire third *Critique* is full of analogies, not only because the very principle of *Zweckmässigkeit* is thought by analogy with practical purposiveness[161] (KU, AA V, 181), but also since this principle of purposiveness reflects on nature *as if* nature and its products were commensurable with our faculty of knowledge, or *as if* nature were judged by analogy with art (EE, AA XX, 201). In other words, the whole language of the KU—specifically the "*als ob*" language—is subsidiary of analogy.[162] Thus, the reflective power of judgment *produces* by analogy its judgments, that is, our reflective judgments in general—and particularly our teleological judgments—are grounded in analogy. Analogy, therefore, can be regarded as that which enables the representation of the peculiar principles of the reflective power of judgment, such as the concept of *Zweckmässigkeit der Natur* or the very concept of *Naturzweck*.

However, this role of analogy is concealed throughout the KU, since Kant does not make it explicit, and he only implicitly points to its indispensable role through the countless examples of how reflective—and teleological—judgments operate by way of analogy. This role is fundamentally evident in the "Critique of the Teleological Power of Judgment", since the very thought of living beings as organized and self-organizing beings is possible by analogical thought. That is to say, our teleological judgments are based on analogical reflections about nature and its products[163], and the representation of the teleological concept of "natural end" [164] is only possible by an analogy with our own

[161] See the Chapter 1 of this dissertation for further details.

[162] See for instance: "nature is represented through this concept [purposiveness of nature] *as if* an understanding contained the ground of the unity of the manifold of its empirical laws" (V, 181); or: "For we cannot ascribe to the products of nature anything like a relation of nature in them to ends, but can only use this concept in order to reflect on the connection of appearances in nature that are given in accordance with empirical laws. This concept is also entirely distinct from that of practical purposiveness (of human art as well as of morals), although it is certainly conceived of in terms of an analogy with that" (181). Or see the work of Vaihinger regarding the als-ob formula (1968, 93, 280, 287).

[163] Dalia Nassar (2015, 2016) and Angela Breitenbach (2009, 2014) also suggest a similar interpretation of the role of analogy within Teleological Judgment. Nuzzo (2005), on the other hand, maintains that it is the reflective power of judgment itself "that makes use of the peculiar instrument of analogy as its heuristic principle" (140).

[164] By "representation of the concept of *Naturzweck*" I mean the indirect presentation of this concept in intuition (symbolic representation) and its subsequent intelligibility by an analogical inference (see the final part of section 3.5 for further details). For the sake of the economy of the words, in the following I will refer to this double function when I use expressions such as "representation of the concept of *Naturzweck*".

causality in accordance with ends, as Kant states (V, 375). Or, to put it in other terms, the peculiar concept of the teleological power of judgment is based on this analogy with our rational-purposive causality. But, what does this analogy mean? How can we properly construe this peculiar analogy that enables the representation of the very concept of *Naturzweck*? In what follows, I will offer a possible—and, I argue, quite plausible—answer to these questions.

5.2.-How can we properly construe the analogy with our causality in accordance with ends?

At the very beginning of the Introduction of the third *Critique*, Kant makes an important distinction that will be indispensable for understanding not only this *Critique*, but also his whole critical system. He divides philosophy into the theoretical and practical sphere. This division is made in accordance with the concepts that each of these spheres makes possible, namely, nature and freedom, respectively. As mentioned in the Chapter 1 of this dissertation, Kant divides philosophy into two different parts "entirely distinct as far as their principles are concerned, namely, the theoretical, as philosophy of nature, and the practical, as moral philosophy" (KU, AA V, 171). In addition to this division, Kant introduces another distinction that might be relevant in order to begin to understand the sense of the term "causality in accordance with ends" in the context of Teleological Judgment, namely, the distinction between *technically* practical and *morally* practical principles. According to Kant, both of these principles are made by the will, nevertheless "the concept that gives the rule to the causality of the will" can be a concept of nature or a concept of freedom (172). That is to say, the will (broadly understood as the faculty of desire) is the faculty that operates according to concepts, and it "is one of the many kinds of natural causes in the world". And "everything that is represented as possible (or necessary) through a will is called practically possible (or necessary)" (172), unlike what is represented as physically (or naturally) necessary, whose cause is determined by the mechanism of nature, and not through concepts. Accordingly, the "practically possible" is all that is represented as possible by means of the will, but the rule of the causality of the will can be a concept of nature or a concept of freedom. And this distinction is, according to Kant, philosophically essential (*wesentlich*).

This distinction is essential because philosophy itself (as the "rational science") depends on this difference of the objects, "the cognition of which requires distinct principles", namely, those which pertain to theoretical philosophy ("as a doctrine of nature") and those which pertain to practical philosophy ("as a doctrine of morals"). Therefore, if the concept that determines the causality of the will is a concept of nature, the practical rule is called "technically practical", in distinction to the "morally practical", whose principle is determined by a concept of freedom. Thus, all technically practical principles ultimately pertains to theoretical philosophy, and all morally practical principles pertains to practical philosophy. That is to say, all technically practical rules ("i.e., those of art and skill in general, as well as those of prudence, as a skill in influencing human beings and their will") must be considered just as "corollaries" of theoretical philosophy. These technically-practical rules cannot be called "laws" (such as the natural laws or the moral law), but only "precepts" (V, 172), since they only contain "rules for skill" for producing a determinate end or purpose "that is possible in accordance with natural concepts of causes and effects" (173). Whereas morally practical principles guide the will according to the moral law (or the law of freedom) "without prior reference to ends and aims", technically practical rules (or precepts) only guide the will in order to achieve a determinate purpose or aim, that is to say, it is a rule for producing a specific object as means to an end. Kant designates by these technically-practical principles either some applicative sphere of natural science (such as applied geometry or mechanics) or the hypothetical imperatives, such as rules of skill and prudence, or the "general doctrine of happiness" (172). As Angelica Nuzzo clearly explains: "Thus the realm of all technical-practical rules is characterized as a set of inferences from the natural laws of nature, and represents the technical and applicative aspect of our scientific knowledge of nature" (2005, 121). Or as Cassirer makes it even clearer: "Such propositions ought to be called technical rather than practical, where technic means less something opposed to theory than its execution with respect to a given particular case. Its rules belong to the art of bringing about the realization of one's desires" (1981, 295).

This whole introduction is absolutely necessary because the distinction between technically practical and morally practical principles is crucial for understanding the very principle of the *Zweckmäßigkeit der Natur*, and hence of the concept of *Naturzweck*. The reason for the relevance of this distinction is that the principles of

Zweckmäßigkeit and *Naturzweck* are only possible, I propose, by analogy with technically-practical principles instead of morally-practically principles. Let us see why.

In the first place, the peculiar principle of *Zweckmäßigkeit der Natur* is thought by analogy with "purposiveness" in the practical sphere[165]. Kant is very emphatic in this regard, when he says in the First Introduction that the concepts of "ends" and of "purposiveness" belong to reason, "insofar as one ascribes the ground of the possibility of an object to it" (EE, AA XX, 234). And he also defines in §10 of the KU that an end "is the object of a concept insofar as the latter is regarded as the cause of the former", and the causality of a concept with respect to its object is called "purposiveness" (V, 220). The faculty for acting in accordance with concepts (i.e., in accordance with the representation of an end) is the will (*Wille*)—here understood in the broadest possible way, namely, as causality in accordance with ends (*Kausalität nach Zwecken*). Nevertheless, Kant readily adds that we can think *Zweckmäßigkeit* by analogy with this broad concept of will (i.e., as causality in accordance with ends):

> An object or a state of mind or even an action, however, even if its possibility does not necessarily presuppose the representation of an end, is called purposive merely because *its possibility can only be explained and conceived by us insofar as we assume as its ground a causality in accordance with ends, i.e., a will that has arranged it so in accordance with the representation of a certain rule.* Purposiveness can thus exist without an end, insofar as we do not place the causes of this form in a will, *but can still make the explanation of its possibility conceivable to ourselves* only by deriving it from a will (V, 220, my emphasis).

Although Kant is here describing what he calls "purposiveness without an end" (*Zweckmäßigkeit ohne Zweck*), it is somehow clear that he is referring to the very peculiar principle of the *Zweckmäßigkeit der Natur*[166] in general, as the *a priori* principle of the reflective power of judgment. At least, he is describing "purposiveness without an end" in quite similar terms as he described the principle of purposiveness of nature in both

[165] "This concept [*Zweckmäßigkeit der Natur*] is also entirely distinct from that of practical purposiveness (of human art as well as of morals [*Sitten*]), although it is certainly conceived of in terms of an analogy with that" (KU, AA V, 181). Here Kant uses the term "morals" (*Sitten*) in a broad sense, since he is referring to hypothetical imperatives (rules for skill as well as rule for prudence), and not to "the moral law". I shall return to this point below.

[166] Zuckert states something very similar in her book *Kant on Beauty and Biology. An Interpretation of the Critique of Judgment* (2007). "More broadly, any purposiveness of nature is purposiveness without a purpose, for non-human nature does not act in accord with conceptual intentions. […] reflective and aesthetic judging are judgments of purposiveness without a purpose: in such judgments the subject does not have, or judge an object to be purposive (useful) according to, a prior concept" (2007, 80-81).

Introductions, namely, as a principle that is conceived by analogy with final causality. Both the principle of *Zweckmäßigkeit* and *Zweckmäßigkeit ohne Zweck* are thought by us by analogy with a will (or with a causality in accordance with ends), but we do not ascribe a will as the cause of this apparent purposiveness. That is to say, the principle of *Zweckmäßigkeit der Natur* does not determine an end—as would be the case in a constitutive principle of the determining power of judgment—but rather it is a principle for reflection: nature (and some of its products, like the beautiful and organisms) is judged by us *as if* (*als ob*) it had been purposively arranged, *as if* a will (a causality that can act in accordance with the representation of an end or "a certain rule") were the cause of the very possibility of that seemingly purposive arrangement[167].

The principle of purposiveness, therefore, is thought by analogy with a will that can act in accordance with the representation of an end, which is the same as "causality in accordance with ends" (or rules, or representations, or concepts). However, we must conceive this "will" (or causality in accordance with ends) in a broad sense, that is to say, in a sense that encompasses the practical in its technical sphere instead of the moral sphere[168]. In the First Introduction, Kant stresses the relation of the principle of *Zweckmäßigkeit der Natur* to technical purposiveness instead of practical purposiveness ("practical" understood here in the narrow Kantian sense of "moral"). As he says: "the concept of a purposiveness of nature (as a technical purposiveness, which is essentially distinct from practical purposiveness)" (EE, AA XX, 243). In Kantian philosophy, the moral sphere pertains to a strong and strict sense of the practical, in fact this sphere justifies the whole division of philosophy into theoretical and practical. As mentioned above, Kant is very emphatic in stating at the beginning of both Introductions that all technically-practical rules belong to theoretical philosophy (at least as corollaries), whereas the morally-practical law (the moral law, the law of freedom) belongs to practical philosophy (KU, AA V, 172; EE, AA XX, 197-98). The principles of *Zweckmäßigkeit der Natur* (or his former concept of *Technik der Natur* of the First Introduction of the KU) and *Naturzweck*, as principles for reflecting on nature and its products, are thus

[167] For further details about the very role of *Zweckmäßigkeit der Nature*, see the chapter 1, especially the sections 1.3.2, 1.3.3, 1.3.4 and 1.3.5.

[168] As Cassirer explains in a very straightforward way the sense of "technical" in the Kantian expression of "technique of nature": "For besides technic as a particular artistic human institution which perpetually clings to the illusion of free choice, there is also, as Kant notes, a technic of nature itself, namely, so far as we regard the nature of things as if their possibility rested on art, or in other words as if they were the expression of *a creative will*" (1981, 295-96). A "creative will" here means a "productive" will, a will that can be the producer of ends in general. In other words, a technical-productive reason.

principles that can be thought by analogy with technically-practical rules, insofar as "they concern only the possibility of things in accordance with concepts of nature" (V, 172), and hence they belong to theoretical philosophy.

In the second place, technically-practical principles are essential for forming by analogy the representation of the very concept of *Naturzweck*, since this reflective concept is thought by ("a remote") analogy with our causality in accordance with ends (V, 375). For instance, Kant says in the First Introduction of the KU:

> But purposiveness in nature, as well as the concept of things as natural ends, places reason as cause into a relation with such things, as the ground of their possibility, in a way which we cannot know through any experience. For we can be conscious of the causality of reason in objects, which on that account are called purposive or ends, only in the case of products of art, and *to call reason technical in regard to them is appropriate to the experience of the causality of our own capacity. But to represent nature as technical, like a reason* (and so to attribute purposiveness and even ends to nature), *is a special concept*, which we cannot encounter in experience and *which only the power of judgment introduces into its reflection on objects*, in order to treat experience, following its direction, in accordance with special laws, namely those of the possibility of a system (EE, AA XX, 234-54, my emphasis).

In this quote, Kant is stating that both the principles of the *Zweckmäßigkeit der Natur* and *Naturzweck* are conceived in relation to reason—more specifically, in relation to the causality of reason. That is to say, we conceive nature and some of its products as if reason were the cause of such a purposive relation. Furthermore, he also states that we cannot know how this purposive relation can take place in experience, except in products of human art, where we can trace the causal relation of reason over objects—which are called, thus, "ends" or "purposive". In such cases, we "call reason technical in regard to" these objects, since reason produces by a rule (or concept) such an object. In these cases, we can also notice our own "capacity", namely, our technically-practical capacity of positing ends (or aims) in general and trying to accomplish them by applying a rule or precept. Nevertheless, as Kant warns us, our technical-rational capacity of positing ends cannot be found in our experience of nature, since nature is not rational and it is not determined by free causality, but by natural-efficient causality. However, and this is the key point here, we *can represent* nature (and its products) by analogy with reason, that is, by analogy with our causality in accordance with ends (i.e., technically-practical reason).

This representation is, as Kant adds at the end of the quote, only possible by our reflective power of judgment in order to reflect on nature.

What is at stake in Kant's argument, I thus claim, is not morally-practical reason, but technically practical reason[169]. Despite several Kantian commentators[170] have associated "causality according to ends" to both moral and technical reason, I claim that this reading of incorporating the moral scope is mistaken. This statement can be textually supported several times, especially where Kant specifies that the analogy with our rational causality only refers to the "technical" use of reason:

> Hence in teleology, […], we speak quite rightly of the wisdom, the economy, the forethought, and the beneficence of nature […] such talk is only meant to designate a kind of causality in nature, in accordance with an analogy with our own causality *in the technical use of reason* (V, 383, my emphasis).
>
> […] in many products of nature this ground [mechanism of nature] is often too deeply hidden for our research, we attempt to ascribe it to nature *by analogy with a subjective principle, namely that of art*, i.e., *causality in accordance with ideas* (390, my emphasis).
>
> The concept of a causality through ends (of art) (397).
>
> For we adduce a teleological ground when we ascribe causality in regard to an object to a concept of the object as if it were to be found in nature (not in us), or rather *we represent the possibility of the object in accordance with the analogy of such a causality (like the*

[169] Angelica Nuzzo stresses something similar regarding natural teleology: "Kant's teleology expresses only a type of reflection according to the analogy with our own technical activity" (2005, 339). However, Nuzzo does not specify whether this analogy "with our own technical activity" can be understood as the analogy between organisms and artifacts (artifacts as the products of such "technical activity") or not. In her analysis, she does not dig into the role of analogy in Kant's Teleological Judgment, let alone investigate further the nature of the analogy with our causality in accordance with ends (which she seems to construe as the analogy with artifacts [2005, 336-37]).

[170] For instance, Zumbach insists that the type of causality that the concept of natural end involves is a "biological causality", which implies free causality (whose expression par excellence is our practical freedom) (1984, 107-08); on the other hand, Zammito states that the human purposive activity involves a rational causality, even a noumenal one (that is, a free causality in the moral sphere) (1992, 221); and in a similar line, Guyer states that: "[t]hough we are driven to raise the question of the purpose of nature by (the limits of) our theoretical comprehension, only practical reason can furnish a candidate for this end, namely our own existence as moral agents. Thus reflection on nature leads us to the goal of our own morality" (2005, 95-96); Steigerwald is more emphatic in stating that the analogy involves both aspects of human rational activity, as she says: "The concept of purpose [in the Teleological Judgment] included human purposive activity in artistic production as well as moral action." (2006, 716); and Mensch points out: "Because an organized natural purpose was inconceivable by way of an analogy to a mechanical product, in other words, the analogy had to rely on reason and the kind of demonstration of free causality that it provided in the moral sphere" (2014, 143)

> *kind we encounter in ourselves)*, and hence *we conceive of nature as technical through its own capacity* (361, my emphasis).

Causality in accordance with ends can refer, therefore, not only to the scope of the morally practical sphere, but also to the technically practical one, namely, "art"—human technique—understood in the broadest sense as a causality guided by technical rules (i.e., by concepts, ideas, rules of skill or prudence, by aims, and so forth). Indeed, in the context of the KU, this causality refers to this technical-practical sense, as Kant asserts in §68 of the Teleological Judgment, namely, "such talk [i.e., teleological talking] is only meant to designate a kind of causality in nature, in accordance with an analogy with our own causality in the *technical use of reason*" (V, 383, my emphasis). This analogy with our technical reason offers a rule for judging some natural products as *Naturzwecke*, that is to say, as natural products judged by teleological principles.

However, it can be claimed that the traditional analogy from design is the very analogy with our causality in accordance with ends. It is true that the analogy from design is based on technical-practical considerations, but the sense of the analogy invoked by Kant is not the traditional comparison between artifacts and organisms, but, as I suggest, between our technical reason and nature (and some of its products, like organisms). Even though this analogy has been dominantly equated with the argument from design by the commentators[171], I have argued in Chapter 4 that this is a misreading. Kant is emphatic in highlighting the shortcomings of the analogy between organisms and artifacts, since this analogy does not account for the self-organization of living beings. My reading, however, is quite different from this traditional and dominant interpretation of other Kantian scholars. As I see it, Kant is not drawing an analogy between the product of a rational agent and a living being (as the traditional artifact model proposes), but rather between our very technical reason (those moved by technical-practical rules or aims) and living beings, which are thus judged as *Naturzwecke*.

Angela Breitenbach states something very similar in this regard: "On a different and, I believe, more plausible interpretation, however, we can read Kant as drawing an analogy not with the products of human activity but with the very capacity for that activity, namely, the capacity of practical reason itself" (2014a, 137). I agree with Breitenbach in her analysis until the part of "practical reason itself", since this would also

[171] See, for instance, Aquila (1991), Fricke (1990), Guyer (2001, 2006), McFarland (1970), McLaughlin (1990), Zumbach (1984), Zuckert (2007), Lenoir (1982), Van den Berg (2014, 2017), and so forth.

entail practical reason in the strongest sense, that is, the moral sense. Breitenbach does not specify this point, she does not explain in which particular sense she is construing the term "practical reason itself",[172] which is crucial for delimiting and understanding both the concept of *Naturzweck* and the role of this particular analogy. Therefore, we can raise the question: What would "practical reason itself" mean in the context of KU? As stated before, Kant is clear and emphatic in both introductions in distinguishing two senses of the practical (or practical reason), namely, the moral sense (which is the proper-strong sense of the practical) and a weak sense of the practical, which he calls "technical" (the technical use of reason, that is, our technical reason). I doubt that Kant is drawing an analogy between organisms and our "practical reason itself", since this would ultimately include the moral sphere (sphere that Kant excluded from the argument[173]). For this reason, I contend that the analogy with technical reason is more accurate and fits better with the context and main argument of the KU, since this sense of reason can be ultimately applied to our inquiry into nature. Thus, an analysis that overlooks this specification is somehow incomplete and insufficient for elucidating the very role of analogical reflection in Kant's Teleological Judgment as well as the concept of natural end itself.

[172] At times, she refers to "human reason" in general, without further specifications: "In this way, the analogy with human reason can account for both the unified organisation and the purposive self-organisation of living beings" (2014b, 23); but she also refers to "the capacity of our practical reason" in general: „Die systematische Organisiertheit und die Fähigkeit des Organismus zur Selbstorganisation kann nun nach der Analogie mit der Systematizität und Zweckgerichtetheit des gesamten Vernunftvermögens begriffen warden. Die Kausalität nach Zwecken, *das praktische Vernunftvermögen in uns*, welches in der Analogie die Organisation von lebendiger Natur enhellen soll, kann verstanden werden als die allgemeine Fähigkeit der Vernunft, sich auf einen selbstgesetzten Zweck zu richten: den Zweck ihrer eigenen, selbstbestimmten Einheit" (2009b, 101 my emphasis). In another passage, she refers to "human reason" in an even more inclusive way: "I assume here Kant's conception of human reason as not only characterized by the ability for free and end-directed activity, but also presenting a complex capacity whose different functions are purposively related to realizing and maintaining the capacity of reason as a whole" (2014a, 137 note). It seems clear to me that she has in mind a broad conception of reason (even a systematic conception, as encompassing all the uses, processes and activities our reason is able to carry out in an unified manner) operating in the analogy with our causality in accordance with ends. However, I insist that it is necessary to narrow the concept of reason solely to our technical reason, since it is solely the technical-productive sphere of our reason what seems to be analogous to nature's organization.

[173] As McLaughlin wittily points out (although he identify this analogy with the argument from design): "The causality of purposes under discussion here is a kind of phenomenal causality, which can be ascertained in every product of art or labor. 'The will, as the power of desire, is one of the many natural causes in the world, namely, the one that acts in accordance with concepts' (Bxii; CJ, 10). As long as we are dealing with concepts of nature (i.e. technique) and not with concepts of freedom (i.e. morals), then our subject consists in 'corollaries' to theoretical philosophy and not in moral philosophy. The technical-practical prescriptions of reflective judgment belong to theoretical philosophy as corollaries; the 'Critique of Teleological Judgment' is an addendum to the *Critique of Pure Reason* not an extension of the *Critique of Practical Reason*. Moral-practical purposiveness as such plays no role whatsoever in the 'Critique of Teleological Judgment': it is only mentioned in the introduction in order to be excluded explicitly (Bxiii-xv; CJ, 10-12)." (1990, 38).

Accordingly, Kant is establishing an analogy between the productive power of our technical reason and organisms, since the latter seem to have a productive and self-organizing power as well. That is why Kant, just after rejecting the analogies with artifacts and life, embraces the analogy with our causality in accordance with ends, that is, with our technical—productive—reason:

> The concept of a thing as in itself a natural end is therefore not a constitutive concept of the understanding or of reason, but it can still be a regulative concept for the reflecting power of judgment, for guiding research into objects of this kind and thinking over their highest ground in accordance with *a remote analogy with our own causality in accordance with ends* (V, 375, my emphasis)[174].

Our causality in accordance with ends (that is, our technical reason) has a feature that we also seem to find in organic beings, namely, self-organization (which is also end-directed). That is to say, our technical reason possesses a self-organizing and purposive character, which is the very ground that enables the analogy between organisms and our causality in accordance with ends. Technical reason is responsible not only for our capacity to produce artifacts, but also (and more broadly) to represent ourselves ends (purposes, aims, goals)[175] and to find a way to accomplish them—that is to say, it self-organizes to accomplish such ends by creating a rule or precept. Our technical reason, understood as a will in the broadest possible sense, is the "faculty to produce something according to an idea which is called end" (AA VIII, 182). This technical-rational capacity in us, therefore, is the source from which the analogical concept of *Naturzweck* is not only indirectly exhibited in intuition, but also it turns intelligible to us. That is to say, we judge living beings as *Naturzwecke* because we seem to recognize in them some features that are similar to our technical reason, namely, purposiveness and self-organization.

It can be argued, however, that our reason is not composed of self-organizing parts that are the cause and effect of themselves. For Kant, the concept of *Naturzweck* can be "provisionally" defined as something that is the cause and effect of itself (V, 371), and he exemplifies this circular causality by means of the regenerative character of the parts of an organism[176]. Our reason, however, does not have parts that regenerate themselves

[174] I shall further analyze this quote in the next section.
[175] Or, as Kant puts it, to represent the ends of "art and skill in general, as well as those of prudence, as a skill in influencing human beings and their will" (V, 172).
[176] See 2.4 for more details.

or that are the cause and effect of the whole. That is true[177]. Nevertheless, what is suggested in the analogy between our technical reason and living beings is the self-productive character that they both seem to share. The aims or ends that our technical reason sets do not come from outside, but rather they are represented and produced by our reason itself. That is to say, our technical reason organizes itself for accomplishing its own ends, by elaborating a plan, a rule or a concept in order to produce—or to carry out—such ends. Accordingly, the self-organization of our technical reason is not from the whole to the parts and from the parts to the whole in a circular causality, but rather its self-organization consists in representing aims in general and finding a way (by creating a rule, precept or concept) to accomplish them. In this sense, technical reason organizes itself in a purposive way. That is why it has end-directedness and self-organization. And this purposive and self-organizing character of our technical reason is the source of the analogical concept of *Naturzweck*.

Nevertheless, Kant says that this analogy is somehow "remote" (*entfernten*). For that reason, in the next section I shall question the "remoteness" of this particular analogy by stressing the indispensable role of it.

5.3. – Is this analogy so "remote" as Kant declares? The role of this analogy in representing the concept of *Naturzweck*

I have stressed several times the indispensable—and sometimes overlooked—role of analogy in the *Kritik der Urteilskraft*, and at the beginning of this chapter I have already introduced the relevance of analogical thought not only for the formation of the principle of the *Zweckmäßigkeit der Natur*, but also for the formation of our representation of the concept of *Naturzweck*. Our teleological judgments of nature are based on analogical

[177] Or, properly speaking, it is partially true. In a well-known passage from the Prologue of the second edition of the KrV, Kant analogically compares speculative (theoretical) reason with an organism. He says that each part of speculative reason must be conceived as mutually related to the others: "pure speculative reason is, in respect of principles of cognition, a unity entirely separate and subsisting for itself, in which, as in an organized body, every part exists for the sake of all the others as all the others exist for its sake" (KrV B XXIII). But this is the case in the analogy between pure speculative reason and organisms. However, it is not accurate to speak of "parts" that are mutually related to each other or that are the cause and effect of themselves in technical-practical reason. Our technical-practical reason is better understood as a will in the broadest possible sense, but a will is not composed of "parts". This is certainly a limit of the analogy between technical reason and *Naturzweck*. However, even though our technical reason does not have parts, this does not mean that it does not have self-organization for pursuing or accomplishing its ends.

reflection. And it is by means of analogy that we can enable the representation of the very concept of natural end[178]. However, as I have already mentioned in 5.2, one precise analogy is the responsible for allowing us to represent the concept of *Naturzweck*, namely, the analogy with our own causality in accordance with ends (i.e., the analogy with our own technical-practical reason). Let us read the already quoted passage where Kant invokes this analogy:

> *The concept of a thing as in itself a natural end is* therefore not a constitutive concept of the understanding or of reason, but it can still be *a regulative concept for the reflecting power of judgment, for guiding research into objects* of this kind and thinking over their highest ground *in accordance with a remote analogy with our own causality in accordance with ends* [*nach einer entfernten Analogie mit unserer Kausalität nach Zwecken überhaupt*] (V, 375, my emphasis).

As mentioned before, Kant writes this just after questioning the analogy with life and rejecting the analogy with artifacts. Kant repeats that *Naturzweck* is a concept of the reflective power of judgment, and as such, it is regulative instead of constitutive. Moreover, he states that this regulative concept is necessary for orienting our research into nature and its objects. This concept, furthermore, is grounded in a "remote" analogy with our causality in accordance with ends. Kant employs the adjective "remote" (*entfernten*) for describing this analogy that enables the representation of the reflective concept of *Naturzweck*, nevertheless I argue that this adjective is not suitable considering the relevance and recurrence with which this analogy appears throughout the KU for describing and elucidating the concept of *Naturzweck*. This analogy is closer than Kant himself dares to admit[179]. The reason for this assertion lies in that this analogy is indispensable for forming our representation of the very concept of *Naturzweck*. That is

[178] By both indirectly presenting this concept in intuition and making sense of it.

[179] I have to highlight once again Kant's ambiguity regarding the value of analogy. For instance, he states in §65, just after he rejects the analogies with artifacts (art) and life: "Strictly speaking, the organization of nature is therefore not analogous with any causality that we know" (V, 375). This quote seems to demonstrate that Kant is finally rejecting any kind of analogical means for understanding living beings, since the organization of nature seems to exceed any causality known to us, such as technical causality. However, he then adds: "But inner natural perfection, as is possessed by those things that are possible only as natural ends and hence as organized beings, is not thinkable and explicable in accordance with any analogy to any physical, i.e., natural capacity that is known to us; indeed, since we ourselves belong to nature in the widest sense, it is not thinkable and explicable even through an exact analogy with human art" (375). This last quote suggests that he continues with the line of argumentation of questioning the analogies with artifacts and life. In this sense, Kant is saying that the organization of nature is not analogous with any natural-physical causality known by us, and for that reason organisms cannot be analogous to artifacts, since organisms surpass an external organized purposiveness (such as an artifact). Nevertheless, they can still be analogous to our own technical reason, since both can be judged as possessing a self-organized and end-directed character.

to say, this analogy is not just an aid for understanding this concept, but additionally—and most important—for enabling the very representation of *Naturzweck*. Let us see why.

Broadly speaking, the concept of our causality in accordance with ends can refer to two types of rational causality in us: i) our moral actions, and ii) our technical-practical reason. In section 5.2, I explained that Kant, in the context of the *Critique of the Power of Judgment*, is referring to the latter type of rational causality. Accordingly, our causality in accordance with ends is that capacity for acting in an end-directed way, that is to say, our very capacity for setting ends or aims in general and for organizing ourselves in the attainment of those ends[180]. For that reason, and as mentioned before, the analogy is not with the *product* of a rational producer or designer, but with the very technical-practical capacity of such a rational producer. Our technical-practical reason operates in an end-directed and self-organized manner, and these features allow us to understand, by means of an analogy with this very capacity, the self-organizing character we seem to find in living beings in the vital processes they carry out, such as growth, reproduction and regeneration. The way in which living beings carry out these three vital processes (along with the purposive way organisms seem to be arranged and formed) is analogous to this technical-practical capacity in us. That is to say, we judge organisms as purposive and self-organized beings because we are rational agents that have an end-directed and self-organized technical reason. Therefore, this peculiar character of our technical reason is responsible for enabling and forming, by analogy, the representation of the reflective concept of *Naturzweck*—by which we judge organisms as self-organized and self-developing beings.

The role of the analogy with our technical reason is, accordingly, twofold. On the one hand, it is methodological, since it is a heuristic tool for guiding and orienting our research into nature and its organized products. Thus, this analogy is necessary for the description and understanding of organisms judged as *Naturzweck*. This role is, furthermore, explicitly recognized by Kant throughout the "Critique of the Teleological Power of Judgment", and it has an ample acceptance amongst the literature as well[181]. On the other hand, this analogy can be regarded as having a stronger function, namely, as

[180] And what are those ends of technical reason? All of those pertaining to "art and skill in general, as well as those of prudence, as a skill in influencing human beings and their will" (V, 172).
[181] See, for instance, Lenoir (1982), McLaughlin (1990), Zammito (1992), Breitenbach (2009, 2014), Nassar (2015, 2016), van den Berg (2017), amongst others. (However, most of them interpret this analogy with the analogy between organisms and artifacts, with the exception of Breitenbach and Nassar).

enabler of the representation of the very concept of *Naturzweck* and, hence, of the living organism[182]. This specific analogy allows us to judge something as organized and self-organizing, which are the features that our technical reason has and that we seem to project, by analogy with such reason, into living beings. This analogy, therefore, provides the necessary conditions under which our reflective power of judgment can judge something in nature as organized and self-organizing, and we thus judge those natural things as "*Naturzwecke*". Accordingly, our teleological judgments about nature are essentially based on this analogy with our own technical reason. This is a strong reading of the role of this analogy, and it is a reading that cannot be explicitly found within the KU—but it can be inferred—, with the exception of this passage of §75, where Kant explains the relevance and necessity of *Naturzweck* as a regulative concept of the reflective power of judgment:

> By contrast, this maxim [the teleological one] of the reflecting power of judgment is essential for *those products of nature which must be judged* only as intentionally formed thus and not otherwise, in order to obtain even an experiential cognition of their internal constitution; because *even the thought of them as organized things is impossible without associating the thought of a generation with an intention* (V, 398, my emphasis).

In this passage of the Antinomy of the Teleological Power of Judgment, Kant is very emphatic in asserting that even the simple thought of something as organized (and self-organizing, I dare add) is only possible by means of an analogy with a reason that acts with intentions (that is, with ends, aims, purposes, representations or concepts). Even though this is the only passage where Kant is more or less explicit about the role of this analogy for forming the very representation of *Naturzweck*, I consider that the statement of this passage is strong enough for supporting my reading. It is not just that we need this analogy to better understand an organic being and how it organizes itself, but rather this analogy enables the very thought of a natural thing as an organized and self-organizing being. This analogy, in other words, traces the way in which *we ought to judge* those natural products in order to make sense of them, in order to make them intelligible for us.

[182] Breitenbach states something very similar when she recognizes two different functions of analogical thought in Kant's Teleological Judgment: as a heuristic device and as symbolic representation for indirectly exhibit "some parts of nature as purposively organized and end-directed" (2014a, 142). For more details of her account, see p. 102-03 of this dissertation (3.5). On the other hand, Dalia Nassar (2016) also recognizes a strong function of analogy for representing *Naturzweck*'s concept.

It is by virtue of the concept of *Naturzweck* that we can conceive the very possibility of a natural whole as an organized being.

Nevertheless, this reading has scarce support amongst Kantian scholars, with the exception of a few, such as Breitenbach and Nassar. Angela Breitenbach says, for instance, "Kant crucially claims that we can make sense of the very possibility of an organism only by means of the analogy. […] [It has] not only heuristic import but also a necessary role in our very thinking about the 'form' and 'internal possibility' of living nature" (2014, 24). And Nassar goes a little further by stating that: "it is only by way of analogy with a goal-directed rational being that we are able to recognize organisms as objects of experience" (2015, 250-51)[183]. These strong theses of the role of analogy for our teleological judgments about nature do not mean at all that by way of analogy we can explain organized beings, since that would imply going against Kant's basic principles (i.e., analogy does not have explanatory function, at least in the Kantian sense of "explanation"). We do not explain organisms by using the analogical concept of *Naturzweck*, but we can *judge* organisms as *Naturzwecke*, and make sense of them by virtue of this reflective concept that is only possible by means of an analogy with our technical reason. Accordingly, this analogy is crucial not only for guiding our research into nature, but also, and most important, for forming the representation of the reflective concept of *Naturzweck* by which we are able to judge something as organized and self-organizing. This reflective concept, which is only represented by means of analogy[184], is not only necessary for our inquiry into nature and our understanding of its organized products, but also for natural science and life science. In what follows, I shall offer a reading of this relevance.

[183] Both Breitenbach and Nassar offer an exhaustive and plausible interpretation of the role of analogy for representing the concept of *Naturzweck*. Moreover, they both offer good reasons for claiming that the very analogy between organisms and our causality in accordance with ends is better construed as an analogy between organisms and "practical reason itself" (Breitenbach 2014, 135). However, and as I have stressed before, they do not specify whether or not they are taking "practical reason" in a broad sense, that is to say, including practical reason in its moral sphere (which seems to suggest the very expression "practical reason itself"). I think is indispensable to make the distinction between morally-practical reason and technically-practical reason, since this difference operates throughout the KU.

[184] In its double operation: by indirectly exhibiting in intuition the concept of *Naturzweck*, and then making this concept intelligible to us.

5.4.-The role of this analogy for biology and life sciences

Once the nature of this analogy and the role it plays for enabling us to represent the concept of *Naturzweck* and hence of our teleological judgments about nature is clarified, the role this analogy plays for life sciences can now be explored. In this section, accordingly, I shall offer an interpretation of what the role of this particular analogy for biology would be according to Kant. There is no place in the Kantian critical corpus where Kant explicitly states what the role of *Naturzweck*—and the role of the analogy with technical reason from which this concept emerges—is for biology. However, I can offer a plausible interpretation of this after reading and analyzing some of Kant's passages and arguments.

In order to doing so, this section will be divided into four parts. The first one (5.4.1) is devoted to clarify the following question: what is, according to Kant, the status of biology as a proper science? In order to answer this question, it is necessary to highlight, first, the notion of proper science that Kant utilizes in his critical writings. Once this is done, the status of biology as a proper science in Kant's view can be addressed. The second part (5.4.2) is about the very role of the analogical concept of *Naturzweck* for biology. This part is, accordingly, my brief interpretative proposal in this regard, since Kant is quite obscure about the possible role of *Naturzweck* for life science. The third part (5.4.3) is devoted to offering a brief account of Kant's reception of the biological theories of his time, in order to evaluate how familiar he was with them. In this part, I will focus primarily on the modern biological debate between the theories of preformation and epigenesis, and in particular on Kant's position regarding such debates. The last part (5.4.4) will addressed the reception of Kant's *Naturzweck*—and natural teleology—in two subsequent German traditions, namely, the *Naturphilosophie* and German biology of the first half of nineteenth century. Both German traditions were strongly influenced by Kantian thought, accordingly a brief account of this influence can shed light on the relevance of Kant's analogical concept of *Naturzweck* for philosophy and biology—at least for the immediate post-Kantian philosophy.

5.4.1.-Kant's concept of proper science and the status of biology as a proper science

Before discussing the role of this analogy for biology, it is necessary to evaluate the status of biology within the Kantian conception of proper science in order to ask whether or not

biology can be deemed a proper science according to Kant. Accordingly, in what follows I will offer a brief account of Kant's concept of proper science and then I will determine whether or not biology can be deemed a proper science for Kant. Kant develops his conception of proper science especially in the *Metaphysische Anfangsgründe der Naturwissenschaft* (1786). In this work, he is mainly concerned with the particular-material nature (or with matter as such) and the way in which it can be specified by empirical concepts and specific principles or laws. These specific laws of nature form part of physics, and they also form a special part of the "metaphysics of nature", which is not concerned with "formal" nature (as was the case in the first *Critique*), but with "material" nature, that is to say, with the metaphysical study of matter as such. In this work, Kant proposes an analysis of the concept of matter and its three mechanical-Newtonian laws, namely, i) the conservation of mass; ii) external causation, that is to say, the principle that declares that every change in matter has an external cause that provokes said change or motion (*Metaphysische Anfangsgründe* AA IV, 543); and iii) action and reaction are always equal to one another (544). These three laws correspond to the mechanical laws of matter as such, and the way in which its moving forces interact by attraction and repulsion.

In addition to the metaphysical study of matter as such and its mechanical laws, Kant offers hints of what he considers the minimal conditions that a science must fulfill in order to be deemed a proper science. A demarcation of what can be considered a natural science is indeed a major concern in Kant's philosophy[185], and this delimitation is quite narrow. As van den Berg states in his *Kant on Proper Science: Biology in the Critical Philosophy and the Opus Postumum*, "Kant is well known for his restrictive conception of proper science" (2014, 15). But what are these restrictive conditions that a proper natural science must satisfy for being deemed a proper science? The answer to this question can be found in the Introduction of the *Metaphysische Anfangsgründe,* where Kant maintains that proper science grounds its objects in accordance with *a priori* principles, while "improper" science bases its objects on empirical laws of nature[186]. But what does the claim that "proper science grounds its objects in accordance with *a priori* principles" mean? In the first place, it means that a proper science must have apodictic

[185] As Olson also asserts: "A clear delimitation of the legitimate domains and methods of the sciences is a central task of the critical philosophy" (Olson 2016, 77).
[186] "So a rational doctrine of Nature deserves the label 'natural science' only when the laws of Nature that underlie it are known a priori and are not mere laws of experience" (IV, 468).

certainty, as Kant says: "Nothing counts as science proper unless it is apodictically certain, i.e. certain because it is absolutely necessary" (IV, 468). The cognition that is based on merely empirical principles can only offer empirical certainty, and hence it cannot offer the condition of necessity that all proper science must fulfill. In addition to apodictic certainty, a proper natural science must be systematic, that means, it must be systematically interconnected in order to constitute an interconnection of grounds (causes) and consequences (effects) (IV, 468). Nevertheless, these interconnected principles must be *a priori*, for they are the only principles that can offer apodictic certainty (that is, necessity).

Thus, already we have two conditions that a proper natural science must satisfy, namely, i) systematic order of principles and consequences, and ii) necessity or apodictic certainty, based on *a priori* principles[187]. For instance, Kant asserts that chemistry is only a "rational doctrine" because it only has empirical principles and its laws are also deduced from experience. That is to say, the principles of chemistry cannot offer apodictic certainty and necessity. For that reason, chemistry cannot receive the name of "science", according to Kant, and it is only a rational doctrine—that is, merely "applied rational knowledge" (IV, 468). Physics, on the other hand, can be considered a natural science—and hence "pure rational knowledge"—because its superior principles and laws are known *a priori*, and they are not mere empirical laws. As Kant states: "Thus all genuine natural science requires a pure part which could be the basis for the apodictic certainty that reason looks for in such science" (469). Moreover, Kant adds that a proper natural science deserves this name inasmuch as it can be applied in mathematical principles:

> In any special doctrine of Nature there is only as much genuine science as there is mathematics […] So if we are to have knowledge of the possibility of specific kinds of natural things [i.e., matter as such], and hence to know truths about them a priori, we'll need to be given a priori an intuition corresponding to the concept, i.e. we need the

[187] Van den Berg, on the other hand, distinguishes three conditions: "Kant's conception of 'proper science' can now be summarized as follows: in order to be a proper science, any body of cognition must be (i) systematically organized, (ii) express relations between objective grounds and consequences, (iii) have a priori principles on the basis of which the non-fundamental judgments of a science can be proven. These conditions comprise Kant's model of 'proper science'. However, the Preface to the Metaphysical foundations is infamous for a different claim. This is the claim that any proper natural or science must allow for the application of mathematics, which Kant employs to deny that chemistry and psychology are sciences proper." (Van den Berg 2011, 18).

> concept to be constructed. And rational knowledge through the construction of concepts is mathematical. (470)[188]

Accordingly, in addition to systematic order of *a priori* principles that can offer apodictic certainty, a proper natural science must be based on mathematics, insofar as the objects of natural science may be "mathematically constructible"[189]. With this in mind, we can raise the question whether or not biology can be deemed a proper science according to Kant—that is to say, whether biology meet the requirement of having *a priori* principles that offer apodictic certainty as well as a systematic interconnection of its laws and consequences.

It is a common knowledge that biology—at least in its modern usage—appeared at the very beginning of the nineteenth century, when both Traviranus (*Biologie oder Philosophie der lebenden Natur*) and Lamarck (*Hydrogéologie*) coined the term in 1802[190] for referring to the scientific study of the different forms and manifestation of life. However, this does not mean that life's study appeared for the very first time when the term biology was coined. In fact, life science has a long-standing history, whose most direct ancient precedent was undoubtedly Aristotle's *History of Animals,* but it continues its historical development through the medical studies during the Middle Ages, and the publication of the biological taxonomy of Linnaeus in 1735. Furthermore, life sciences encompassed several disciplines such as medicine, physiology, botany, zoology, and natural history[191]. The observation, experimentation and study of the phenomena of life was not only a scientific problem during Kant's time, but also a philosophical problem. Thus, it is not incidental that Kant himself was attracted by these biological topics.

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[188] Dalia Nassar explains this in a very straightforward way: "As an object of outer sense, matter, Kant explains, cannot be determined solely by concepts but also requires the pure forms of intuition (space and time). This means that the concept of matter must be constructed on the basis of the laws which pertain to space and time. This 'rational construction of matter', as he puts it, requires mathematics. This means that the necessity of apodictic science is based on the necessity by which the mathematical construction of matter must proceed" (2015, 253).

[189] Olson puts this last point in the following way: "There are, thus, two requirements for any proper science: first, its laws or principles must themselves be a priori and so apodictic; and, second, its objects must be mathematically constructible" (2016, 82).

[190] Nevertheless, there are some previous usages of the term biology. For instance, the Latin term "biologi" was used by Carl Linnaeus in his *Bibliotheca botanica* (1736); Michael Christoph Hanov later used this term in his work *Philosophiae naturalis sive physicae: tomus III, continens geologian, biologian, phytologian generalis* (1766); "biologi" was translated as "Biologie" for the German translation of the work of Linnaeus in 1771; Karl Friedrich Burdach used the term in 1800 in his *Propädeutik zum Studien der gesammten Heilkunst* for designating the study of human beings from a physiological, morphological and psychological point of view. However, the term "biology" as we know it nowadays, was coined by Traviranus and Lamarck. An interesting account of this can be found in Lenoir (1982).

[191] In fact, some scholars identify natural history as "the ancestral form of modern biology" (Benson 1989, 1067).

Nevertheless, despite Kant's fascination regarding these subjects, he was also quite skeptical about the scientific status of biology, mostly because biology—or life science—is based, according to him, on teleological considerations.

As mentioned above, Kant was committed to elaborating a strict-Newtonian conception of science, what he called proper science. In this sense, the emergence of biology as a science certainly was a concern for Kant. Nevertheless, he does not explicitly say whether or not biology can be regarded as a proper science[192]. Kantian scholars are quite divided about this particular issue, but they can be distinguished into two dominant lines of interpreters: the ones who consider that Kant provided theoretical foundations for conceiving biology as a proper and autonomous science, and the ones who think that he does not. The first line of interpretation is mostly followed by Lenoir (1989), Zumbach (1984), Quarfood (2006), Breitenbach (2009, 2014), and Ginsborg (2006); whereas the second line is followed by Zammito (2006, 2008, 2012), Richards (2000) and most recently by van den Berg (2014, 2017), and Nassar (2015, 2016). The first group of interpreters maintains that Kant is advocating biology as a new and autonomous science, which cannot be merely reduced to physics, since it has its own standards and methodology. Furthermore, they state that Kant holds that biology can offer explanations of its object—i.e., organic beings—by connecting mechanical and teleological principles[193]. The second group, conversely, states that Kant denies the possibility that biology can ever be deemed a natural science, since living beings are ultimately inexplicable in purely mechanical terms, and teleological considerations—which are to some extent unavoidable for studying living beings—are not explanations properly speaking.[194] That is to say, biology cannot offer apodictic certainty in its judgments, since

[192] For instance, van den Berg states that the "status of biology in Kant's philosophy of science is often deemed to be problematic. In the *Metaphysische Anfangsgründe der Naturwissenschaft* (1786), Kant specifies several conditions that a proper natural science must satisfy. Prima facie, only Newtonian physics satisfies these conditions. Hence, it is not uncommon to think that Kant dismisses all other doctrines of nature as unscientific" (2014, 1).

[193] See, for instance, this quote of Lenoir: "My principal thesis is that the development of biology in Germany during the first half of the nineteenth century was guided by a core of ideas and a program for research set forth initially during the 1790s. The clearest early formulation of those ideas is to be found in the writings of the philosopher Immanuel Kant. […] Kant argued that the life sciences must ultimately rest on an explanatory framework uniting the principles of both teleology and mechanism" (Lenoir 1982, 2).

[194] The following quote from Richards is enlightening in this regard: "The impact of Kant's *Kritik der Urteilskraft* on the discipline of biology has, I believe, been radically misunderstood by many contemporary historians. It is frequently thought that Kant provided a conceptual framework in terms of which biological science could be conducted. This is, I think, a fundamental misinterpretation of Kant's relationship to the work of biologists during the Romantic period. Those biologists who found something congenial in Kant's Third *Critique*, either misunderstood his project (as did, for example, Blumenbach and Goethe) or reconstructed certain ideas to have very different consequences from those originally intended by Kant (as

they are mostly based on teleological principles. As Zammito states: "Given our cognitive limitations, Kant consigns biology forever to the domain of reflective judgment, to heuristic, never actual conception. There will never be a 'Newton of the blade of grass' because biology is 'not a proper science'" (2008, 39)[195].

My position in this matter falls in the second camp, since Kant is very emphatic throughout the "Critique of the Teleological Power of Judgment" that organic form and the seemingly purposive arrangements of organic beings are mechanically inexplicable. Or, to put it in other words, what may be explicable is a material mechanism, but not a living being—since this last concept is, ultimately, a regulative-analogical one. And that is the reason why our limited-discursive understanding is aided by teleological principles when judging organisms. Nevertheless, organic form cannot be explained by these teleological principles, since the only valid form of explanation for us—humans with limited and discursive understanding—is that which proceeds mechanically and in a descendent direction from grounds (causes) to consequences (effects); that is to say, explanations by efficient causes (KU, AA V, 372) and by the mechanical laws of motion (V, 390)[196]. Accordingly, an organized being cannot be explained by purely mechanical principles, and hence it cannot be *explained* whatsoever. As Kant says in a well-known quote:

> For it is quite certain that *we can never adequately come to know the organized beings and their internal possibility in accordance with merely mechanical principles of nature, let alone explain them*; and indeed this is so certain that we can boldly say that it would be absurd for humans even to make such an attempt or to hope that there may yet arise a Newton who could make comprehensible even the generation of a blade of grass according to natural laws that no intention has ordered; rather, *we must absolutely deny this insight to human beings* (KU, AA V: 400, my emphasis).

This quote is explicit in stating that Kant denies the possibility for explaining organisms by merely mechanical terms. However, this kind of explanation is the one that a natural

did Kielmeyer and Schelling) […] He thus suggested that biology could not really be a science, but at best only a loose system of uncertain empirical regularities, not a *Naturwissenschaf*t but a *Naturlehre*" (2000, 26-27). Or as van den Berg maintains: "I argue that, according to Kant, biology is not a proper natural science. For Kant, only natural sciences that employ mathematics are proper sciences. In the eighteenth century, however, biology was fundamentally a non-mathematical science" (2014, 2).

[195] Or as he puts it in another paper: "Kant—drawing on his eighteenth-century predecessors—provided a discerning and powerful characterization of what biologists had to explain in organic form. His difference from the rest is that he opined that it was impossible to explain it" (Zammito 2006, 765).

[196] Or as Cassirer clearly puts it: "There is [for Kant] only one principle and one ideal of natural scientific explanation, and this is defined by the form of mathematical physics" (1981, 341).

proper science employs, according to Kant. Accordingly, it is not absurd to conclude that biology cannot offer purely scientific explanations of its objects—organic beings—since it is inextricably mixed with teleological principles—which offer an elucidation (*Erörterung*) and description (*Beschreibung*) of the self-organization feature that organisms seem to exhibit, but not an *explanation* (*Erklärung*) of it (V, 417)[197]. Therefore, biology cannot be deemed a natural proper science for Kant.

Biology cannot be deemed a proper science, according to Kant, because it cannot offer apodictic certainty and a satisfactory explanation of its object—since it is the result of a combination of mechanical explanations and teleological considerations. However, biology—as a rational doctrine necessarily formed by teleological principles—can offer a study of its object, mainly, one based on the methodological role of the elucidation and description of nature and its organized products. This role cannot ground biology in the domain of proper science, but it can offer the conditions by which biology can be regarded as a middle term between science and the mere description of nature. Biology is, in fact, a combination of mechanical explanations and teleological reflections of living forms. Kant is very emphatic in this regard when he says that the principle of mechanism is "entirely unrestricted" when we try to explain nature and its organized products, because without mechanism we cannot explain something at all. Nevertheless, this principle is entirely insufficient by itself when studying organized beings, due to the constitution of our discursive understanding (KU, AA V, 417)[198]. Accordingly, even though biology cannot be deemed a proper natural science, it can offer an understanding of the form and arrangements of organic beings, as well as partial explanations of them (e.g., how a determinate part functions inside an organism, what is the mechanism of a determinate organ or part inside such organism, how to isolate a determinate protein or cell for studying and modifying it, and so forth). Mechanism is indispensable for biology since it can offer—although limited, according to Kant—explanations of organic beings[199], but teleology is necessary because it offers to us intelligibility of organic forms,

[197] As Dalia Nassar clearly explains: "Kant identifies teleological judgment with 'description' [*Beschreibung*] and 'elucidation' [*Erörterung*] as opposed to 'explanation'. Ultimately, teleological judgment cannot determine the origins of organized beings—it cannot explain the physical (natural) cause of an object, establish its existence or derives its necessity—because it does not offer an explanation based on the laws of motion" (2016, 62).

[198] I have explained the peculiar character of our discursive understanding in Chapter 2 of this work (2.5), in the context of the Antinomy of the Teleological Power of Judgment.

[199] And, nowadays, the mechanical approach can even offer technical modification and manipulation of biological organisms.

that is, it allows us to judge such forms as organized and self-organizing beings. For that reason, Kant explains in §68 ("On the principle of teleology as an internal principle of natural science")[200] that teleological maxims can be introduced into natural science as heuristic tools for guiding our inquiry into nature and making sense of natural forms, such as living organisms.

Teleological principles are, therefore, allowed in natural science provided that they can be used as *lemmata*, that is, as a "basis for order" or as guidelines for orienting our research into nature. For Kant, each science is composed by principles, but these principles can be either internal (indigenous, *principia domestica*) to this science or they can be external (foreign, *peregrina*) to it. "Sciences that contain the latter base their doctrines on auxiliary propositions (*lemmata*), i.e., they borrow some concept, and along with it a basis for order, from another science" (V, 381). Thus, *lemmata* can be introduced into natural science, but they cannot provide apodictic certainty or proper explanations of the objects, since they are only regulative guidelines. Whereas mechanism is an indigenous or internal principle to natural science, teleological principles are foreign to it. Teleological principles can only operate as *lemmata* or guidelines into natural science. However, our very understanding of organic beings is based on teleological considerations—at least, according to Kant— therefore biology, as the science that investigates living beings, cannot be deemed a proper natural science, since it is grounded in teleological reflections. This is, therefore, the *aporia* that teleological judgments about nature pose: without teleological reflection, organic beings cannot be intelligible for us; however teleology is neither an explanatory principle nor an internal principle of natural science. Teleology can only offer analogical reflections about nature and its organized products, but it cannot offer explanations of them at all. And biology is based on teleological reflections and, for that reason, it cannot be considered a proper natural science.

In sum, it can be inferred that biology is not a proper science for Kant, since it cannot ground apodictic certainty and it cannot offer purely mechanical explanations of its objects. Biology is combined with mechanical principles and teleological reflections, and these last principles tie biology to a rational natural doctrine rather than natural

[200] Even though Kant gives that name to this section, that is, "teleology as an internal principle of natural science", it would be wise to correct that, strictly speaking, teleology is not an internal principle of natural science, but rather an external principle that operates as a guideline or *lemmata*. I will explain this point below.

science. Despite this limitation of biology for being deemed a proper natural science, it can offer descriptions and elucidations of it objects, as well as limited mechanical explanations and technical manipulations of them. Furthermore, biology—aided by teleological principles—helps us to understand organic forms and to make sense of them by means of the reflective concept of *Naturzweck*. In what follows, I shall describe and explain the indispensable role of *Naturzweck* for biology.

5.4.2.-The role of the analogical concept of *Naturzweck* for biology according to Kant

In the previous section, I argued that—according to my reading of Kant—biology cannot be considered a proper science. However, even though biology is not a proper science for Kant and hence it cannot offer satisfactory explanations of its objects, it can offer teleological considerations. These teleological reflections not only provide heuristic tools for guiding our research into nature and its organized products, but also for forming the representation of the very "object" of biology, namely, organized beings. Therefore, teleology—and especially the reflective-analogical concept of *Naturzweck*—has an indispensable role for biology and the life sciences. As mentioned in sections 5.2 and 5.3, the analogy with our causality in accordance with ends—that is, the analogy with reason in its technical use—is the one that enables our teleological judgments about nature, and hence the one that allows us to represent the reflective concept of *Naturzweck*, under which we judge natural products as organized and self-organizing beings. Judging something as organized and self-organizing is to judge such a thing according to purposive causation. For Kant, our very understanding of organic beings is by means of this analogy with our technical reason that enables us to represent the reflective concept of *Naturzweck*. Accordingly, we need the concept of *Naturzweck* for forming our very understanding of organic beings, since otherwise we would not be able to judge in those things the self-organizational and end-directed character, which are the key features that we seem to acknowledge in organisms. It is by means of teleological reflection, for instance, that we can make sense of the three organic processes of reproduction, growth and regeneration, as well as the way in which the parts seem to be mutually related to each other and to the whole[201]. Mechanical principles cannot offer explanations of such

[201] For further details about this point, see the 2.4 of this work.

features and relations that are absolutely indispensable for understanding organic beings. As Kant says:

> [O]ne could investigate all the thus far known and yet to be discovered laws of mechanical generation in a thing that we must judge as an end of nature, and even hope to make good progress in this, *without the appeal to a quite distinct generating ground for the possibility of such a product, namely that of causality through ends***,** ever being canceled out; and absolutely no human reason (or even any finite reason that is similar to ours in quality, no matter how much it exceeds it in degree) can ever hope to understand the generation of even a little blade of grass from merely mechanical causes (V, 409-10, my emphasis).

By merely mechanical principles we cannot make sense of those features we seem to find in living beings, so the teleological maxim is absolutely necessary for us in our judging of nature and its organic products. For that reason, the teleological principle is absolutely unavoidable for biology or life science, since otherwise we would not be able to obtain the representation of something as organized and self-developing, which are the main features we seem to acknowledge in organic beings.

Therefore, the reflective-analogical concept of *Naturzweck* offers us the conditions under which we can judge a natural thing as organized and self-organizing, that is to say, as having an end-directed character that allows the development of its organic processes and its self-conservation. In other words, the very concept of *Naturzweck* makes possible the object of biological investigation called "living being". Without the regulative concept of *Naturzweck*, we could not judge a natural whole as such, that is, as a self-organizing unity whose parts are mutually and purposively related to each other and to the whole itself. Without this reflective concept, we would judge a natural whole as a mere aggregate of independents parts, which corresponds to the mechanical principle of judging. Thus, it is the analogical-reflective concept of *Naturzweck* that enables to us the representation of the biological object of living being. Dalia Nassar concludes something very similar in her enlightening paper "Analogical Reflection as a Source for the Science of Life: Kant and the Possibility of the Biological Science":

> Analogical reflection thus delivers the very thought of an organized being and thereby enables us to conceive of natural organisms, i.e., it allows us to think of a non-mechanical unity and a non-efficient causality and in this way brings living beings to presentation. In

other words, analogical reflection provides us with our very object of investigation (2016, 63)[202].

As Nassar states, analogical reflection, by means of its special concept of *Naturzweck*, provides the conditions under which we can judge a natural product as a whole that has an internal purposiveness and that is self-organized. Our very conception of a living being is carried out by way of teleological notions, such as end-directedness and self-organization. Biology, therefore, finds its object of investigation due to the analogical concept of *Naturzweck* that enables the representation of an organizing unity, and not a mere aggregate of parts. *Naturzweck* allows biologists to understand and describe the peculiar and internal constitution of an organic form, without presuming "to determine [its] origins or derive objects from *a priori* principles" (Nassar 2016, 64). Biology, in other words, is not—at least for Kant—concerned with explanation (*Erklärung*), but with elucidation and description, that is, with offering an analogical understanding of the internal constitution of an organic being, analyzing its structure, form and organization. This means that biology can offer, of course, mechanical explanations of determinate parts or functions of a living being, but it cannot offer an explanation of its seemingly purposive and self-organizing structure and processes in merely mechanical terms. The latter is only intelligible to us in teleological terms—that is, by judging such a natural product as *Naturzweck* and, hence, as a living being. In sum, the role of the analogical concept of *Naturzweck* for biology is, ultimately, to provide the very representation of the object of investigation, namely, living beings.

5.4.3.-Kant and biological theories of his time: a brief account

During the eighteenth century, the dominant biological theories of generation, embryology and of the origin of organic life centered mostly on two main positions: preformation and epigenesis. On the one hand, the theory of preformation—also known as pre-existence theory—proposed that each individual organism was formed in their

[202] Cassirer suggested a similar idea in his Kant's Life and Thought: "Thanks to this procedure [the teleological one], the secret of organic life is never solved in an abstract and purely conceptual fashion, but the knowledge and the intuition of the individual forms of nature are steadily broadened and deepened by it" (1981, 349). That is to say, it is by means of the analogical concept of *Naturzweck* that we can make sense of and bring indirectly to intuition a seemingly purposive natural unity.

fundamental properties by God's agency since the world's creation[203]. These fundamental organic properties created by God himself were encapsulated into preformed "germ cells" (*Keime*), which contain miniature versions of the main features and properties of each individual being, like a "Russian doll". On the preformativist view, there is no qualitative change in the development of the organism, but just quantitative ones—since a qualitative change in the evolution of organisms would imply going against God's own agency. Although there were different views concerning these preformed germ cells, all of them coincided in two fundamental aspects: i) God's agency in the creation of these preformed cells—for instance, the ovists maintained that the female egg was the preformed cell, whereas the animalculists maintained that the male sperm was the germ—; and ii) mechanical explanations "of the individual's eventual augmentation" (Mensch 2013, 62) and of the constituent parts of an organism by the mechanicals laws of motion[204]. That is to say, the preformationist theory recognized in God's agency the generation of preformed germ cells from which all the main properties of each individual proceed; but, at the same time, this theory was strongly committed to a mechanical explanation of organic beings, where there is no major qualitative difference between the inorganic and organic, but merely a difference in degree. The major part of pre-existence theory was fruitfully developed in the seventeenth and eighteenth centuries, however, it began to decline in the middle of eighteenth century at the arising of the epigenetic-vitalistic theory of organic systems[205] and also at the development of more sophisticated microscopes that finally refuted the theory of preformation.

The modern theory of epigenesis, on the other hand, has a long-standing tradition, whose most prominent source can be found in Aristotle's biological thinking. In general, epigenetic theory maintains that "organic life begins with a self-organizing natural power that inheres in unstructured matter" (Goy 2014, 43). But despite this general view shared by the defenders of epigenesis, modern epigenetic theories are usually divided into two different perspectives: i) there is a mechanistic version of epigenesis,

[203] The main defenders of preformation's theory were Nicolas Malebranche (1638-1715), Albrecht von Haller (1708-1777), Charles Bonnet (1720-1793), and Leibniz (1646-1716), amongst others.
[204] For further details about preformation's theory, see: Mensch (2013), Sloan (2002), Goy (2014), McLaughlin (1990), Cohen (2009), Richards (2000), amongst others.
[205] "In the fifth decade of the 18th century a fundamental change in theories and explanations of the organism began, which led towards the end of the century to vitalism. It was no longer the quantitative complexity of the organism that occupied the foreground; rather the difference between organic and inorganic was seen to be of a qualitative kind, often expressed in the form of a double organization: the particles of matter were taken to be organized into organic parts or molecules and then these already organic parts were taken to be organized into organisms" (McLaughlin 1990, 15).

mainly developed during the seventeenth century and the first half of the eighteenth century; and ii) there is a vitalistic version of epigenesis, which came to replace the former mechanistic accounts of epigenesis. The former understood this self-organizing natural power of living beings according to merely mechanical-Newtonian laws of attraction and repulsion, that is, by the mere laws of motion and matter, whereas the latter tried to account for this self-organizing power of organisms as having its roots in a vital or essential force (e.g., the Wollfian "*wesentliche Kraft*" or the "*Bildungstrieb*" of Blumenbach). Maupertuis (1698-1759) and Buffon (1707-1788) were the most prominent figures of the mechanistic version of epigenesis. Buffon, for instance, was the most influential thinker on this version of epigenesis, especially the ideas he developed in his *Histoire naturelle générale et particulière* (1749). In this work, Buffon maintains that all the matter of organic being is formed by the "*molecules organiques*"[206], which, in turn, were organized into specific structures by the "*moule intérieure*". The important point of Buffon's *molecules* and *moules* was that their interaction can account for the organization of the embryo, its subsequent growth, nutrition, and the reproduction of the species by the action of the *moule*. Nevertheless, the mechanistic epigenesis of the 17th and first half of the 18th centuries were already declining by the time of the position of Caspar Friedrich Wolff (1734-1794), who illustrates the transition from the mechanistic to the vistalistic conception of epigenesis. His theory of *vis essentialis* (*wesentliche Kraft*) which organizes an originally structureless matter into an embryo marks the starting point of epigenetic vitalism. Nevertheless, it was Blumenbach (1752-1840) who defends the vitalistic version of epigenesis most fervently, especially with his concept of *Bildungstrieb*, which he describes as follows: "there exists in all living creatures a particular inborn, life-long active drive [*Trieb*] […]. It shows itself to be one of the first causes of all generation, nutrition, and reproduction. […] I give it the name of *Bildungstrieb*" (Blumenbach 1781, 12-13). As will be mentioned below, Kant was very aware of this whole debate and, indeed, he seemed to sympathize with some of Blumenbach's ideas.

Kant, of course, was not indifferent to this biological debate between preformation and epigenesis. In fact, he was very interested in biological issues from early on in his philosophical career, demonstrating strong skepticism concerning the

[206] These molecules are "conceived as a micro-force on the analogy of the Newtonian microforces, similar to those that accounted for the formation of crystals and chemical bonding" (Sloan 2002, 234).

possibility of mechanically explaining the organization of nature[207]. For instance, in his pre-critical *Allgemeine Naturgeschichte und Theorie des Himmels* (1755), he explicitly expressed that it would be more plausible to understand the arrangements and constitution of the whole universe than to understand the constitution of a simple caterpillar in merely mechanical terms[208]. Or as he says in his early *Der einzige mögliche Beweisgrund zu einer Demonstration des Daseins Gottes* (1763): "it would be absurd to consider the first production of a plant or an animal as a merely mechanical incidental result of universal laws of nature" (AA I, 680). These pre-critical positions did not vary in Kant's transition to critical philosophy, as he says in the KU, it would be absurd to expect that a Newton may arise to explain in solely mechanical terms a single living being, even a seemingly simple one, such as a tiny blade of grass.[209] According to these statements, it can be seen that Kant was, at best, quite reluctant at the prospect of mechanically explaining organized beings and, hence, he was also hesitant to give any purely mechanistic biological theory. Furthermore, from the very beginning of his writings, he was aware of the debate of preformation and epigenesis theories[210], and he can be seen as simultaneously supporting and rejecting some components of both preformation and epigenesis[211]. Having said that,

[207] Besides, he was quite skeptical about "the ancient view of a *generatio aequivoca*, a theory that explains the generation of organized beings occurs from 'the mechanism of crude, unorganized matter' such as mud or slime" (Goy and Watkins 2014, 2).

[208] "It seems to me that in a certain sense one could say here without being presumptuous: Give me matter and I will build a world out of it, that is, give me matter and I will show you how a world is to come into being out of it. Because if matter endowed with an essential attractive force is present, then it is not difficult to determine those causes that can have contributed to the arrangement of the world system, viewed on the large scale. [...] But can we claim such advantages about the most insignificant plant or insect? Are we in a position to say: Give me matter and I will show you how a caterpillar can be created? Do we not get stuck at the first step due to ignorance about the true inner nature of the object and the complexity of the diversity contained in it? It should therefore not be thought strange if I dare to say that we will understand the formation of all the heavenly bodies, the cause of their motion, in short, the origin of the whole present constitution of the universe sooner than the creation of a single plant or caterpillar becomes clearly and completely known on mechanical grounds" (*Allgemeine Naturgeschichte*, AA I, 230).

[209] "For it is quite certain that we can never adequately come to know the organized beings and their internal possibility in accordance with merely mechanical principles of nature, let alone explain them; and indeed this is so certain that we can boldly say that it would be absurd for humans even to make such an attempt or to hope that there may yet arise a Newton who could make comprehensible even the generation of a blade of grass according to natural laws that no intention has ordered; rather, we must absolutely deny this insight to human beings" (KU, AA V, 400).

[210] For further and accurate details about the trajectory of this debate in Kant's writings, see Sloan (2002, 236-246), McLaughlin (1990, 7-40), Cohen (2009, 22-24), and Zumbach (1984, 79-100).

[211] As Cohen says: "I believe that Kant's position is best labelled as a middle ground between preformation and epigenesis, by which I mean that it has both an epigenetic and a preformationist component […]. However, it is crucial to note that Kant's official support for epigenesis as the only viable theory of organic generation is in fact supplemented with a strong preformationist component. This appears most clearly in his definition of epigenesis as 'the system of generic preformation', since the productive capacity of the progenitor is still preformed in accordance with the internally purposive predispositions that were imparted to its stock, and thus the specific from was performed *virtualitier*. Thus, Kant's endorsement of epigenesis should be understood as limited by the role assigned to natural predispositions" (2009, 22-23). That is to

notwithstanding the aforementioned reservations, of the relevant positions surveyed here, Kant is most in agreement with Blumenbach[212].

The alleged biological agreement between Kant and Blumenbach—mediated by the concept of the *Bildungstrieb*—has given rise to fruitful discussion in the literature. In particular, the main dispute concerns the extent of this agreement[213] . Either way, the concrete element is that both Kant and Blumenbach expressed mutual admiration of each other's respective works, and, in fact, Kant dedicates favorable words to Blumenbach in the Appendix of the KU: "No one has done more for the proof of this theory of epigenesis as well as the establishment of the proper principles of its application, partly by limiting an excessively presumptuous use of it, than Privy Councilor Blumenbach" (V, 424). Furthermore, Kant expresses an almost laudatory message to Blumenbach in a letter sent to him after the publication of the KU:

> I wish to extend my thanks for sending me last year your excellent work on the formative force [*Bildungstrieb*]. I have learned a great deal from your writings. Indeed, in your new work, you unite two principles—the physical-mechanical and the sheerly teleological mode of explanation of organized nature (Kant, *Briefwechsel* 1790, AA XI: 184-185)[214].

As the quote shows, Kant had a positive outlook on Blumenbach's *Bildungstrieb*. However, and as Richards and van den Berg have pointed out, there is in fact a large disagreement in their thoughts—albeit ignored by both. Let us see why.

In short, Blumenbach's theory of the *Bildungstrieb* consists in a force or drive, which is responsible for the form, reproduction, nourishment, and regeneration of all living beings—from the simplest to the most complex one. This force is responsible for these processes and it modifies its operation according to the particular circumstances

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say, Kant embraced not only some components of preformationist and epigenetic theories, but also—I would add—he rejected other components of both theories, viewed in his strong anti-reductionist standpoint, and its anti-vitalist standpoint—since he regard *Naturzweck* or any self-organizing or self-determining character as a regulative guideline instead of a constitutive feature of organisms. For Kant's opinion about both preformation—which he calls "theory of evolution"—and epigenesis, see: KU AA V, 423-424.

[212] However, there is a group of recent scholars who maintain that Kant's major agreement regarding epigenesis was with Wolff instead of Blumenbach. See, for instance, Dupont (2007), Huneman (2007), and Goy (2014).

[213] For more details of this discussion, see Lenoir 1982, Richards 2000, and van den Berg 2014.

[214] The response of Blumenbach to this laudatory message came without further delay. As Richards says: "Blumenbach was obviously flattered by the recognition given him by the great Königsberg sage, for in his subsequent works he usually added to his description of the *Bildungstrieb* a parenthesis, stemming directly from Kant's letter, which indicated that this force 'united the mechanistic with the purposively modifiable'." (2000, 11).

of each individual or environment. The *Bildungstrieb* is the first cause of all of these organic processes, and it "is completely different from the common features of the body generally; it is also completely different from the other special forces of organized bodies in particular" (Blumenbach 1781, 12). Moreover, Blumenbach conceives this *Trieb* as an independent and teleological vital agency that proceeds from matter itself—although it neither can be explained in merely mechanical terms nor be thought of as a "kind of soul superimposed to matter" (Lenoir 1980, 84). That is to say, for Blumenbach, this force is an actual vital teleological agency that resides in nature, as a "constitutive" cause of organic form[215]. And this is the key point that allows us to notice why there is a considerable gulf between the positions of Blumenbach and Kant. For Kant, any teleological consideration of nature—either of a teleological agent or a vital force—is only a heuristic tool for orienting our research into nature or for making intelligible for us the representation of organic beings. In other words, his concept of *Naturzweck*—which might be seen in analogue terms with the concept of *Bildungstrieb*—is a regulative idea produced by our reflective power of judgment.

For Kant, we need teleological principles for investigating nature and making sense of it, but we cannot explain nature—and organized bodies—in teleological terms, since they are only regulative—although necessary—ideas. For Blumenbach, by contrast, the *Bildungstrieb* was an explanatory concept that offers determining judgments about organized nature and its origin, just as any mechanistic principle in its explanatory role would offer. That is to say, he "made no such distinction between a regulative, reflective principle and a constitutive, determinate one. He blissfully used the *Bildungstrieb* as part of a constitutively causal account of organization" (Richards 2000, 32)—something that Kant, of course, could not have accepted.

In sum, it can be said that Kant was quite aware of the biological debates of his time, and, indeed, he tried to take an active role within them. Moreover, his biological contributions had an impact not only on his contemporaries—such as his biological exchange with Blumenbach—but also on the subsequent biological discussion concerning the generation of organic nature. In the following section, I shall address very

[215] As van den Berg explains: "It was [the *Bildungstrieb*] a teleological force or agent, irreducible to physical or chemical forces, which explained the purposive, self-formative and self-maintaining character of organisms" (2014, 219).

briefly this impact in two relevant German traditions of the nineteenth century, namely, *Naturphilosophie* and German biology.

5.4.4. - The role of the analogical concept of *Naturzweck* for biology and natural philosophy right after Kant

As mentioned in the previous section, Kant's conception of natural teleology and *Naturzweck* of the third *Critique* can be placed into the larger "biological" context of his time, namely, the polemic between proponents of preformation and those of epigenesis—although the former theory was already considerably debilitated by the time Kant wrote the KU. Furthermore, Kant's philosophy of biology was mainly focused on reconciling the mechanical and teleological principles in the study of living beings. Even though teleological principles can only have a regulative status for biology, they are nonetheless absolutely necessary in order to make the representation of an organic being as a self-developing unity intelligible. Our research into nature and its organic products requires, according to Kant, the reflective-regulative guiding thread of teleological principles, especially the analogical concept of *Naturzweck*. These teleological principles not only orient our biological investigation, but they also analogically form the very object of biological investigation, namely, living being. Kant was aware of the risk that the introduction of teleological principles into life sciences might carry, for that reason he is so emphatic in highlighting the merely regulative status of such principles throughout the KU. Turning these principles into constitutive ones was a risk that Kant tried to avoid by all means. However, he did not succeed as much as he wanted to. *Naturphilosophie* is an example of an allegedly "dogmatic" reception of these Kantian regulative teleological principles.

But a more Kantian reception of such regulative principles in German biology and physiology can be found in thinkers such as von Baer and Müller. They tried to combine mechanical with teleological considerations in the study of living beings, while, at the same time, stressing the indispensable role of mechanism as the only mode of proper explanation in biology. The Kantian doctrine of *Naturzweck* and natural teleology, therefore, seem to have an important—whether for weal or for woe—influence

over the immediate development of *Naturphilosophie*[216] and German biology, though it was short-lived. The development of biology during the nineteenth and twentieth centuries was more concerned with eliminating any trace of teleology[217] than defending any use—either constitutive or regulative—of it. Accordingly, in what follows I shall offer a very brief account of the immediate reception and role of the Kantian concept of *Naturzweck* for both i) the romantic *Naturphilosophie* and ii) German biology at the beginning of the Nineteenth Century, since both were largely influenced by Kant's doctrine of natural teleology.

i) Kant is considered, without any doubt, one of the most influential philosophers on all of history since his time. However, it can be said that German Idealism[218]—in the amplest sense of the term—was the tradition most influenced by Kantian ideas. Within this philosophical movement can be found the romantic *Naturphilosophie*, which was mostly influenced by the Kantian doctrine of natural teleology and his concepts of *Naturzweck* and organized being, as in the third *Critique*.

[216] "Both Goethe and Schiller-each by his own route-discovered and confirmed his own essential relation to Kant through the Critique of Judgment; and it, more than any other work of Kant's, launched a whole new movement of thought, which determined the direction of the entire post-Kantian philosophy" (Cassirer 1981, 273).

[217] The most celebrated example of this agenda was, of course, Darwin. As Cornell accurately says: "To Ernst Haeckel, for example, Darwin was the 'new Newton' who had explained organisms strictly by mechanical causes—invalidating Kant's claim that not even a 'blade of grass' would be accounted for without the principle of purposiveness. […] Darwin, we might say, resolved the ancient problem of teleology by taking the organism beyond the physiologist's laboratory and setting it in proper environmental and historical relief" (1986, 405). For further accounts of this topic, see also Haeckel (1889), and Grene (1974). Lenoir states something very similar regarding the early developing of biology in the nineteenth century: "the principal achievement of biologists in the early nineteenth century appears to be this: Turning away from broad speculation and importing the methods of physics and chemistry along with a massive infusion of experimental technique and technology, they succeeded in preparing the ground for a comprehensive theory of life by eliminating the main conceptual stumbling blocks to genuine scientific advance in biology; namely, vitalism and teleological thinking" (1982, 2). Even though teleological ideas were a common and recurrent place in biological thinking, after Darwin they seem to be completely dismissed by biologists and biological science. As Mayr succinctly describes: "Perhaps no other ideology has influenced biology more profoundly than teleological thinking. In one form or another it was the prevailing world view prior to Darwin" (1992, 117).

[218] Also known as post-Kantian philosophy, this was a philosophical movement strongly influenced by the Kant's critical idealism. Its most important figures were Fichte, Schelling and Hegel. Even though this movement was founded under the wings of Kantian philosophy, their main figures rapidly emancipated themselves from critical philosophy and they elaborated their own distinctive philosophies. Kant never ceased to be influential on German Idealism, but the reception of Kant's doctrines was heavily debated and criticized by them, especially his dualism. I cannot discussed further German Idealism here and the way in which it was influenced by Kantian philosophy, but relevant information and discussion can be found in: Ameriks (ed.), *The Cambridge Companion to German Idealism* (New York: Cambridge University Press, 2000); Behler (ed.), *The Philosophy of German Idealism: Fichte, Jacobi, and Schelling* (New York: Continuum, 1987); di Giovanni and Harris (ed.), *Between Kant and Hegel* (Albany: State University of New York Press, 1985); Taylor (ed.), *The Romantic Tradition in Germany: An Anthology with Critical Essays and Commentaries* (London: Methuen, 1970); Willson, (ed.), *German Romantic Criticism* (New York: Continuum, 1982), amongst others.

Herder, Schelling and Goethe—and to a lesser extent, figures such as Novalis, Schlegel and Hegel[219]—received from Kant the regulative concepts of analogy and *Naturzweck* for speculating about nature and its organization. *Naturphilosophen* were more concerned with questioning the classical-Newtonian conception of nature as an object that can be explored in purely mechanical terms, and with defending a more or less purposive and "organic" conception of nature. For that reason, they found in Kant's teleological judgment a useful source for their speculative conceptions on nature.

Herder, for instance, was a former disciple of Kant who read with enthusiasm the pre-critical work *Allgemeine Naturgeschichte und Theorie des Himmels* (1755)[220], where he found the raw material for his strong conception of analogy, which he conceived as a valid method for investigating nature. For Herder, all our knowledge about nature is analogical ("what we know we know only through analogy"[221]). It can be claimed, accordingly, that Herder attributed to analogy a constitutive role instead of a regulative one, turning analogy into a legitimate method for cognizing nature, that is, analogy constitutes objects for our constitutive knowledge of nature. Even though Herder predates *Naturphilosophie*, his concern about the use of analogy and his strong claim about it influenced *Naturphilosophen*. *Naturphilosophen* not only defended the method of analogy, but also a sort of Kantian concepts of the *Zweckmäßigkeit* and *Naturzweck*. However, their conception of *Zweckmäßigkeit* and *Naturzweck* was strictly constitutive, unlike Kant's strongly regulative conception of purposiveness. As Beiser explains: "Kant and the *Naturphilosophers* share a very similar concept of the purposiveness of nature; yet Kant denies, while the *Naturphilosophers* affirm, its constitutive status" (2006, 11). *Naturphilosophie* took the Kantian concept of *Naturzweck* and then they carried this concept into nature as a whole, as if nature were a great organism. The very problem with this reading of the concepts of purposiveness and natural end is that it forgets the problematic—regulative and "as if"—status of such concepts for Kant's philosophy. For *Naturphilosophen*, these teleological concepts have a constitutive status. Schelling, for

[219] Schlegel and Novalis were more concerned with aesthetics and poetry, and Hegel, in turn, had a very brief interest in *Naturphilosophie* and Romanticism, especially during his Jena's period. See, for instance, the section "Kantian Philosophy" of *Faith and Knowledge* (1802, 301-333).

[220] It is of common knowledge the dispute between Herder and Kant regarding the publication of Herder's Ideas for a Philosophy of the History of Humanity (1784-85). For interesting views of this polemics, see: Zammito, *Kant, Herder, and the Birth of Anthropology* (Chicago: Chicago University Press, 2002); and Nassar, "*Analogy, Natural History and the Philosophy of Nature. Kant, Herder and the Problem of Empirical Science"* (2015).

[221] Herder, *On Cognition and Sensation of the Human Soul*. In: Werke in zehn Bänden: (FA) IV, 330.

instance, was mainly focused on overcoming Kantian dualism between the noumenal and the phenomenal—and also between the regulative and the constitutive—and one of his ways for overcoming this dualism was through his conception of nature as an organism[222]. "If nature is an organism, then it follows that there is no distinction in kind but only in degree between the mental and the physical, the subjective and the objective, the ideal and the real" (Beiser 2006, 22), and the regulative and the constitutive.[223]

Moreover, Goethe also embraced a partially dogmatic reading of Kantian doctrines[224] in his biological reflections, especially those concerning botany and morphology through his notion of "anatomical archetype". The anatomical archetype is "a general picture containing all the forms of animals as potential, one which will guide us to an orderly description of each animal. […] to trace descriptively a particular part of the archetype through all the major genera" (Goethe 1795, 118-19). These archetypes, furthermore, can be traced out empirically, that is, they have objective existence. Goethe's conception of "anatomical archetype" and, more generally, of "archetype", was taken from Kant's regulative ideas of an *archetypus intellectus,* which only have a heuristic and hypothetical role for orienting our research into nature due to our limited understanding. Nevertheless, as Richards states: "Yet the archetype for Goethe, as he here thinks of it, is not merely a regulative consideration, since it is the same one that the productive genius of nature employs—to use Kantian terms, it would be determinative" (2006, 35)[225]. These examples, taken from Herder, Goethe and Schelling, show how *Naturphilosophie*—a movement strongly influenced by Kantian philosophy—read in a certain dogmatic way the main regulative commitments of Kant's third *Critique*, such as analogy, *Zweckmäßigkeit der Natur*, *Naturzweck,* organisms and the regulative ideas in general.

ii) On the other hand, for the German biology of the first half of the nineteenth century the panorama was different from that of *Naturphilosophie*. At the

[222] See, for instance, Schelling's Introduction to *Ideas for a Philosophy of Nature* (1797, 661-723), or his Preface to *On the World Soul* (1798, 415-419).
[223] "They insisted that nature is an organism, and not only that we must proceed in our inquiries as if it were one. It was only by giving this concept constitutive status, the romantics believed, that they could overcome the outstanding Kantian dualisms" (Beiser 2000, 33).
[224] As Huneman states: "Goethe acknowledged that his program was highly influenced by Kant: 'Then the *Critique of Judgment* fell into my hands and with this book a wonderful period came into my life'. Yet in a retrospective memoir, Goethe said that in the 1790s, together with Herder, he embarked on precisely the 'adventure of reason' that had been prohibited by Kant" (2006, 665).
[225] For further details about the reception of the KU in Goethe, see also Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago: University of Chicago Press, 2002); Huneman, "Naturalising Purpose: From Comparative Anatomy to the 'Adventure of Reason'", (2006).

beginning of the nineteenth century, the advances in scientific explanations had experienced an outstanding progress that gives rise to a renewal of the old mechanistic program. For this reason German biologists were mainly concerned with eliminating teleological thinking from biology[226]. But some of them, on the other hand, tried to reconcile mechanical explanation with teleological considerations, as Kant had also tried to do[227]. The main figures of this biological perspective were the embryologists Karl Ernst von Baer and Johannes Müller, who used the teleological ideas of Kant to elaborate a biological framework with a strong emphasis on mechanical processes—especially those given by chemical analysis[228]—but without eliminating teleological considerations, such as giving priority to the whole over the constituent parts of an organic being[229]. Daniel Kolb explains this point as follows: "The organic form or type of each organism is a result of the systematic relation of inorganic forces [which can be explained in mechanical terms], but the system itself regulates the processes and development of the organism" (1992, 24). That is to say, for biologists such as von Baer and Müller—and, following Kant's notions, the whole of the organism, i.e. its organization, properly speaking—is apparently irreducible to mechanical explanations, no matter how mechanical explanation progresses. And, in fact, there was an important progression in mechanical and scientific explanations in the German biology of the nineteenth century—especially, in the context of physiology, neurology, and embryology—which reinforced the mechanistic agenda of eliminating from biology any trace of teleology. For those who had tried to embrace a certain teleological framework within a broader biological program, these progresses caused an undermining of such former teleological positions[230]. Such seemingly irreducible aspects of organic phenomena were now apparently accounted for by

[226] "The principal achievement of biologists in the early nineteenth century appears to be this: Turning away from broad speculation and importing the methods of physics and chemistry along with a massive infusion of experimental technique and technology, they succeeded in preparing the ground for a comprehensive theory of life by eliminating the main conceptual stumbling blocks to genuine scientific advance in biology; namely, vitalism and teleological thinking" (Lenoir 1982, 2).

[227] Timothy Lenoir has called this group of German biologists as "teleomechanism", since they tried to reconcile a strong mechanistic approach and explanation of nature with teleological—sometimes vitalistic—conceptions. Here we can find the names of Blumenbach, Reil, Kielmeyer, von Baer, Muller and Rathke, amongst others. See Lenoir (1982).

[228] As Kolb states: "German biology in the half century preceding the publication of *On the Origin of Species* was rich in discoveries in embryology, morphology, cell theory, etc., and largely teleological in its basic explanatory concepts" (1992, 10).

[229] For interesting accounts for this topic, see: Kolb, "Kant, Teleology, and Evolution" (1992, 9-28); and Lenoir, *The Strategy of Life. Teleology and Mechanics in Nineteenth Century German Biology*, (1982).

[230] Helmholtz was a clear example of such abdication of teleology. See Helmholtz, *Selected Writings of Hermann von Helmholtz* (1971, 120-21). But besides Helmholtz, it was almost the whole German biology who tried to eliminate teleological thinking in scientific explanations of organic beings. See, for instance, Lenoir (1982, 2).

mechanical principles; and if such scientific progress continues, the rest of the things that still remain unexplained sooner or later will be reducible to mechanical explanations.

Thus, German biology gradually abandoned teleological ideas for reductionist, mechanical, explanations[231]; and the discoveries of Darwin reinforced even more the belief of eliminating any teleological approaching in biology[232]. But this was not the case for von Baer, "whose teleological convictions stemmed from a philosophical kinship with the Kantian perspective, progress in mechanical accounts of organic processes served only to strengthen belief in the systematic, teleological, structure of organisms" (Kolb 1992, 24). For von Baer, the reductionist-mechanical biologists could hope to explain someday all the organic processes in chemical and physical terms, but they never will be able to explain why an organism with such a self-organizing system exists at all, or "how matter came to be organized into an organic system" (25). Just as Kant, von Baer thought that there was something mechanically inexplicable in organisms, something that can be formulated in teleological terms—although not explained by it. However, and as Kolb also points out, "with the death of von Baer the tradition in German biology associated with Kant's ideas effectively comes to an end" (26).

In sum, Kant's teleological reflections impact the development of German thought, especially in the traditions of German Idealism—and particularly in *Naturphilosophie*—and in the early German biology, mainly in von Baer's biological contributions. However, even though biology gradually eliminated teleology and teleological considerations from its scientific program, teleological language still remains in the science of life, which is essentially analogical in its approach to the organic world[233].

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[231] "The steady stream of successes at providing mechanical explanations of organic processes led a number of leading German scientists to view teleology as a sort of 'God of the Gaps', a confession of ignorance which would ultimately be overcome by scientific progress" (Kolb 1992, 24).

[232] As Haeckel states: "All that was done before Darwin to establish a natural mechanical conception of the origin of animals and plants has been in vain, and until his time no theory gained a general recognition. Darwin's theory first succeeded in doing this, and thus has rendered an immense service. For the idea of the unity of organic and inorganic nature is now firmly established; and that branch of natural science, which had longest and most obstinately opposed mechanical conception and explanation, viz. the science of the structure of animate forms, is launched onto identically the same road towards perfection as that along which all the rest of the natural sciences are travelling" (Haeckel, 1868, I, 22). Or as Helmholtz says: "Darwin's theory contains an essential new and fruitful line of thought. It shows how adaptation in the structure of organisms can result from the blind rule of a law of nature without any intervention of intelligence" (1971, 238).

[233] I shall come back to this point in the Conclusion.

5.5.-The role of this analogy for the understanding of our own reason

Thus far, I have stated throughout this chapter that the reflective power of judgment is eminently analogical in its procedure. Furthermore, the Kantian reflective concept of *Naturzweck*, and, hence, the teleological judgments about nature, are based on a fundamental analogy, namely the analogy with our causality in accordance with ends. This analogy can be better construed, I have claimed, if we consider it in terms of practical reason in its technical use. This analogy is crucial for two main reasons: in the first place, it plays a fundamental heuristic role in our research into nature, especially in our investigation, observation and making sense of organic beings. That is to say, this analogy is fundamental for orienting our inquiry into nature and its organized products. In the second place, this analogy is absolutely necessary for forming the very representation of something as organized and self-developing, that is, it allows us the very experience of something self-organizing that we called living being. In other words, it is by means of this analogy that we can enable the representation of the reflective concept of *Naturzweck* and thereby make the representation of a living and organized form intelligible to us. I have also shown the role this analogy plays not only for the reflective power of judgment in general and teleological judgments in particular, but also for biology and life sciences.

Now, as the concept of *Naturzweck* is grounded in an original analogy with our technical-practical reason, it can be stated that this analogy allows us to understand also the very concept of reason. That is to say, this analogy—and as Kant suggests in passing in some passages—serves to illuminate not only the concepts of *Naturzweck* and organism, but also of our own practical reason. If the analogy with our technical reason enables the very representation of organisms—by means of the concept of *Naturzweck*—this analogy, conversely, sheds light on aspects of our own reason[234]. Let us see some passages where Kant seems to suggest this.

[234] Recent literature has suggested something similar, especially by invoking some passages of the KrV where Kant seems to characterize the system of reason by an analogy with organisms (See, for instance, the passages of A 833/ B 862, where Kant states that reason must be conceived as an unified system, where the whole is not a mere aggregate of parts, but an organic unity). Bernd Dörflinger refers to reason as if it has "life" in the "organic" sense of life (2000, 1). Jennifer Mensch has developed further and accurately the analogy between organisms and reason in her *Kant's Organicism. Epigenesis and the Development of Critical Philosophy* (2013). She says about it: "What we can see here [in the passage just mentioned] is that in attempting to capture the systematic unity of reason in its historical self-development, Kant was repeatedly drawn to organic imagery. Kant likened the system of reason to the organic unity of an animal,

The first passage that I would like to analyze is located at the end of §65, where Kant invokes the crucial analogy with our causality in accordance with ends—i.e., with technical practical reason—:

> The concept of a thing as in itself a natural end is therefore not a constitutive concept of the understanding or of reason, but it can still be a regulative concept for the reflecting power of judgment, for guiding research into objects of this kind and thinking over their highest ground in accordance with a remote analogy with our own causality in accordance with ends; not, of course, for the sake of knowledge of nature or of its original ground, but rather *for the sake of the very same practical faculty of reason in us in analogy with which we consider the cause of that purposiveness* (KU, AA V, 375, my emphasis).

Again, Kant is stressing here that the concept of *Naturzweck* is a reflective one, that is, a peculiar concept of the reflective power of judgment, which operates as a regulative guideline in the investigation of nature and its products. This concept, furthermore helps us to reflect on the organization of nature through an analogy with our technical-practical reason. This analogy, Kant says, is not for the sake of explaining such organization—since analogy has no explanatory function whatsoever—but for the sake of gaining understanding of "the very same practical faculty of reason in us", which is, in turn, the very ground—I propose—of the possibility of the analogical concept of *Naturzweck*. In other words, Kant is emphasizing two main arguments here: on the one hand, the reflective concept of natural end is not an explanatory-determining concept, but a regulative one that serves to orient our research into natural organization. We do not gain knowledge of nature and its products by such an analogical concept, but we gain through it a heuristic tool for guiding natural investigation and making sense of such organization.

On the other hand, the analogy that makes possible the representation of the concept of *Naturzweck*—the analogy with our practical reason in its technical use—helps us to understand aspects of our own practical reason[235], especially the procedure of

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he took reason's historical development to be a movement from its infancy to its adulthood, and he described reason's function within this history as akin to that of a root" (129-30. Angela Breitenbach (2009) is another example of how the analogy between reason and organism can operate in a reciprocal way. And Natalia Lerussi (2014, 113-136) elaborates an interesting reading of how the analogy between reason and organism operates in the KrV. As fascinating and suggestive these interpretations are, I cannot develop further this line of thought, since it would scape the limits of this work. However, it is clearly a line of thought worth of following in future researches.

[235] Moreover, Kant states that the analogy with natural ends—or organisms judged as natural ends—can shed light on other rational manifestations of human beings, such as the concept of "state" or the "entire body politics", which are thought by analogy with organic beings: "One can, conversely, illuminate a certain association, though one that is encountered more in the idea than in reality, by means of an analogy

technical reason. That is to say, it is by means of this analogy—which helps us to gain understanding of organic beings—that we can obtain knowledge of the practical reason in us, which is the source for enabling by analogy our teleological judgments. Our analogical understanding of living beings makes possible, in turn, a better understanding of our own practical reason: the way in which organic beings organize themselves in the vital processes they carry out, the way in which they seem to be purposively arranged—all of these end-directed features we seem to acknowledge in organic beings are in part there because we are rational agents whose own technical-practical reason operates in a similar fashion. In other words, by judging organic beings as *Naturzweck*, we are recognizing, in turn, a technical, end-directed and self-organizing practical technical reason in us. The quoted passage is, perhaps, the most explicit in illustrating how this specific analogy can be useful not only for enabling the representation of the concept of *Naturzweck* and hence for making sense of our experience of living beings, but also for understanding our own technical-practical reason in us.

However, there is another passage where Kant seems to suggest that the analogy between organisms and our rational technical causality can shed light on our own reason. This passage is located in §68, where Kant states that we can legitimately use teleological principles when reflecting on nature and its organization, since it is a regulative principle that serves to guide our research. However, he warns us, we cannot take these teleological principles or teleological language—such as "the wisdom, the economy, the forethought, and the beneficence of nature"—to be constitutive, since it would imply taking nature as an intelligent being—which would be absurd, according to Kant—or "without daring to set over it, as its architect, another, intelligent being, because this would be presumptuous" (V, 383). After stating this, Kant explains in a footnote the following point regarding the suggestion of the argument from design:

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with the immediate ends of nature that have been mentioned. Thus, in the case of a recently undertaken fundamental transformation of a great people into a state, the word organization has frequently been quite appropriately used for the institution of the magistracies, etc., and even of the entire body politic. For in such a whole each member should certainly be not merely a means, but at the same time also an end, and, insofar as it contributes to the possibility of the whole, its position and function should also be determined by the idea of the whole" (KU AA V, 375 footnote). This is not the first time where Kant invokes an analogy between a democratic state and organism, in fact, he invokes this particular analogy while describing the very role of symbolic representation (see KU V, 352). The concept of state is only possible in our practical reason, it is a product of our rational capacity; and, at the same time, this practical concept is thought by us—at least sometimes—by analogy with nature's organization, by analogy with an organism in which the whole seems to precede its constituent parts, and whose parts are purposively related to each other and to the whole—in the same way that our ideal conception of a state should be organized: not as a mere aggregate of people and different and opposed interest, but in an organic, unified manner.

> The German word presumptuous [*vermessen*] is a good, meaningful word. A judgment in which we forget to take the proper measure of our powers (of understanding) can sound very modest and yet make great claims and be very presumptuous. Most of the judgments by means of which we purport to exalt the divine wisdom are like this, since in them *we ascribe intentions to the works of creation and preservation that are really intended to do honor to our own wisdom as subtle thinkers* (KU AA V, 383, footnote, my emphasis).

In the first place, Kant is questioning in this quote the validity of the argument from design—i.e., God as the divine designer of nature and organized beings—by stating that such an argument is, in fact, presumptuous because we cannot make any determinative claim about God's attributes, such as his technical creations. Once more, he is questioning the so-called teleological argument or argument from design. In the second place, such teleological judgments about nature do not highlight the proof of God's wisdom or God's designing power, but rather such teleological judgments about nature's organization illuminate, by way of analogy, our "own wisdom as subtle thinkers", that is, they illuminate our own reason in its technical use. The "wisdom, the economy, the forethought, and the beneficence" are features of our own technical-practical reason that we analogically project into nature and its products, but these characteristics say more about ourselves—about our practical reason—than about nature's organization.

Accordingly, it can be said that this crucial analogy between practical-technical reason and organisms can operate in a circular, reversible way, namely, by enabling and illuminating our understanding and judging of organisms, but also by illuminating our practical reason in its multiple manifestations, especially our technical-practical reason[236]. However, and as I have stressed throughout the chapter, the crucial point of this analogy is that it shows how the reflective power of judgment is essentially analogical in its procedure, and how this analogical procedure enables our very

[236] Despite the stress laid by some Kantian scholars on the benefits of the analogy with the organism (see note 234) for elucidating our own reason, it is possible that this would lead to a circularity. Even though Kant sometimes uses the concept of the organism as an analogy for illuminating and understanding the nature of our reason (especially in KrV, A 833/ B 862), it is at least curious that in the KU he uses this analogy the other way around (i.e., our technical reason for analogically representing living beings). At times he suggests that we need the analogy with our technical reason in order to elucidate the concept of *Naturzwecke*, but at other times he states that this analogy is only for the sake of knowing "the very same practical faculty of reason in us" (KU V, 375). This last point shows, once again, the inconsistencies in some passages of the "Critique of the Teleological Power of Judgment", especially in his attempts to making intelligible the concept of *Naturzweck*.

understanding of something as organized and self-organizing (*Naturzweck*), which we represent thus as a living being.

Concluding Remarks

My aim in this dissertation has been to investigate the role of analogical reflection for Kant's concept of *Naturzweck*. Although this role has been traditionally overlooked—by both Kant and the secondary literature on Kant—I claim that this role is not only relevant for a better understanding of organisms judged as natural ends, but also—and most importantly—it is indispensable for enabling us to represent the very concept of *Naturzweck* and, therefore, for making sense of our very representation of the living being as well. However, one analogy in particular is the *enabler* of our teleological judging of nature's organization, namely, the analogy with our causality in accordance with ends. In this dissertation, I have offered a plausible way to better understand what "our causality in accordance with ends" means in the context of the "Critique of the Teleological Power of Judgment": namely, as I have stressed, in terms of our technical-practical reason.

This way of construing this analogy is at odds with what the relevant literature has dominantly maintained, namely, that Kant is drawing an analogy between organisms and artifacts—and in so doing, he is somehow following the long-standing tradition of the argument from design. In Chapters 4 and 5, I stressed that this dominant reading is wrong, since Kant is very emphatic in ruling out the analogy between artifacts and organisms, especially because organisms seem to exhibit a self-organizing character that no artifact has. For that reason, the analogy invoked by Kant is not between organisms and the products of a rational agent, but rather between organisms and the very rational-technical capacity of such a rational agent, since they both seem to possess end-directedness and self-organization.

At this point of the dissertation, I can highlight the outcomes of this research. In the first place, my interpretation displays the very procedure of the reflective power of judgment, which is essentially analogical. In Chapter 3, I offered a reading of what this analogical procedure means in the context of the "Critique of the Teleological Power of Judgment", which consists of a combination of symbolic representation and a specification of analogical inference (a relation of identity between grounds and consequences). This synthesis of symbolization and analogical inference is how our teleological judgment operates when we reflect on nature's organization, since it operates by indirectly presenting in intuition the concept of *Naturzweck* and making this concept intelligible to us. Moreover, I offered in section 5.1 a consistent reading of the

indispensable procedure of analogy throughout the third *Critique*. This role is mostly concealed by Kant, but it appears time and again in the text, since the language in the entire KU is eminently analogical: the "*als ob*" formula, the very principle of *Zweckmäßigkeit der Natur*, the *Naturzweck*'s concept, all of these expressions are subsidiaries of analogy. And beyond that, these expressions reveal how the main concepts of the KU are conceived through analogy (like the principle of purposiveness) or are based on an analogy (like the concept of *Naturzweck*).

Second, my dissertation can shed light on the very role of analogical reflection for the teleological power of judgment, which is twofold: on the one hand, analogical reflection operates as a heuristic device for research into nature and its organization. Analogy is, according to Kant, a regulative guideline for empirical investigation of any sort. This first role is, moreover, explicitly pointed out by Kant throughout the third *Critique*. On the other hand, analogical reflection has an additional and indispensable role for our teleological judgments, a role that is not explicitly stressed by Kant—indeed, he is at times inconsistent regarding the role of analogy in general, and of the analogy with technical reason in particular. This role is as the *enabler* of our teleological judgments about nature. That is to say, the analogy with our technical reason makes possible the representation of the very reflective concept of *Naturzweck*, by which we can represent a natural thing as having purposiveness and self-organization. Analogical reflection is responsible for this peculiar way we judge living beings by means of teleological considerations. This analogy with our technical reason, therefore, allows us to conceive something as organized and self-organizing, which are the main features we seem to acknowledge in living beings qua "living". In other words, we can gain intelligibility about the seemingly purposive and self-organized character of living beings by virtue of an analogy with our own technical reason, which eminently operates in a purposive and self-organized manner.

Third, my interpretation elucidates how indispensable is analogy for Kant's Teleological Judgment. Even though this indispensable role remains obscure throughout the KU (chiefly because Kant's ambiguity regarding this issue), I have argued that the role of analogy is absolutely necessary for our teleological judgments on nature. Kant has an ambivalent evaluation regarding analogy in his entire philosophical work[237], and this

[237] See chapter 3 and 5.1.

is especially evident in how he introduces the concept of *Naturzweck* by invoking and simultaneously rejecting three analogies (with artifacts, life and technical reason)[238]. I hope to have contributed to turning this ambiguity into a more precise account of both analogical reflection and living beings judged as *Naturzwecke*—which can only be fully understood, I propose, through a thorough analysis of Kant's analogy with technical reason and the procedure it carries out in the formation of our teleological judgments. My interpretation, I think, has contributed to shedding light on analogical reflection and to plausibly amending this inconsistent evaluation of Kant regarding analogy—especially in the teleological power of judgment.

Finally, I would like to mention very briefly the possible upshot that my interpretation may have for current biological thinking. In light of the enormous advances in biological investigation[239], one might be tempted to take Kant's assertion concerning the impossibility of mechanically explaining living organisms[240] as profoundly obsolete[241]. However, this is not entirely fair, since his main thesis concerning the role of teleology in this context is still in force. As he says at the end of the "Dialectic of the Teleological Power of Judgment":

> we also do not know how far the mechanical mode of explanation that is possible for us will extend, but are only certain of this much, namely, that no matter how far we ever get with that, it will still always be inadequate for things that we once acknowledge as natural ends, and, given the constitution of our understanding, we must always subordinate all such mechanical grounds to a teleological principle (KU, AA V, 415).

[238] See chapter 4 and 5.

[239] "Recent years have seen remarkable advances in the life sciences, including increasing technical capacities to reproduce, manipulate and even replace living nature with the products of human artifact" (Breitenbach 2014b, 19).

[240] "One could investigate all the thus far known and yet to be discovered laws of mechanical generation in a thing that we must judge as an end of nature, and even hope to make good progress in this, without the appeal to a quite distinct generating ground for the possibility of such a product, namely that of causality through ends, ever being canceled out; and absolutely no human reason (or even any finite reason that is similar to ours in quality, no matter how much it exceeds it in degree) can ever hope to understand the generation of even a little blade of grass from merely mechanical causes" (KU AA V, 409; see, also: 400, 415).

[241] "Kant was a strict mechanist as far as the inanimate universe is concerned, but provisionally adopted teleology for certain phenomena of living nature, which (in the 1790s) were inexplicable owing to the primitive condition of contemporary biology. It would be absurd, however, to use Kant's tentative comments two hundred years later as evidence for the validity of finalism" (Mayr 1992, 121).

That is, and "no matter how far" mechanical and scientific explanation of nature progresses[242], our own peculiar way of making sense of living beings is, according to Kant, through teleological principles—i.e., by judging them as *Naturzwecke*. This peculiar way of judging living being as *Naturzwecke* is only possible, I have claimed, by an analogy with our technical-practical reason, which allows us to represent something as having an end-directed and self-organizing activity.

This peculiar Kantian way of conceiving living beings as *Naturzwecke* (i.e., as organized and self-organizing beings) is not inconsistent with mechanical-scientific explanations provided by biology. That is because the analogical-teleological way of approaching living beings is a heuristic starting point for making an intelligible representation of them. The crucial Kantian point in this regard consists, I suggest therefore, in the fact that our very understanding of living beings is by means of the analogical concept of *Naturzwecke*, which is nothing other than judging something as apparently having self-organization and a self-determining character. That is to say, our very concept of "living being" is a regulative-analogical one. However, this analogical-teleological standpoint we adopt in order to make intelligible the representation of living beings qua "living" has nothing to do with mechanical explanations provided by biology or any science committed to purely causal research. What is more, this mechanistic-causal research program can be developed as far as the sciences progress, but it will always explain a mere mechanism—i.e., an object that can be causally explained, "identified, isolated, measured, and manipulated"[243]. The mechanical-causal explanation and technical manipulation that biology is hoping to achieve in its scientific investigation is not hindered by our teleological way of making sense of nature's organization. However, when describing concepts like "organism" or "life", biology can at most aim to use notions formed by analogy with human reason.

[242] And, in fact, it has progressed in an outstanding way the last two centuries since Kant's KU publication. In these years, Darwin's theory of evolution arose, the discovery of the double-helix structure of DNA, the discovery of RNA and its synthesis, the increasing development in genetic engineering or genetic modification, cloning, and so forth.

[243] Garrido (2015, 370). That is, a mechanism is an object of causal-objective research, whereas a "living being" is not. That does not mean that an organism cannot be studied and manipulated, or even explained, but this is the case qua "mechanism", and not as our regulative concept of a living being as a self-developing and end-directed being.

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Samenvatting

Dit proefschrift gaat over de rol van analogie in de 'Kritiek van het teleologisch oordeelsvermogen' van Kant en, in het bijzonder, over de rol die analogie speelt bij de vorming van het Kantiaanse concept van het natuurdoel (*Naturzweck*). Het 'teleologische oordeelsvermogen' verwijst naar de vooronderstelling van een interne doelgerichtheid in de natuur, die dient als leidraad voor onze oordelen en onderzoek naar de natuur. Een natuurdoel is een ´regulatief concept´ van het reflecterend oordeelsvermogen, dat wil zeggen, een heuristisch instrument dat ons in staat stelt om het, op het oog, op een einddoel gerichte en zelforganiserende karakter van levende wezens te doorgronden en om ons onderzoek naar de organisatie van de natuur te begeleiden. In het tweede deel van de *Kritik der Urteilskraft* (KU) tracht Kant afstand te nemen van een puur mechanistische benadering van de organisatie van de natuur en ontwikkelt hij een teleologisch perspectief op de levende natuur via zijn regulatief uitgangspunt van *Naturzweck*.

Het concept van *Naturzweck* is echter problematisch, omdat het ons begrip ernstig bemoeilijkt. Als een 'regulatief concept' of 'idee' laat het namelijk geen directe voorstelling in zintuigelijke intuïtie toe. Om dit regulatieve concept begrijpelijk te maken, maakt Kant gebruik van analogie, als een soort indirecte voorstelling in intuïtie. In feite doet Kant's beschrijving van het concept van *Naturzweck* een beroep op drie analogieën: de analogie met onze eigen causaliteit in overeenstemming met einddoelen (*unserer Kausalität nach Zwecken)*[244]*;* de analogie met een artefact of een kunstwerk[245]; en de analogie met het leven, hetgeen een concept is dat in de visie van Kant betrekking heeft op praktische filosofie[246]. Echter, na deze analogieën te hebben geopperd, stelt Kant dat het concept van natuurdoel niet analoog is aan enige causaliteit die ons bekend is[247], inclusief die, die verband houdt met menselijke artefacten en leven. Hoewel deze analogieën enig licht werpen op het concept van *Naturzweck,* omvatten ze niet volledig de onherleidbare kenmerken die een levend wezen lijkt te bezitten; te weten die van zelforganisatie en doelmatigheid. Hoewel Kant stelt dat de analogie met onze "causaliteit

[244] KU, AA V, 375, regels 20-22.
[245] KU, AK. V, 374, regels 9-33.
[246] KU, AK. V, 374, regels 27-37.
[247] V, 375, regels 5-7.

in overeenstemming met einddoelen" "afgelegen" (*entfernten*) is[248], dringt hij desalniettemin aan op de vergelijking tussen deze concepten.

De tekst van Kant is inconsistent en problematisch: hij gebruikt en verwerpt deze analogieën tegelijkertijd. Bovendien lijkt hij de analogie met onze causaliteit in overeenstemming met einddoelen (gedeeltelijk) te omarmen, maar met enkele beperkingen waar hij niet de moeite voor neemt om ze te verduidelijken. Waarom verwerpt Kant de - volgens hem, afgelegen - analogie met onze causaliteit in overeenstemming met einddoelen niet volledig bij het beschrijven van het concept van het georganiseerde wezen, dat als een *Naturzweck* wordt beoordeeld? Het is vrij duidelijk dat Kant vasthoudt aan de analogie met onze causaliteit. De relevante vraag is echter: *in welke mate* houdt hij deze analogie in stand? Wat is de rol van analoge reflectie in het algemeen en van deze analogie in het bijzonder? Omvat het concept 'causaliteit in overeenstemming met einddoelen' al het doelbewuste menselijk handelen, inclusief het morele handelen?

Onze uiteindelijke causaliteit hoeft niet alleen te verwijzen naar het domein van moraliteit, maar kan ook verwijzen naar het domein van menselijke rationale productie (technische rede in het algemeen). Beide activiteiten zijn zowel rationeel, als doelgericht en Kant maakt niet duidelijk in welke van deze twee begrippen hij deze analogie aanroept. Dienovereenkomstig is een van de belangrijkste filosofische vragen waar dit proefschrift antwoord op tracht te geven: hoe kunnen we het concept van onze causaliteit construeren in overeenstemming met einddoelen in deze analogie? Beroept Kant zich hier zowel op de technisch-praktische rede, als de moreel-praktische rede of op één van de twee?

Hoewel Kant niet rechtstreeks refereert aan de sfeer van het morele handelen wanneer hij de analogie met onze eigen causaliteit in overeenstemming met einddoelen aanhaalt, beweren verschillende commentatoren dat in deze context het concept van menselijke causaliteit (causaliteit in overeenstemming met einddoelen) zowel technische, als morele praktische rede impliceert. Tegen de achtergrond van deze argumentatie stel ik dat het concept van onze causaliteit volgens einddoelen, dat in de context van de KU op het spel staat, een technische is. Dat wil zeggen, een soort causaliteit in het menselijke rationele handelen in de technisch-praktische sfeer.

[248] 375, regel 20.

De filosofische literatuur over Kant heeft deze analogie over het typerend – en overwegend - vermengd met de traditionele analogie van ontwerp. Volgens deze lezing trekt Kant een analogie tussen objecten en levende wezens, niet om Gods bestaan te bewijzen, maar om het ogenschijnlijk doelmatige karakter van de organisatie van de natuur te begrijpen. Deze denkers interpreteren de term 'causaliteit in overeenstemming met einddoelen' als 'rationeel ontwerp', waarmee de analogie als volgt zou zijn: tussen een levend wezen (dat lijkt te beschikken over doelmatigheid) en een ontworpen object (dat is ontworpen voor een specifiek doeleinde). Deze lezing wordt voornamelijk gevolgd door McFarland (1970), Zumbach (1984), McLaughlin (1990), Aquila (1991), Fricke (1990), Ginsborg (2001), Guyer (2001, 2006), Zuckert (2007), Lenoir (1982), Steigerwald (2006) en Van den Berg (2014, 2017), onder andere.

Ik beweer echter dat dit een incorrecte lezing is. Kant stelt zeer nadrukkelijk dat de analogie tussen artefacten en organische wezens meer een disanalogie is en houdt de analogie met intelligent ontwerp uiteindelijk voor onmogelijk[249]. Ik stel dat de beste manier om deze analogie te construeren niet is door het te identificeren met het traditionele argument van ontwerp, maar eerder met onze eigen rede in zijn 'technisch gebruik[250]. Dat wil zeggen, de analogie met onze causaliteit in overeenstemming met einddoelen biedt geen grond voor een identiteitsrelatie tussen organismen en artefacten - zoals de secundaire literatuur hoofdzakelijk heeft gesteld -, maar tussen organismen en onze eigen technisch-praktische rede.

Daarom is de voornaamste hypothese van dit proefschrift dat Kant's analogie tussen organismen en onze causaliteit in overeenstemming met einddoelen het best kan worden begrepen als een analogie tussen technische rede en levende wezens. Onze technische rede is niet alleen verantwoordelijk voor ons vermogen om artefacten te creëren; ze is tevens verantwoordelijk voor ons vermogen om onze doelstellingen te vertegenwoordigen en om een manier te vinden - dat wil zeggen een regel of voorschrift te creëren - om deze te bereiken. Deze technisch-rationele capaciteit in ons is dan ook de bron van het analoge concept van *Naturzweck*. Dit technisch-rationele vermogen in ons kenmerkt zich door doelgerichtheid en zelfbeschikking. We beoordelen levende wezens

[249] V, 374, regels 9-33. Onlangs heeft ook Angela Breitenbach gewezen op de tekortkomingen van deze dominante interpretatie (2009b, 2014a).
[250] "Vandaar dat we in de teleologie [...] terecht spreken over de wijsheid [...] van de natuur [...] een dergelijke lezing beoogt een soort causaliteit in de natuur aan te duiden, in overeenstemming met een analogie met onze eigen causaliteit in de technische context van rede"(V, 383).

als *Naturzwecke,* omdat we in hen kenmerken lijken te herkennen die vergelijkbaar zijn met onze technische rede, namelijk doelmatigheid en zelforganisatie.

Deze interpretatie motiveert bovendien een andere stelling die in mijn proefschrift op het spel staat. Het betreft hier de vraagstelling die is gerelateerd aan de rol van analogie in de "Kritiek van het Teleologische Oordeelsvermogen". Kant is wederom niet erg duidelijk over de reikwijdte die hij beoogt toe te schrijven aan analogie in het algemeen en in het bijzonder aan de analogie met onze technische rede. Desalniettemin wordt analoge reflectie in de KU veel nadrukkelijker toegepast dan Kant zelf zou durven toegeven. In dit proefschrift stel ik voor dat onze teleologische oordelen over de natuur gebaseerd zijn op deze analogie met onze technische rede. Dientengevolge is de rol van analogie absoluut noodzakelijk, aangezien het ons in staat stelt het analoog-reflectieve concept van *Naturzweck* indirect aan de dag te leggen (dat wil zeggen, het stelt ons in staat om dit concept indirect in te zetten in intuïtie om vervolgens begrepen te kunnen worden). Dit omdat het ons in staat stelt iets te conceptualiseren als georganiseerd en zelf-organiserend, hetgeen de manier is waarop we levende wezens duiden als 'levend'.

Deze stellingen maken het noodzakelijk om het concept van analogie zelf te onderzoeken. Hoe begrijpt Kant de notie van analogie in zijn werk en met name in de derde *Critique*? Welke vorm van analogie staat op het spel in Kants 'Kritiek van het Teleologische Oordeelsvermogen'? Waarom is het zo noodzakelijk om te verduidelijken welke vorm van analoge procedure figureert binnen de KU? Het beantwoorden van deze vragen zal ons in staat stellen om tot een gedegen idee te komen van de essentiële rol die analogische reflectie speelt bij het begrijpen van de procedure reflectief oordeelsvermogen in het algemeen, en van onze teleologische oordelen over de organisatie van de natuur in het bijzonder. Kant benadrukt de heuristische rol van analogie voor ons empirisch onderzoek. Ik ben echter van mening dat analogie verder gaat dan deze louter heuristische rol, omdat het ons in staat stelt om het concept *Naturzweck* indirect te presenteren. Dat wil zeggen, analogie is niet alleen een heuristisch instrument om de natuur te onderzoeken, maar ook dé voorwaarde voor de mogelijkheid van het reflectieve concept van *Naturzweck*. Alleen op grond van een analogie met onze technische rede, die tevens op een doelgerichte en zelfgeorganiseerde manier werkt, kunnen we begrip verkrijgen over het ogenschijnlijk doelgerichte en zelforganiserende karakter van levende wezens.

Om de zojuist geschetste filosofische problemen te kunnen behandelen, is het proefschrift onderverdeeld in vijf hoofdstukken. De eerste twee hoofdstukken zijn hoofdzakelijk inleidend. Ze introduceren de problemen, argumenten en belangrijkste filosofische concepten, die Kant in de KU en in de 'Kritiek van het Teleologische Oordeelsvermogen' uiteen heeft gezet. Hoofdstuk 1 geeft een algemeen overzicht van de KU. Hoewel het een overzicht geeft, bevat dit eerste hoofdstuk een interpretatief voorstel voor een beter begrip van de belangrijkste problemen die Kant in de derde *Critique* introduceerde. Dit hoofdstuk is cruciaal, omdat het de centrale probleemstelling van dit proefschrift vanuit een systemische benadering plaatst binnen het overkoepelende project van de KU en de kritische filosofie in het algemeen. Het eerste hoofdstuk introduceert dan ook de filosofische concepten die in de tekst van Kant op het spel staan en het biedt een plausibele reconstructie van de belangrijkste argumenten die Kant uitwerkt in de twee Introducties van de KU - die op een gecondenseerde (en soms obscure) manier de gehele inhoud van het boek bevatten.

Hoofdstuk 2 bevat op zijn beurt een overzicht van de gehele "Kritiek van het Teleologische Oordeelsvermogen" sectie van KU. In dit hoofdstuk beschrijf, analyseer en licht ik het Teleologisch Oordeel van Kant toe, alsmede al die aspecten die nodig zijn voor het reconstrueren van het belangrijkste argument van dit tweede deel van de derde *Critique*. Tevens biedt dit hoofdstuk een eerste reconstructie van het centrale concept van *Naturzweck*. Deze reconstructie is echter "voorlopig" van aard, omdat ze de verduidelijking van dit concept opschort door de analogieën die Kant oproept. Dienovereenkomstig functioneert deze reconstructie van het concept van *Naturzweck* meer als een eerste benadering dan als een exhaustieve en systematische analyse ervan. Dit laatste zal plaatsvinden in de hoofdstukken 4 en – voornamelijk - 5.

Hoofdstuk 3 bevat een reconstructie van Kant´s concept van analogie, vooral in de kritische periode. Hoewel Kant enigszins ambivalent blijft ten opzichte van het begrip analogie, en soms zelfs behoorlijk kritisch lijkt te zijn met betrekking tot het gebruik ervan voor wetenschappelijk onderzoek, gebruikt en beroept hij zich in zijn werken regelmatig op dit begrip. Bovendien is analogie een technische term in de filosofie van Kant, met verschillende betekenissen en gebruiksvormen. Het eerste deel van dit hoofdstuk biedt een onderscheid tussen wiskundige en filosofische analogieën, hetgeen het Kantiaanse uitgangspunt is voor elke overweging die betrekking heft op het gebruik van analogie in de filosofie. Vervolgens verschaf ik verder onderscheid in filosofische analogieën:

namelijk, ervaringsanalogieën, analogie als een wijze van gevolgtrekking in zijn logische functie, en symbolische representatie. Ten slotte, wordt het hoofdstuk afgesloten met een interpretatie van het soort analoge procedure die in onze teleologische oordelen over de natuur wordt toegepast. Dit hoofdstuk biedt daarom een systematisering van Kants verschillende ideeën over analogie om te verduidelijken wat voor soort analoge procedure op het spel staat in de 'Kritiek van het Teleologische Oordeelsvermogen'. Dit is cruciaal voor de dissertatie, omdat het een plausibele lezing biedt van het soort analoge procedure dat werkzaam is in het Teleologisch Oordeel van Kant. Dit met name om ons in staat te stellen om het reflectieve concept van *Naturzweck* indirect te presenteren - hetgeen verre van duidelijk is in de Kantiaanse tekst.

Hoofdstuk 4 verschaft een analyse en interpretatie van de rol van twee analogieën die Kant inzet wanneer hij levende wezens beschrijft die als *Naturzwecke* worden beschouwd: de disanalogie met artefacten en de gedeeltelijke analogie met het leven. In dit hoofdstuk geef ik een gedetailleerde analyse van deze twee analogieën, waarbij de nadruk licht op hun respectievelijke bijdragen aan en beperkingen voor het kunnen begrijpen van Kant's concept van natuurdoel. Om het bovengenoemde reflectieve concept te kunnen begrijpen, hebben we zelfs de analyses van de door Kant verworpen analogieën nodig. Dit laatste niet alleen omdat die laten zien hoe het reflectieve oordeel bij uitstek werkt door middel van analogie, maar ook omdat ze enkele van Kant's onbekende bijdragen over natuurlijke teleologie tonen[251].

Met het oog hierop geeft dit hoofdstuk eerst een historisch verslag van het argument van het ontwerp, om vast te stellen hoe Kant afstand neemt van deze geschiedenis, en in plaats daarvan een kritische evaluatie van de (dis) analogie tussen organismen en artefacten uitwerkt. In dit deel van het hoofdstuk verschaf ik een overzicht en debat over de wijze waarop de Kantiaanse literatuur deze analogie met intelligent ontwerp (die overwegend - en ten onrechte - is gelijkgesteld aan de analogie met onze causaliteit in overeenstemming met einddoelen) heeft geïnterpreteerd. Ten tweede biedt dit hoofdstuk een reconstructie van Kant's opvatting over het leven, om te laten zien hoe de analogie tussen leven en organismen enig licht werpt op het concept van *Naturzweck*. Echter, deze analogie blijkt desalniettemin ontoereikend om het te verklaren.

[251] Met name zijn kritische kijk op het oude argument van ontwerp en de aanhoudende vergelijking tussen organismen en artefacten.

Hoofdstuk 5 gaat rechtstreeks in op de hoofdthese van dit proefschrift: de bewering dat het reflecterend oordeelsvermogen in wezen analoog is in zijn procedure, en dat onze teleologische oordelen over de natuur, in feite, zijn gebaseerd op een originele analogie met onze causaliteit in overeenstemming met einddoelen, die worden geïnterpreteerd als een analogie met onze eigen technische rede. Om deze bewering te belichting en te verantwoorden, wordt in paragraaf 5.1 de cruciale rol van analogie in de KU geanalyseerd. Hoewel deze rol in de Kantiaanse literatuur vaak over het hoofd wordt gezien - en soms ook door Kant zelf - is hij onmisbaar voor de vormgeving van de twee hoofdconcepten van de KU, namelijk het reflectieve principe van *Zweckmäßigkeit der Natur* (doelgerichtheid van de natuur) en *Naturzweck*. Dienovereenkomstig behandelt dit eerste deel van het hoofdstuk de plaats en de rol van analogie voor ons reflecterend oordeelsvermogen in het algemeen. De paragrafen 5.2 en 5.3 richten zich op twee fundamentele vragen: Hoe kunnen we het concept van onze causaliteit in overeenstemming met einddoelen, correct interpreteren? Is deze analogie zo "afgelegen" (impliciet) als Kant beweert, en wat is de onmisbare rol van deze analogie voor onze teleologische oordelen? Deze paragrafen zijn van fundamenteel belang, omdat ze een plausibele interpretatie bieden van de beste manier om deze obscure analogie tussen georganiseerde wezens en onze technisch-praktische rede te begrijpen.

Paragraaf 5.4 draait om de rol die deze analogie speelt in de biologie. Als we onze technische rede beschouwen als de bron waaruit we een *Naturzweck* op analoge wijze kunnen conceptualiseren, kunnen we ook de grenzen van biologische kennis zelf bepalen. Voor Kant is *Naturzweck* het reflectieve concept dat ons in staat stelt levende wezens te begrijpen alsof ze doelgerichtheid en zelforganisatie hadden. En dit onvermijdelijke teleologische standpunt voor het beoordelen van levende wezens confronteert de biologie met een ernstig dilemma in haar streven om als een echte wetenschap te worden beschouwd. Dit deel van het hoofdstuk gaat nader in op dit dilemma en staat stil bij de ontvangst van Kant's theorie van levende wezens voor latere biologische denkers. Aan het einde van dit hoofdstuk geef ik een korte reflectie op de rol die deze analogie speelt in het begrip van onze eigen rede.

Tenslotte belicht ik in de concluderende opmerkingen de resultaten van dit proefschrift voor Kantstudies en voor het huidige biologische denken. Ook al is het verleidelijk om Kant ´s beredenering als achterhaald te beschouwen, beweer ik dat dit niet het geval is. Zijn hoofdthesis over de rol die teleologie speelt bij het begrijpen van levende

wezens, is nog steeds relevant. Ons begrip van levende wezens is immers gebaseerd op het analoge concept van *Naturzweck*, wat ´iets beoordelen als zelfgeorganiseerd en doelmatig´ betekent. Echter, het analoog-teleologische standpunt dat we aannemen om de weergave van levende wezens, in de hoedanigheid van levend, voor onszelf begrijpelijk te maken, heeft niets te maken met de mechanistische verklaringen van de biologie of welke wetenschap dan ook, die uitsluitend puur causaal onderzoek verricht. Als gevolg hiervan wordt de mechanistisch-causale verklaring en technische manipulatie, die de biologie hoopt te bereiken in haar wetenschappelijk onderzoek, niet gehinderd door onze teleologische manier om de organisatie van de natuur te begrijpen.

Summary

This dissertation concerns the role of analogy in Kant's "Critique of the Teleological Power of Judgment", especially the role of analogy for the formation of the Kantian concept of a natural end (*Naturzweck*). The 'teleological power of judgment' refers to the presupposition of an internal purposiveness in nature that serves to guide our judgments and research into nature. A 'natural end' is a 'regulative concept' of the reflective power of judgment, that is, a heuristic device that enables us to make sense of the seemingly end-directed and self-organizing character of living beings and to orient our research into the organization of nature. In the second part of the *Kritik der Urteilskraft* (KU), Kant tries to distance himself from a purely mechanistic account of the organization of nature, and he develops a teleological view of living nature through his regulative concept of *Naturzweck*.

The concept of *Naturzweck* is, however, problematic since it presents serious difficulties for our understanding. This is because, as a 'regulative concept' or 'idea', it does not allow for a direct presentation in sensible intuition. In order to make this regulative concept intelligible to us, Kant appeals to analogy, as a kind of indirect presentation in intuition. In fact, Kant's description of the concept of *Naturzweck* appeals to three analogies: the analogy with our own causality in accordance with ends (*unserer Kausalität nach Zwecken*)[252]; the analogy with an artifact or work of art[253]; and the analogy with *life*, which is a concept that pertains to practical philosophy in Kant's view[254]. Nevertheless, after suggesting these analogies, Kant states that the concept of natural end is not analogous with any causality known to us[255], including that pertaining to human artifacts and life. Even though these analogies shed some light on the concept of *Naturzweck*, they do not fully encompass the irreducible features that a living being seems to possess, namely, self-organization and end-directedness. While stating that the analogy with our "causality in accordance with ends" is "remote" (*entfernten*)[256], he nevertheless insists on the comparison between these concepts.

[252] KU, AA V, 375, lines 20-22.
[253] KU, AK. V, 374, lines 9-33.
[254] KU, AK. V, 374, lines 27-37.
[255] V, 375, lines 5-7.
[256] 375, line 20.

Kant's text is inconsistent and problematic: it uses and simultaneously rejects these analogies. Furthermore, he seems to (partially) embrace the analogy with our causality in accordance with ends, but with some reservations that he does not bother to clarify. Why does Kant not fully reject the (remote, according to him) analogy with our causality in accordance with ends when describing the concept of organized being judged as a *Naturzweck*? It is pretty clear that Kant holds onto the analogy with our causality in accordance with ends, but the question is: *To what extent* does he maintain this analogy? What is the role of analogical reflection in general and of this analogy in particular? Does the concept "causality in accordance with ends" encompass all human purposeful activity, including moral actions?

Our causality in accordance to ends can refer not only to the domain of morality, but also to the domain of technical reason. 'Technical reason' means our rational capacity to represent ends to ourselves (the ends of art and skill) and to find a way to accomplish them. Both activities are rational as well as purposive, and Kant does not make explicit in which of these two senses he is invoking this analogy. It is therefore essential to specify in which sense of practical reason Kant is using the term "causality in accordance with ends", since this will clarify not only the very concept of *Naturzweck*, but also the way in which we can make sense of nature's organization. Accordingly, one of the main philosophical questions that this dissertation tackles is: How can we construe the concept of our causality in accordance with ends in this analogy? Is Kant invoking both technical-practical reason and moral-practical reason or one or other of them?

Even though Kant does not directly refer to the sphere of moral action when invoking the analogy with our own causality in accordance with ends, several commentators maintain that in this context the concept of human causality (causality in accordance with ends) implies both technical and moral practical reason. Against this line of interpretation, I argue that the concept of our causality according to ends that is at stake in the context of the KU is a technical one, that is, a type of causality in human rational activity in the technical-practical sphere.

The philosophical literature on Kant has typically—and predominantly—conflated this analogy with the traditional analogy from design. On this reading, Kant is drawing an analogy between artifacts and living beings, not in order to prove God's existence, but in order to make sense of the seemingly end-directed character of nature's organization. These scholars construe the term "causality in accordance with ends" as

"rational design", and the analogy would be as follows: between a living being (which seems to possess end-directedness) and a designed object (which is designed for a determinate end). This reading has been advanced by McFarland (1970), Zumbach (1984), McLaughlin (1990), Aquila (1991), Fricke (1990), Ginsborg (2001), Guyer (2001, 2006), Zuckert (2007), Lenoir (1982), Steigerwald (2006), and Van den Berg (2014, 2017), amongst others.

My position in this dissertation is that this is a misreading. Kant is very emphatic in stating that the analogy between artifacts and organic beings is more properly a disanalogy, and in the end he rules out the analogy with intelligent design[257]. My proposal is that the best way to construe this analogy is not by identifying it with the old argument from design, but rather with our own reason in its "technical use"[258]. That is to say, the analogy with our causality in accordance with ends does not establish a relation of identity between organisms and artifacts—as the secondary literature has predominantly stated—but between organisms and technical-practical reason itself.

Therefore, the main thesis of this dissertation is that Kant's analogy between organisms and our causality in accordance with ends is best understood as an analogy between technical reason and living beings. Our technical reason is not only responsible for our capacity to create artifacts; it is also responsible for our capacity to represent ends to ourselves and to find a way—that is, creating a rule or precept—to accomplish them. This technical-rational capacity in us is, therefore, the source of the analogical concept of *Naturzweck*. This technical-rational capacity in us has end-directedness and self-determination, and we judge living beings as *Naturzwecke* because we seem to recognize in them some features that are similar to our technical reason, namely, purposiveness and self- organization.

This interpretation, furthermore, motivates another thesis that is at stake in my dissertation, which concerns the question about the very role of analogy in the "Critique of the Teleological Power of Judgment". Kant, once again, is not very clear about the scope he wants to ascribe to analogy in general and to the analogy with our technical reason in particular. Yet, the usage of analogical reflection throughout the KU is much

[257] V, 374, lines 9-33. Recently, Angela Breitenbach has pointed out the shortcomings of this dominant interpretation as well (2009b, 2014a).
[258] "Hence in teleology, […], we speak quite rightly of the wisdom […] of nature […] such talk is only meant to designate a kind of causality in nature, in accordance with an analogy with our own causality in the technical use of reason" (V, 383).

more persistent than Kant himself would wish to admit. In this dissertation, I propose that our teleological judgments about nature are based on this analogy with our technical reason. As a consequence, the role of analogy is absolutely necessary, since it enables us to indirectly exhibit the analogical-reflective concept of *Naturzweck* (that is, it allows us to present this concept indirectly in intuition for its subsequent intelligibility). This is because it allows us to conceptualize something as organized and self-organizing, which is how we make sense of living beings qua "living".

These theses make it imperative to investigate the concept of analogy itself. How does Kant understand the notion of analogy throughout his works and, particularly, in the third *Critique*? What type of analogy is at stake in Kant's "Critique of the Teleological Power of Judgment"? And why should it be so necessary to clarify the kind of analogical procedure operating within the KU? Answering these questions allows us to arrive at a well-formed idea of how analogical reflection works as the key for understanding the procedure of the reflective power of judgment in general, and of our teleological judgments about nature's organization in particular. Kant is emphatic in stressing the heuristic role of analogy for our empirical research. But I propose that analogy goes beyond this mere heuristic role, since it enables us to present indirectly the very concept of *Naturzweck*. That is to say, analogy is not only a heuristic device for investigating nature, but also the very condition for the possibility of the reflective concept of *Naturzweck*. We can gain intelligibility about the seemingly purposive and self-organizing character of living beings only by virtue of an analogy with our technical reason, which operates in a purposive and self-organized manner as well.

In order to tackle the philosophical problems just outlined, the dissertation is divided into five chapters. The first two chapters are mainly introductory, since they present the problems, arguments, and main philosophical concepts introduced by Kant in the KU and in the "Critique of the Teleological Power of Judgment", respectively. Chapter 1 provides a general overview of the KU. Although it is an overview, this first chapter contains an interpretative proposal for a better understanding of the main problems introduced by Kant in the third *Critique*. This chapter is crucial for situating the main problem of this dissertation within the overarching project of the KU and critical philosophy in general, viewed as a system. Thus, this chapter introduces the philosophical concepts that are at stake in this Kantian text and it offers a plausible reconstruction of

the main arguments Kant elaborates in the two Introductions of the KU—which contain in a condensed (and at times obscure) way the whole content of the book.

Chapter 2, in turn, contains an overview of the entire "Critique of the Teleological Power of Judgment" section of KU. In this chapter I describe, explain and analyze Kant's Teleological Judgment and all those aspects that are necessary for reconstructing the main argument of this second section of the third *Critique*. Furthermore, this chapter offers a first reconstruction of the key concept of *Naturzweck*. However, this reconstruction is a "provisional" one, since it puts on hold the clarification of this concept through the analogies invoked by Kant. Accordingly, this reconstruction of the concept of *Naturzweck* functions more as a first approximation than an exhaustive and systematic analysis of it. The latter will take place in Chapter 4 and mostly in Chapter 5.

Chapter 3 offers a reconstruction of Kant's concept of analogy, especially in the critical period. Even though Kant remains somewhat ambivalent toward the notion of analogy, and even seems quite critical at times regarding its use for scientific inquiry, he invokes and uses this notion regularly throughout his works. Furthermore, analogy is a technical term in Kant's philosophy, with different meanings and uses. This chapter offers, first, a distinction between mathematical and philosophical analogies, which is the Kantian starting point for any reflection regarding the use of analogy in philosophy. Next, I provide further distinctions within philosophical analogies: namely, analogies of experience, analogy as a mode of inference in its logical function, and symbolic representation. Finally, the chapter concludes with an interpretation of the kind of analogical procedure operating in our teleological judgments about nature. This chapter, accordingly, offers a systematization of Kant's different conceptions of analogy in order to clarify what kind of analogical procedure is at stake in the "Critique of the Teleological Power of Judgment". This is crucial for the dissertation, since it offers a plausible reading of the kind of analogical procedure operating in Kant's Teleological Judgment, especially for enabling us to present indirectly and make sense of the reflective concept of *Naturzweck*—which is something that is far from clear in the Kantian text.

Chapter 4 provides an analysis and interpretation of the role of two analogies used by Kant when he describes living beings judged as *Naturzwecke*: the disanalogy with artifacts and the partial analogy with life. In this chapter, I offer a detailed analysis of these two analogies, highlighting their respective contributions and limitations for understanding Kant's concept of natural end. In order to understand the aforementioned

reflective concept, even the analyses of the analogies dismissed by Kant are necessary, not only because they reveal how reflective judgment eminently operates by means of analogy, but also because they disclose some of Kant's novel contributions regarding natural teleology[259].

In view of this, this chapter provides, first, an historical account of the argument from design in order to establish how Kant distances himself from this history and elaborates instead a critical evaluation of the (dis)analogy between organisms and artifacts. In this part of the chapter, I conduct an overview and discussion of how Kantian literature has construed this analogy with intelligent design (which has been predominantly—and wrongly—equated with the analogy with our causality in accordance with ends). Second, this chapter offers a reconstruction of Kant's conception of life, in order to show how the analogy between life and organisms sheds some light on the concept of *Naturzweck*. However, this analogy is nevertheless shown to be insufficient for accounting it.

Chapter 5 deals directly with the main thesis of this dissertation: the claim that the reflective power of judgment is essentially analogical in its procedure, and our teleological judgments about nature are, in fact, grounded on an original analogy with our causality in accordance with ends, understood as an analogy with our own technical reason. In order to address and justify this assertion, section 5.1 analyses the crucial role of analogy in the KU. While this role is often overlooked in Kantian literature—and, at times, by Kant himself—it is indispensable for forming the two main concepts of the KU, namely, the reflective principle of *Zweckmäßigkeit der Natur* (purposiveness of nature) and *Naturzweck*. Accordingly, this first section of the chapter tackles the place and role of analogy for our reflective power of judgment in general. Sections 5.2 and 5.3 focus on two fundamental questions: How can we properly construe the concept of our causality in accordance with ends? Is this analogy as "remote" (*entferten*) as Kant states, and what is the indispensable role of this analogy for our teleological judgments? These sections are fundamental, since they offer a plausible interpretation of the best way to understand this obscure analogy between organized beings and our technical-practical reason.

[259] Especially his critical view regarding the old argument from design and the persistent comparison between organisms and artifacts.

Section 5.4 turns to the role this analogy plays in biology. If we consider our technical-reason as the source from which we can analogically conceptualize a *Naturzweck*, we can also determine the boundaries of biological knowledge itself. For Kant, *Naturzweck* is the reflective concept that allows us to make sense of living beings as if they had end-directedness and self-organization. And this unavoidable teleological standpoint for judging living beings confronts biology with a serious dilemma in its aspiration to be deemed a proper science. This section tackles this dilemma and highlights the reception of Kant's theory of living beings for subsequent biological thinkers. At the end of this chapter, I offer a brief reflection concerning the role of this analogy for the understanding of our own reason.

Finally, in the Concluding Remarks I highlight the outcomes of this dissertation for Kant studies and for current biological thinking. Even if the temptation is to consider Kant's thinking totally obsolete, I maintain that this is not the case. His main thesis concerning the role of teleology for making sense of living beings is still in force: our very understanding of them is by means of the analogical concept of *Naturzweck*, which means to judge something as self-organized and end-directed. However, this analogical-teleological standpoint that we adopt in order to make intelligible the representation of living beings qua living to ourselves, has nothing to do with mechanistic explanations provided by biology or any science committed to purely causal research. As a consequence, the mechanistic-causal explanation and technical manipulation that biology is hoping to achieve in its scientific investigation is not hindered by our teleological way of making sense of nature's organization.

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Curriculum Vitae

María Constanza Terra Polanco was born in Santiago (Chile), May 24th, 1985. After completing her secondary education at Colegio del Sagrado Corazón in 2003, she enrolled in the BA program of Theory and History of Art at Universidad de Chile. She concluded her BA studies in 2009 with highest distinction. In 2010, she enrolled at Universidad Diego Portales for a MA in Contemporary Thought: Philosophy and Political Thinking. During this period, she worked as an assistant lecturer in Modern Philosophy and Contemporary Philosophy at Universidad Alberto Hurtado. She obtained her MA degree in 2013 with highest distinction as well. In 2014, she enrolled in the joint PhD program at Leiden University Institute for Philosophy and Universidad Diego Portales, and she conducted research in both the Netherlands and in Chile. She continued working as an assistant lecturer and assistant researcher at Universidad Alberto Hurtado and Universidad Diego Portales, respectively.