

Practical embodied cognition as a constructive process: Towards a more complex idea of the world by acting on it

Conhecimento prático corporeificado como um processo construtivo: na direção de uma ideia mais complexa de mundo a partir da ação sobre ele

Carlos Adriano Ferraz¹
Universidade Federal de Pelotas

Abstract

Embodied cognition, which might be traced back to Immanuel Kant's philosophy, is a sort of compatibilist (coupling) perspective regarding the problematic relation between mind and world. The point is that the very idea of an embodiment partly determines all the cognitive processes available to an organism such as the human being, since mind, body, and world interact and influence one another in order to achieve adaptive success in a Darwinian fashion. In this sense, I would like to investigate how some ideas (especially the 'practical cognition' – *praktische Erkenntnis*, according to Kant in the preface of his *Groundwork of the Metaphysics of Morals*) such as the idea of God (of wholeness, since all cognition involves unification into a organic, coherent whole), of morals, and so forth, could be part of our learning about the world. To put it another way, in which sense thinking, e.g. about God, morals, democracy, liberalism etc., is the result of our ability to interact with our environment in order to be a well-adapted species? The embodiment of practical cognition, as well as the theoretical one, is the result of our sensorimotor experiences that, given the plasticity of our brains, enable us to successfully interact with our environment. In sum, "our" world, even from a practical point of view, is not observer-independent: it is the result of our agency on it.

Keywords: cognition, teleology, morals.

Resumo

Conhecimento corporeificado, o qual pode ser rastreado até a filosofia de Immanuel Kant, é uma forma de perspectiva compatibilista (unitiva) acerca da relação problemática entre mente e mundo. A questão é que a ideia mesma de uma corporeificação, em parte, determina todos os processos cognitivos disponíveis para um organismo como o ser humano, uma vez que mente, corpo

¹ Universidade Federal de Pelotas. Instituto de Filosofia, Sociologia e Política, Departamento de Filosofia. Rua Coronel Alberto Rosa, 154, 2º andar, 96010-770, Pelotas, RS, Brasil. E-mail: ferrazca@hotmail.com

e mundo interagem e se influenciam uns aos outros com o propósito de obter sucesso adaptativo em uma perspectiva darwiniana. Nesse sentido, eu gostaria de investigar como algumas ideias (especialmente a de ‘cognição prática’ - “conhecimento prático”, segundo Kant no prefácio de sua *Fundamentação da Metafísica dos Costumes*), como a ideia de Deus (de totalidade, uma vez que toda cognição envolve unificação em um todo orgânico, coerente), de moral e assim por diante, poderiam ser parte de nosso aprendizado sobre o mundo. Em outros termos, em que sentido pensar, por exemplo, sobre Deus, moral, democracia, liberalismo, etc, é o resultado de nossa habilidade de interagir com nosso ambiente com o propósito de sermos uma espécie bem adaptada? A corporificação do conhecimento prático, bem como do teórico, é o resultado de nossa experiência sensório-motor, a qual, dada a plasticidade de nossos cérebros, nos capacitam para bem sucedidamente interagirmos com nosso ambiente. Em suma, “nosso” mundo, mesmo de um ponto de vista prático, não independe do observador: ele resulta de nossa ação sobre ele.

Palavras-chave: cognição, teleologia, moral.

We might find a sort of proto-embodied cognition in Kant’s epistemology. In spite of his well-known rejection of John Locke’s approach, which Kant criticizes in his “Kritik der reinen Vernunft” (A 86/87; B 118/119), in the context of its ‘Analytic of concepts’ (at the core of the deduction of the pure concepts of understanding), Kant does not reject a physiological perspective at all. In the aforementioned part of the KrV Kant is, at any rate, clear about what exactly he rejects regarding Locke’s point of view: “a deduction of the pure *a priori* concepts can never be obtained in this manner” (Kant, 1965, B 119, p. 122), to wit, in the manner in which Locke did it in his essay (Locke, 1996). That is because such “physiological derivation concerns a *quaestio facti*” (Kant, 1965, B 119, p. 122), which means “it cannot strictly be called deduction” (Kant, 1965, B 119, p. 122)². And, as it is very well-known, Kant was looking for a deduction, that is, for a *quaestio juris*, for a rational justification of the theoretical use of the categories of understanding (*Verstand*).

So certainly Kant himself rejected Locke’s physiological derivation. But if we pay due attention to what Kant says in the ‘transcendental aesthetic’, we will acknowledge that Kant did not give up physiology altogether. In it we can find some arguments against the (mistaken) idea of a “nativist Kant”. Surely Kant was not himself an empiricist, nor a sensationist, strictly speaking. I think Kant was in between: he was neither an empiricist nor a nativist. An interesting way of setting it forth is by using a more up-to-date language. According to the current image regarding the mind, it works like devices such as computers. So we have inputs, a processing of these inputs (the information processing), and an output. But the point is that Kant was not a classicist. In Kant’s perspective, the mind does not only mirror the world. It is not a mere passive retrieval device. Even using that up-to-date language, expressed in computational concepts, we might think not only in terms of problem-solving (computational) operations. The organism’s internal cognitive process involves not only computation and representation, but it is also “molded” by its relation with the environment. In other words, through the input information gets into the system, which causes a chain of events inside the device/mind. That is the processing itself taking place. At the end of this same process we have the output. Nowadays the philosophers of mind would call these outputs “propositional attitudes”.

² Locke’s sensationist (Kant calls it “physiological” – *physiologische*) account of perception may be seen in his Essay, especially in Book II, chapter I. That is probably the text Kant had in mind when he called Locke’s deduction a “*physiologische*” one.

Yet, speaking in a Kantian fashion, the input would be called ‘sensation’ (*sensatio*), while the output would be called theoretical cognition. And, given this analogy, Kant will sustain, against both the empiricists and the nativists, that at the first moment we do not have innate ideas (nor do we have only sensations). That is because there must be an order in which that data must be given to us. So in order to understand Kant properly we must pay attention to the fact that for Kant the sensorimotor experience is a compound of sensory stimuli (information) and order (Kant would say: ‘matter’ and ‘form’ of cognition). This means that we are not utterly passive recipients of raw data. We are active agents in this process. There is no order in Nature itself, according to Kant. I mean, at least we, as human beings, are not allowed to know that. On that account, the order ought to be in the agent, in his/her mind, “in so far as the mind is affected in a certain way” (Kant, 1965, B 33, p. 65)³. And the mind is firstly affected: “In the order of time, therefore, we have no knowledge antecedent to experience, and with experience all our knowledge begins” (Kant, 1965, B 1, p. 41). Thus in the beginning lies the sensation, and it always occurs in the framework of time and space (the pure forms of all intuition). But these very ideas, or forms (to put it in a Kantian way), are not ready for us to use them, that is, they are not given innately in our minds. Anyway, they are not given in sensations either. What is innate is “the formal character of the subject, in virtue of which, in being affected by objects, it obtains *immediate representation*, that is, *intuition*, of them” (Kant, 1965, B 41, p. 70-71). The pure forms of intuition are, then, part of the “formal” character of the subject, and this “formal character” is the way in which we are constituted. Kant gives us some clues to understand that, such as when he says that “we know nothing but our mode of perceiving them – a mode which is peculiar to us, and not necessarily shared in by every being, though, certainly, by every human being” (Kant, 1965, B 59, p. 82). In sum, “our nature is so constituted that our intuition can never be other than sensible; that is, it contains only the mode in which we are affected by objects” (Kant, 1965, B 75, p. 93). But the point is that the cognitive process is not fully inside our heads (in our *Gemüt*, as Kant might have put it). It seems defensible that Kant outlined some ideas that might be corroborated by the forthcoming embodied cognition, in spite of his untenable metaphysical foundations⁴.

Anyway, having this background regarding Kant’s epistemology, we may now surmise that there is a missing key idea in Kant’s philosophical approach, to wit, the idea of evolution. Even though he himself seems to recognize the importance of the way we are “constituted” (*Unsre Natur bringt es so mit sich, daß die Anschauung niemals anders als sinnlich sein kann, d.i. nur die Art enthält, wie wir von Gegenständen affiziert werden*) for us to have cognition, he could not go any further.

In any event, I think we must go one step further and try to examine some of Kant’s ideas in the light of evolution as well as of the idea of an embodied cognition, in order to comprehend how cognition, theoretical and practical, occurs in our minds.

So far I was talking about a theoretical cognition. But what about practical cognition? Well, I believe cognition, both theoretical and practical, has only one

³ Here I am following Norman Kemp Smith’s translation, who translated *Gemüt* as mind. But in Kant, as we are going to see, this concept, *Gemüt*, is broader than the word mind would suggest.

⁴ An interesting example was given by Kant himself. In the ‘introduction’ to his *KrV* (B 15, p. 53) he gives this revealing example: “The concept of 12 is by no means already thought in merely thinking this union of 7 and 5; and I may analyse my concept of such a possible sum as long I please, still I shall never find the 12 in it. We have to go outside these concepts, and call in the aid of the intuition which corresponds to one of them, our five fingers, for instance [...]” (Kant, 1965, B 15, p. 53). I believe that this is an unfortunate example to explain Kant’s point. But it is quite illustrative if we are speculating about some of Kant’s insights regarding an ‘embodied cognition’. After all, in his example we see that we are able to formulate and to solve a mathematical proposition by appealing to our body, to the way we are constituted (in this case, to our fingers).

root. Keeping Kant's philosophy as our background, it would be quite enlightening to pay attention to what Kant understood by *Gemüt*, which is usually translated as "mind". The point is that mind suggests a kind of theoretical activity (a speculative – *spekulative* – one). It seems we are talking about a theoretical feature only. But in Kant *Gemüt* refers to the whole of our faculties. And all the higher faculties are the following ones ("The faculties of the mind – *Gemüt* –, namely, can all be reduced to the following three" [Kant, 2000, 245, p. 44]): (i) faculty of cognition (restricted to the faculty of understanding); (ii) feeling of pleasure and displeasure (which refers to the power/faculty of judgment); and (iii) faculty of desire (related to reason) (Kant, 2000, 245, p. 44-45). Each of them has a distinct principle (*lawfulness, purposiveness* and *purposiveness that is at the same time obligation*) and a precise field of application (nature, art and morals, respectively). So mind is not only a faculty of theoretical knowledge: it is also the faculty that allows us to comprehend the whole, I mean, the World in a broader sense, in a sense which may to enfold the theoretical as well as the practical meaning of this same world, understood here therefore as the whole. Those higher faculties constitute what Kant understood as "mind" (*Gemüt*)⁵. Hence mind is a many-sided trait. It enables us to apprehend the whole, giving this World a full meaning.

On that ground I am now interested in investigating the possibility of a "practical embodied cognition", the kind of cognition that paved the way directly to ideas such as the ideas we can find in morals, especially the idea of the whole, which is closely related to idea of God. As a matter of fact, I borrow the idea of "practical cognition" from Kant; but I will give it another perspective. In his "Groundwork of the metaphysics of morals" (Kant, 1999) (*Die Grundlegung zur Metaphysik der Sitten*, 1785), in its preface, Kant, all of a sudden, refers to a *praktische Erkenntnis*, a 'practical cognition', which sounds quite strange if we have in mind that until this work 'cognition' was, properly speaking, theoretical, since it was limited to those boundaries established in the KrV. How could he now, in 1785, just say that there is such a kind of cognition? Well, it is not my aim here to explain why Kant described moral laws (*moralische Gesetze*) as cognition, which must have something to do with the idea that the moral law is, as a theoretical cognition, objectively valid. It is not a matter of faith, nor even of opinion. It is a kind of cognition that lies on a different foundation.

By any means, what I want to investigate here is "what if" we try to explain it in the framework of Darwin's perspective. So "what if" we conceive this practical cognition in terms of evolution as well as in terms of the advances achieved by the philosophy of mind (such as the very idea of an embodied cognition or the idea of an extended mind)?

So let's assume that Kant was right about that: in the practical field we have also a kind of cognition: a practical one. The point is, now, to show that this is a natural process (as a process that involves Nature). In this sense, I am talking here of a kind of "natural autonomy", which is only a self-rule without reference to supernatural powers. This is a way of understanding Kant in a natural perspective, a perspective he would not allow, at least not so explicitly, since the purpose of salvaging metaphysics was part of his agenda. But the point is that I am trying to reconcile the transcendental with Nature: the transcendental grows from our relation with Nature.

⁵ We should not identify *Gemüt* with soul. As we may read in the KrV: "By means of outer sense, a property of our mind (einer Eigenschaft unsres Gemüts), we represent to ourselves objects as outside of us, and all without exception in space. In space their shape, magnitude, and relation to one another are determined or determinable. Inner sense, by means of which the mind (*Gemüt*) intuits itself or its inner state, yields indeed no intuition of the soul (*Seele*) itself as an object" (Kant, 1965, B 37, p. 67).

To that end, as previously mentioned, each of those higher faculties has a principle, a transcendental one, which each faculty applies in order to comprehend Nature properly. In this sense, those transcendental principles are achieved through acting on Nature (not exactly from Nature, as in traditional empiricism, but through our interaction with Nature). A different (outer) Nature would give rise to different (inner) transcendental principles, determining a different judgment of Nature. And all the three principles are somehow connected, harmonized with each other, and the moral principle is the more important one. It has, as it was put by Kant himself in his "Critique of Practical Reason" (Kant, 1993) (*Kritik der praktischen Vernunft*, 1788), the primacy over the theoretical one⁶. And "by primacy between two or more things connected by reason, I understand the prerogative of one by virtue of which it is the prime ground of determination of the combination with the others" (Kant, 1993, 120, p. 126). In sum,

to every faculty of the mind (*Gemüt*) an interest can be ascribed, i.e., a principle which contains the condition under which alone its exercise is advanced. Reason, as the faculty of principles, determines the interest of all the powers of the mind (*Gemüt*) and its own. The interest of its speculative use consists in the knowledge of objects up to the highest a priori principles; that of its practical employment lies in the determination of the will with respect to the final and perfect end. That which is needed in general for the possibility of any employment of reason, i.e., that its principles and assertions not contradict one another, is not a part of its interest but rather the condition of having any reason at all (Kant, 1993, 120, p. 126).

The primacy of the practical over the theoretical/speculative is connected to the idea that the practical reason, which provides a practical cognition, presents to us the "final and perfect end". This kind of idea is not something just "invented" (as in fiction). It is something our mind just apperceives while reflecting about Nature. Therefore theoretical cognition is a sort of by-product, a side effect of this pursuit of that "final and perfect end", of the acquisition of a practical cognition. As Kant himself says, "[...] every interest is ultimately practical, even that of speculative reason being only conditional and reaching perfection only in practical use" (Kant, 1993, 122, p. 128).

Since mechanical explanations (through the category of causality) are insufficient to fulfill the claims of reason, the explanation demands a new approach to Nature, the teleological one (a "para-mechanical" explanation, so to speak). Accordingly, reason is also regulative. There are fundamental ideas of reason such as the ideas of God, freedom, as well as the idea of the World as a whole, that are essential for us to apprehend Nature in its totality. These ideas a sine qua non condition for us to judge Nature as having an asymptotic progress towards a full understanding of it, of its meaning and purpose. It is only through this regulative use of reason that we can see some coherence in Nature. And even this regulative use is, at least as far as I understand it, embodied (I mean: at least it might be understood as embodied, for reasons I am going to discuss later on in this paper). It is the result of an embodiment. At some point it was necessary to judge Nature purposively, that is, according to an idea of a purposively arranged system. The reason for this can be exemplified by using one of Kant's examples: "the internal form of a mere blade of grass can demonstrate its merely possible origin in accordance with the rule of ends in a way that is sufficient for our human faculty for judging" (Kant, 2000, 378, p.

⁶ See Kant (1993, 120, p. 126). See especially the section titled "On the primacy of pure practical Reason in its association with speculative Reason".

250). Nature, as it has appeared before us since the beginning, molded our faculties in order to allow us to know it. Without the very idea of a purpose, for example, many things in Nature would be unknown to us. The artifacts we create are reproductions of what we observe in Nature. Nature taught us how to produce artificial organisms. In the same way we are now producing, for instance, AI, using our own mind as a model, in the distant past we learned how to produce artifacts that behave just like natural organisms, in which we have observed that each part worked for the functioning of the whole. That is how the “transcendental” developed (got embodied) inside our minds: through our interrelation with Nature, which provided us with the idea of a “formative power” (*bildende Kraft*)⁷. We arrived at this very idea by apprehending Nature’s purposiveness. This is a regulative principle, which we can use (our reason) in order to comprehend Nature as a whole. Although it is not a constitutive principle, as the twelve categories of understanding (*Verstand*) are, it is, nonetheless, a necessary principle. After all, how would it be possible for us to judge a natural event such as the one Kant uses to exemplify the very idea of a “natural end” (*Naturzweck*), to wit, a tree? In § 64 (Kant, 2000, 371, p. 243) he illustrates this point firstly explaining that a simple tree generates another tree of the same genus, perpetuating itself generically; secondly, it produces itself as an individual, having as its sustenance the raw material Nature offers. And thirdly, its parts depend, for their maintenance, reciprocally on each other (“one part of this creature also generates itself in such a way that the preservation of the one is reciprocally dependent of the preservation of the others” (Kant, 2000, 371, p. 243). I believe this is a good example, since it points out the way in which the idea of purposiveness was imprinted on us in order to constitute the transcendental principle that allows us to judge Nature as having a meaning. I mean, in a distant past we started to observe this kind of natural event just happening before us. At that time we certainly did not have the idea of purposiveness, but after some time, a long time, our mind was molded by the way we saw Nature (in a relationship that has molded also our senses, which, in turn, determined the way our minds work). In the beginning we probably felt surprised observing such a simulacrum of purposiveness. And the more we observed that purposiveness, the stronger it became. As a matter of fact, it became innate and so extraordinarily complex that we are now able to judge Nature as a coherent whole. Our faculties just work better in such a World. I mean, we are a well-adapted species since we have a well-adapted mind. And what I am trying to argue here is that this adaptation was the result of an embodiment. The transcendental, the more “spiritualized” facet of human nature, has an embodied dimension. And in the order of time it began with some basic sensory experiences (such as in Kant’s tree example), which, along our evolutionary history, brought us to those increasingly faculties, such as the most important of them, the moral one. In this sense, we certainly were not moral agents in the dawn of our history as beings capable of rationality, that is, as a sort of animal that fits the idea of an *animal rationabilis*, which simply means we have a “capacity for reason”, a capacity of directing our lives rationally⁸. At some point we became capable to weigh Nature according to some ends, moral ones. And all these ends sprout from the idea of moral law. This was the first rule. But the question is: “But what kind of law can that be, the representation of which must determine the will, even without regard for the effect expected from it, in order for the will to be called good

⁷ Kant took this important idea from Johann Friedrich Blumenbach (1752-1840), with whom he exchanged letters regarding biological and anthropological themes.

⁸ This does not mean, then, that we are rational animals (as the in the traditional idea of an animal rationale). We are, so, fallibly rational beings. See Kant (1974, 321, p. 183).

absolutely and without limitation?" As is well known, the supreme principle may be stated as follows: "I ought never to act except in such a way that I could also will that my maxim should become a universal law" (Kant, 1999, 402, p. 57). This law, the moral law, is something that *became innate*, in the sense that "common human reason also agrees completely with this in its practical appraisals and always has this principle before its eyes". The innatism of this position can be identified in many parts of Kant's *Groundwork*, such as in that passage in which he says that

we have arrived, within the moral cognition of common human reason, at its principle, which it admittedly does not think so abstractly in a universal form but which it actually has always before its eyes and uses as the norm for its appraisals. Here it would be easy to show how common human reason, with this compass in hand, knows very well how to distinguish in every case that comes up what is good and what is evil, what is in conformity with duty or contrary to duty, if, without in the least teaching it anything new, we only, as did Socrates, make it attentive to its own principle; and that there is, accordingly, no need of science and philosophy to know what one has to do in order to be honest and good, and even wise and virtuous (Kant, 1999, 404, p. 58).

Thus we have this kind of "compass" as a guide that helps us to give Nature a meaning. But the point is, again, that this "compass" became innate after a long time of interaction with Nature itself. It is part of the embodiment of the transcendental, of those elements that make it possible for us to apprehend Nature in a specific framework. This embodied practical law, the moral law, made it possible for us to have the ideas of freedom, immortality and God. In Kant's language, they are postulates. And "the postulates of pure practical reason all proceed from the principle of morality, which is not a postulate but a law by which reason directly determines the will" (Kant, 1993, 132, p. 138). Since we had the moral law before our "mind's eye", it was inevitable to have also such postulates. But in Kant we do not have a suitable, unifying, principle to understand such ideas. But the important point is that Kant recognized that some elements, the formal/transcendental ones, were "awakened into action" with experience. Kant was not aware of the mechanism through which this could have happened. He reached important conclusions without knowing the mechanism that produced such an order in Nature. Anyway, his conclusions are not conflicting with the idea of an embodied cognition, theoretical and practical. He just did not have the key idea in order to understand such an embodiment.

However, in the 19th century things changed. After all, Charles Darwin gave us another perspective through which we can understand more properly the way we are "molded", that is, the way we are thus constituted. Kant took the way in which we are constituted for granted and did not ask about the natural reasons why we are thus formed. This was, for him, something just given. But since Darwin we have an explanation for it, a natural one (which, I believe, does not conflict with the transcendental one).

So since embodied cognition is a "research programme", as it was put by Larry Shapiro in his paper (Shapiro, 2007), let's assume that there is such a practical embodied cognition, that is, let's take a step further, although in doing that we certainly will reach a conclusion Kant did not want to reach (after all, as I just have said above, Kant intention was to salvage metaphysics).

But the point for me here is to see, on Kant's shoulders (*nanos gigantium humeris insidentes*), some ethical themes at another level: the level of metaethics and of environmental ethics. That is because I want to investigate the meaning of some of our moral concepts in the context of our relation with our own environment.

Given I am talking about practical cognition and Nature, let's think about the role the environment plays in the development of this "practical cognition". This assumption would explain the origin of our moral concepts as well as prove the importance of our environment (and the consequent concern we must have with it).

Until the 18th century it was very usual to leap from a teleological judgment of the World to the very idea of a Creator (from the design to the designer). Natural Theology was (maybe it still is, for most people) something quite intuitive. It was usually connected to a physicotheological proof of the existence of God, a proof which Kant defines, in his "Lectures on Philosophical Theology" (1817), in the following way: "The physicotheological proof is the one in which we infer from the constitution of the present World to the nature of its Author" (Kant, 1986, p. 36). Elsewhere in the same text he says: "Human reason has need of an idea of highest perfection, to serve it as a standard according to which it can make determinations" (Kant, 1986, p. 21).

Given this characterization of God, of the whole that serves "as a standard", we might now ask in which sense embodiment determined the practical cognitive processes that allowed us to arrive at the "highest idea". To put it another way, what was the formative role of the environment in the evolution of the practical cognitive processes that gave rise to this kind of idea?

Well, having the "fact" of evolution as our background, we are now able to think the practical cognition as a "dynamic system", which enables us to think about the rising of moral ideas, especially the highest one, the idea – or metaphor – of God, evolving over time in our evolutionary history. The point is that we get to this metaphorical reasoning through the physical properties of our bodies (through their development). While using the metaphor – God/wholeness, e.g. – we are able to understand life and its meaning. That was precisely Kant's concern in 1788, when he wrote the essay "On the Use of Teleological Principles in Philosophy" in order to explain a class of forms, the organized ones, the organisms. The first *Kritik*, *KrV*, had explained Nature in a causal fashion, through the Aristotelian idea of a *causa efficiens*, an efficient cause. But this kind of explanation, given our "nature", was not satisfactory to explain living forms. And Kant was very aware of that. Even in his *Kritik der praktischen Vernunft*, which was also written in 1788, we can find many passages (A 251; A 261; A 285, for instance⁹) in which he claims that it is necessary to judge Nature teleologically – as if (*als ob*) it had some finality (*telos*). The only way to understand life and its meaning is by metaphorically speaking of an Author of this World. Kant has the merit of realizing that point, in spite of his metaphysical conclusions. But he was not aware of the 'fact' of evolution, nor of the principle of adaptiveness. So he borrowed from Blumenbach the idea of a "formative force" (*Bildungstrieb – nisum formativum*) in order to explain the life forms. It was an advance, though, since it represents our ability to see the "big picture" of Nature. At some point of our natural history it proved to be important for us to apprehend Nature as a system, a dynamical one. Other creatures seem to apprehend Nature, if anything, inductively in a plain manner. And that was something David Hume and Charles Darwin both realized, namely, that some creatures (even the lower ones) were molded in order to see a connection between two separate events. This ability is, probably, the result of the interaction between mind and Nature. The more complex this relation became, the more complex the mind itself became, that is, the more complex became the way in which certain life forms started to apprehend Nature. As a matter of fact, our faculties became – together with other

⁹ See Kant (1993, p. 138-168), from 'On the postulates of Pure Practical reason' to 'Methodology of Pure Practical Reason'.

creatures – more and more complex, to the point that we have now reached ideas such as the idea of God. But that’s something we share with non-human animals. As Darwin put it, “the lower animals, like man, manifestly feel pleasure and pain, happiness and misery” (Darwin, 2010, p. 38). In sum, “most of the more complex emotions and many of the more intellectual emotions and faculties are common to the higher animals and ourselves” (Darwin, 2010, p. 42). The basic elements for our social institutions, like religion, for instance, are also present in lower animals. After all: “There is no fundamental difference between man and the higher animals in their mental faculties” (Darwin, 2010, p. 40).

The evolution of morality, so I believe, was the path to the idea of God, and the road to it was a “long and winding road”. First, we started to make inductive inferences. Then, we started to choose among possible ends the ones that are more estimable from an evolutionary point of view. At the dawn of our intentionality, when the life forms were unimaginable simple, we can find the first specialized cells. An interesting description of this point is made by Daniel Dennett:

Four and half billion years ago, the planet Earth was formed, and it was utterly without life. And so it stayed for perhaps half a billion years, until the first simple life-forms emerged [...]. Then finally much larger, more complex cells evolved – eukaryotes – still clueless and robotic, but with enough internal machinery to begin to specialize. So it continued for a few hundred million more years [...] (Dennett, 2003, p. 5).

On that account, early in their evolutionary history, organisms developed the fundamental feature that allowed them to avoid harm and search for benefits. This rudimentary feature showed itself essential for the development of life itself. It was the rise of a useful ability, the ability to expect some regularity in Nature. In the early stages of life on Earth the primeval life forms already postulated an order in Nature in order to survive. And that “order” did not just happen to germinate in our minds, as something already there, just innately ready to use. In fact, the coupling between mind and Nature was necessary. This coupling was a successful marriage, a marriage which gave birth to a mental offspring, in which we can find countless ideas, such as the very idea of regularity. And such ideas just got stronger and stronger, specially with the evolution of a new, and more recent, “trick”, namely, language.¹⁰

As a matter of fact, Nature formed¹¹ the organisms in order for them to apprehend it *as if* there were a regularity in it. If there were a different Nature, we would apprehend it differently, with different categories molded by the way we were molded by our relation with this very Nature.

At any rate, after some millions of years we arrived at an unifying ideal of the World, according to which *nihil est sine ratione*: “Nothing is without reason”. This “spiritual” evolution¹² could only happen simultaneously with the physiological evolution. As we have complex thoughts only because we developed our language, which required the development of our vocal tract, of the physiological basis of our language, the same must have happened with those “spiritual” faculties, the faculties

¹⁰ “In just one species, our species, a new trick evolved: language. It has provided us a broad highway of knowledge-sharing, on every topic. Conversation unites us, in spite of our different languages [...]. No matter how different from one another we people are, scattered around the globe, we can explore our differences and communicate about them” (Dennett, 2003, p. 4).

¹¹ I am not assuming there is any intentionality in Nature itself. That’s something we just cannot assume from a theoretical point of view. Here maybe we see the exact moment for that leap from knowledge to faith. To quote Kant: “I have therefore found it necessary to deny knowledge, in order to make room for faith” (Kant, 1965, B XXX, p. 29).

¹² Understood as the evolution of our intellectual faculties.

that made emotions and other mental states possible. Happiness, as one of those expressions, for example, required the development of our facial muscles, which are the physiological basis for happiness. And happiness itself demanded language in order to be a "propositional attitude". In effect, the expression of our emotions is something just inherited. But in the the past it was not like this. It became, at some moment, innate. And innate here only means that it (the expression of our emotions) was "integrated" into our biological system during our evolutionary history. In other words, they are innate because, at some point, they were important for us to be a well-adapted species. That is what Darwin himself called a 'Lamarckian view'.

But the point I want to emphasize here is the relation between our body formation and the formation of our intellectual faculties, especially the moral one, which is something more recent in our evolutionary history. So, in his notebook N (1838-1839), Darwin gave us a precious insight, the idea that our language started with our ancestors imitating the sounds of Nature. In this sense, the evolution of language involved an interrelation between our ancestors and Nature. And this same evolution, after some time, a long time, gave us language as we know it. The development of this "instinct" was only possible through this mimetic process. Nature, therefore, molded the physiological basis of our language (our vocal tract), which came, by the way, before our mental states (before we could have such states) (see e.g. Sellars, 1997). After all, our minds are molded by language. And language, in its dawn, was molded by Nature. As Darwin put it in his *The Descent of Man*:

[...] I cannot doubt that language owes its origin to the imitation and modification of various natural sounds, the voices of other animals, [...]. As the voice was used more and more, the vocal organs would have been strengthened and perfected through the principle of the inherited effects of use; and this would have reacted on the power of speech. But the relation between the continued use of language and the development of the brain, has no doubt been far more important. The mental powers in some early progenitor of man must have been more highly developed than in any existing ape, before even the most imperfect form of speech could have come into use; but we may confidently believe that the continued use and advancement of this power would have reacted on the mind itself, by enabling and encouraging it to carry on long trains of thought (Darwin, 2010, p. 38).

After being originated from that mimetic process of acquisition, language itself evolved, probably out of adaptive needs, especially the need for communication. There is room for many speculations here. But the point is that it actually evolved. That's a matter of fact (a "truth of fact" – *vérité de fait*). That same evolution made it possible for us to have abstract ideas, such as those ideas that may be put under the aegis of the "truths of reason" (*vérités de raison*), with God being the highest one. So certainly everything in Nature is complex. But we are extraordinarily complex. This extraordinary aspect is remarkable regarding our mental faculties. They distinguish us (in many cases by degree not by kind) from the rest of Nature.

Our relation with Nature was directly influential concerning the acquisition and development of our language (physiologically speaking) and indirectly influential regarding the development of a "metaphorical reasoning", which allowed us to have the ideas we postulate on Nature, such as the idea of the whole (intimately connected to the idea of God, of a designer). The issue here is about that question Dennett puts forth in his *Freedom Evolves*, chapter five, to wit: "Where does all the design come from?"

Evolution through the process of natural selection gave rise to the development of new levels (more complex ones) of freedom. In this sense we have reached

a broader use of inductive inferences. The very idea of induction was probably born in our minds after we perceived that x followed y over and over again (just like in Kant's example of a tree). After some time, a long time, we just arrived at the idea of a sort of *verborgener Plan der Natur*, a "secret plan of Nature". In other words, we started to think about Nature through the idea of a *causa finalis*. And it did not take too long for us to judge Nature teleologically.

As realized by David Hume and Charles Darwin, to think inductively was an important achievement for us, human animals. As a matter of fact, many living forms do that: at some level it is essential for them to make inductive inferences in order to survive. This was an useful custom that became innate (it was imprinted on our *Gemüt*). And it also became as complex as our language: the more complex the living form is, the more complex is the way it judges Nature¹³.

But what we have is only a sort of simulacrum of regularity, which was fortified by the "aliveness" of our past experiences, in which we were able to see event 2 following event 1 repeatedly. In our relation with Nature we (as many other living beings) "learn" how to know it in a causal manner. And this, to our luck, has been usually worked. And here we may assume the proximity between language and causal inferences: in the same way that language is the result of our relation with Nature, our World – Nature plus Culture – is the result of our linguistic interference in it. The evolution of this instinct, and here we have as take for granted the fact of evolution, enabled the extension of mind to Nature. An example taken from D. Chalmers and A. Clark is quite illustrative:

The extraordinary efficiency of the fish as a swimming device is partly due, it now seems, to an evolved capacity to couple its swimming behavior to the pools of external kinetic energy found at swirls, eddies and vortices in its environment (Chalmers and Clark, 1998, p. xx).

The "plasticity of the brain" was essential to this evolution. As we developed our language, the sensorimotor experiences started to serve as a basis for the formation of more complex concepts. So we have now the concepts of God, of purpose, and so on.

Our relation with the World is a two-way road: the way we are embodied is the result of Nature's pressure on us and, at the same time, the way we are embodied determines, through Culture, the way our World is. After all, the way the World partly determines our faculties determines the way the World appears to us.

We see here practical cognition as a constructive process, since the mutual specification between an organism and its environment produces a specific, *sui generis* sensorimotor device. This sensorimotor device is achieved through acting on Nature, in response to its pressure on us. And the same sensorimotor device reflects the manner according to which we are molded by Nature (and by the World as well). If Nature were different, we would certainly be different. Evolution would have required from us a different sensorimotor device. So our ideas referring to this World would be also different. But since we have *this* sensorimotor device (which may be considered something contingent; I mean, since it is the result of our past needs, a different one would be logically possible), we have reached the ideas we

¹³ "The feeling of religious devotion is a highly complex one, consisting of love, complete submission to an exalted and mysterious superior, a strong sense of dependence, fear, reverence, gratitude, hope for the future, and perhaps other elements. No being could experience so complex an emotion until advanced in his intellectual and moral faculties to at least a moderately high level. Nevertheless, we see some distinct approach to this state of mind in the deep love of a dog for his master, associated with complete submission, some fear, and perhaps other feelings" (Darwin, 2010, p. 38).

effectively have in mind while judging Nature, such as the idea of God and the whole. The same, by the way, is true of our social institutions: the ideals of liberalism, democracy, human rights, constitution, and so forth could be comprehended as the result of our interaction with Nature towards a well-adapted state.

Notwithstanding the aforementioned ideas, one question remains: mind, understood as *Gemüt*, as a set of faculties (with transcendental principles of their own), is molded by our relation with Nature, so we had got to the important idea of Nature as the whole (involving both Nature and the transcendental). The more we interact with Nature, the more it gets complex and, incredibly, the more it shows itself as intentional, purposeful. So the question is: is this regularity something that lies in Nature itself?

Well, it was not my aim here to investigate that. My point was only to demonstrate that embodiment is compatible with the transcendental. The problem of an intentionality inherent to Nature itself gives room for another investigation.

References

- CHALMERS, D.; CLARK, A. 1998. The extended mind. *Analysis*, 58:10-23.
- DARWIN, C. 2010. *The descent of man*. New York, Dove Publications, 492 p.
- DENNETT, D. 2003. *Freedom evolves*. New York, Penguin Books, 347 p.
- KANT, I. 1965. *Critique of pure reason*. New York, St Martin's Press, 681 p.
- KANT, I. 1974. *Anthropology from a pragmatic point of view*. The Hague, Martinus Nijhoff, 247 p.
<http://dx.doi.org/10.1007/978-94-010-2018-3>
- KANT, I. 1986. *Lectures on philosophical theology*. Ithaca, Cornell University Press, 175 p.
- KANT, I. 1993. *Critique of practical reason*. New Jersey, Prentice-Hall, 171 p.
- KANT, I. 1999. *Groundwork of the metaphysics of morals*. New York, Cambridge University Press, 156 p.
- KANT, I. 2000. *Critique of the power of judgment*. New York, Cambridge University Press, 325 p.
<http://dx.doi.org/10.1017/CBO9780511804656>
- LOCKE, J. 1996. *An essay concerning human understanding*. Indianapolis, Hackett Publishing Company, 246 p.
- SELLARS, W. 1997. *Empiricism and the philosophy of mind*. Cambridge, Harvard University Press, 176 p.
- SHAPIRO, L. 2007. The embodied cognition research programme. *Philosophy Compass*, 2/2:338-346.

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