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## KANT'S PHILOSOPHICAL METHOD FOR THE SCIENTIFIC INVESTIGATION OF NATURE

Ramazan ERTÜRK\*

How do/should we explain what is going on around us, i.e. in nature, including us human beings? To give an answer to this question has been the central point of all philosophical endeavor since the time of the ancient Greeks. In order to explain nature, either a merely mechanistic or an entirely teleological approach has been presented by various thinkers throughout centuries.<sup>1</sup> Furthermore, these ways of explanations are introduced as if they contradict each other and, therefore, it is impossible to apply both of them to nature in order to explain it. Those who adhere to the merely mechanistic explanation of nature want to leave no room for the teleological approach, and vice versa. But it appears that neither of them can fully explain whole nature by just staying within its own limits. Seeing that neither approach, when taken alone, is enough to do the task, Immanuel Kant thinks not only that these approaches do not contradict each other but also that they both are applicable, and indeed should be applied, to nature if we want to explain the entire nature. In this paper, I will try to analyze why and how Kant applies these two approaches, i.e., the mechanistic and teleological, to nature.

When we want to investigate what happens around us and begin to carry out this investigation, on the one hand, first we think consciously or unconsciously that we will be able to do that. This means that we presuppose that we can overcome the task of inquiry. In other words, it is assumed that nature is appropriate and suitable for our investigation. Secondly, we suppose that we will be able to unify various particular natural laws having numerous diversity in order to have a concept of nature as a whole. Otherwise we would have no need to struggle for such an investigation. Now, the appropriateness of nature for the tasks of both investigation and unification mentioned, is called its purposiveness. And the system trying to explain natural products and nature itself in terms of purposes –in terms of a final causality- based on the purposiveness, is called the teleological approach to nature. On the other hand, we also presume that there should be a physical law governing the investigated natural product(s). What we try to do by means of scientific research is to endeavor to grasp this particular law. If there were no such a law under which our various perceptions of natural products are unified,

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<sup>1</sup> History of thought is full of such approaches and one can easily find many of them in any account of this history. But, in general, middle ages are known as the hey days of teleological approach whereas modern times is the period in which the mechanical approach reaches its peak. For instance, for a good account of the historical development of Western mind's passage from teleological to mechanical approach to nature as it adopts a new scientific method at the beginning of modern era, see Harry Prosch, *The Genesis of 20<sup>th</sup> Century Philosophy: The Evolution of Thought from Copernicus to the Present*, New York 1971; see especially pp. 64-71.

we could gain no knowledge about these products at all. For "laws describe regularities and are employed in order to explain and predict particular occurrences and phenomena"<sup>2</sup>. So, whenever we want to investigate a natural product, we should always seek a law. Furthermore, what is said for a particular natural product here is also valid for nature itself as a whole: For, just like a natural product is, so also "nature is the existence of things, so far as it is *determined according to universal laws*"<sup>3</sup>. In other words, "we have to suppose that the physical world contains a certain order and regularity"<sup>4</sup> working in accordance with universal laws of nature. All these mean that there are necessary relations among various natural products. For "what is characteristic of a law is that it is *fixed and absolute*"<sup>5</sup>. A proposition is a law only because once true, always true, and if true for this person, then also for that one."<sup>6</sup> That is why laws are construed as expressions of necessary relations. Now, the lawly structure working in accordance with necessary relations, is called mechanical structure. And the system explaining nature in terms of such a structure, is called the mechanistic approach to nature. Thus, if we want to obtain the cognition of nature or its products in the proper sense of the term, we should always follow the principle of mechanism. For, unless we presuppose it in our investigation, we can have no cognition of nature at all.<sup>7</sup> After all, since we can leave neither of these presuppositions out, we should find a way of applying these approaches to nature. But before passing on to that, it will be better for us to have a quick look at the meaning of purposiveness and its implications.

Kant introduces purposiveness as a principle of understanding nature as an aesthetic object. And what is interesting more is that he defines purposiveness as "the causality that a concept has with regard to its object"<sup>8</sup>. This definition implies that there is a causal relation between a concept and its object. That is, the concept is the cause and the object, its effect. Here, the concept precedes the object and determines it; and what is aimed at in the concept is the object. It is understood, from these analyses of the

<sup>2</sup> Danto, Arthur and Morgenbesser, Sidney (ed.), "Introduction," in *Philosophy of Science*, New York 1974, p. 178.

<sup>3</sup> Kant, I., *Prolegomena to Any Future Metaphysics*, Indianapolis 1950, p. 42; see also p. 69; italics are added. Hereafter, this work of Kant's will be referred to as "Prolegomena".

<sup>4</sup> Trigg, Roger, *Rationality & Science: Can Science Explain Everything*, Oxford 1993, p. 11.

<sup>5</sup> Italics are mine.

<sup>6</sup> Duhem, Pierre, "Physical Law," in *Philosophy of Science*, p. 189-190.

<sup>7</sup> Kant, I., *Critique of Judgment*, (tr. W.S. Pluhar), Indianapolis 1987, p. 268. This work will be referred to as "Judgment" hereafter. It is worth noting here that some positivist interpretation of science's supposition that nature has a lawful structure goes so far an extreme that they say "scientific investigation can be effective only on the assumption that all phenomena are strictly determined. ... Science is inconceivable without determinism. ... science admits of no accidental occurrences or exceptions to its rules." See Leszek Kolakowski, *Positivist Philosophy: From Hume to the Vienna Circle*, tr. Norbert Guterman, Harmondsworth 1972, pp. 92-93. But the supposition need not be interpreted in such a strict and determinist way like this. It may, and indeed mostly is, interpreted in a much more loosely manner after some modern and postmodern developments in contemporary science.

<sup>8</sup> Kant, *Judgment*, p. 65.

definition of it, that the term 'purposiveness' is closely related to the term 'purpose'. For, according to Kant, "a purpose is the object of a concept insofar as we regard this concept as the object's cause (the real basis of its possibility)"<sup>9</sup>. So, the possibility of an object presupposes the presentation of a purpose -of its concept- as its basis. Then, what does the judgment 'nature is (or natural products are) purposive' mean? If the purposiveness is taken in the foregoing sense and applied to nature, then it seems that this will be in contradiction to the mechanism of nature. For the purposiveness of nature requires a kind of contingency in nature whereas the mechanism of it requires necessary relations functioning there. In other words, on the one hand, our tasks of investigating nature and unifying natural products are empirical and, therefore, contingent while, on the other hand, the functioning of natural laws is a mechanic working and, therefore, necessary.<sup>10</sup>

It was said above that we can not leave the principle of mechanism -nature's productive ability, in other words- out and should always follow it in order to explain natural products. But, "according to Kant, some natural objects, namely, those objects called 'organisms', have the same sort of structure as art objects; they must, therefore, be cognized by means of the same sort of concept"<sup>11</sup> and the principle of mechanism can not do this<sup>12</sup>; in Kant's own words, "it is just as indubitably certain that the mere mechanism of nature can not provide our cognitive power with a basis on which we could explain the production of organized beings"<sup>13</sup>. That is to say, blindly working causes neither can produce such beings nor provide the purposiveness of nature which is suited for human investigation of it. So, in order to account for them, we need another kind of causality which is wholly different and distinct from the mechanism. Here, the purposiveness of nature is called for in order to be used as a basis for the establishment of such a causality.<sup>14</sup> In other words, the things for which mere mechanism is not

<sup>9</sup> Kant, *Judgment*, p. 64.

<sup>10</sup> Mechanical and teleological approaches to nature imply, besides contingency and/or necessity of the structure/working of nature, two other important issues. One is how to explain the existence of free moral agents, like us, for instance, in nature if nature has fixed mechanical structure determined by necessary laws of nature. This issue is, in a sense, the problem of how to combine science with morality. Another issue is the problem of how to combine science with religion. For religion suggests that nature (and universe) is designed by God for some purposes and functions accordingly; that is why it has a teleological structure whereas modern science seems to have the inclination that nature has a mechanical structure working in accordance with natural laws. Hence, Kant's method discussed here may be regarded as a good combination of the following three elements of human existence: scientific knowledge, aesthetic feeling and moral agency.

<sup>11</sup> Jones, W.T., *A History of Western Philosophy: Kant to Wittgenstein and Sartre*, New York 1952, p. 96.

<sup>12</sup> Heimssoeth, Heinz, *Immanuel Kant'in Felsefesi*, tr. Takiyettin Mengüşoğlu, İstanbul 1986, p. 175.

<sup>13</sup> Kant, *Judgment*, p. 269.

<sup>14</sup> Another difference between the two causalities, apart from the necessity-contingency difference mentioned above, may be described in this way: In the mechanical causality we look behind and find the cause(s) of an existing state of affairs in the antecedent event(s) whereas in the teleological causality we look ahead and

adequate to explain, are to be accounted for in terms of purposes –or final causes- which are meant to be based on the purposiveness of nature. Since we neither can abandon the mechanism nor are contented with it to explain nature, we should solve the problem of contradiction –if there is one- between the two principles and apply both of them to nature. But first it is worthwhile to examine whether there is a real contradiction between them, and if there is not, where the case which seems to be a contradiction stems from.

To explain nature requires us to pass judgments about it. In order to pass a judgment, we need concepts. But whenever we want to arrive at concepts concerning the natural laws in experience, we also need maxims or standards for this purpose. Since we have different kinds of judgments, the required maxim depends on the judgment we aim to pass. Thus, if the aimed judgment is a determinative one, the task of our faculty of judgment is only to subsume or to specify the conditions of sensible intuition under laws or concepts that are given it as principles by the understanding; for the faculty of judgment has no principles of its own to form the basis for concepts of objects. But if the judgment is a reflective one, then, the faculty of judgment should perform two tasks. First, it has to give a principle to itself because no concept of the object given by the understanding is adequate as a principle for the case. Secondly, it has to subsume under such a law what is to be subsumed. So, since this law is not given beforehand by the understanding as an objective law, it is only a principle of reflection on certain objects and “can not provide an objectively adequate basis for cognizing the object; it has to serve as a merely subjective principle governing the purposive use of our cognitive powers –i.e., our reflection on a certain kind of objects”<sup>15</sup>. Now, our faculty of judgment has to unify particular natural laws and establish the unity of nature in order to reach a coherent empirical cognition of it. This unity can be achieved by means of reflection, not the determination. For if the unity were prescribed a priori to nature by the understanding, then, it would already be there in nature and we would need no such a unifying struggle at all. Our power of judgment may presuppose the following two maxims as it reflects on this unity<sup>16</sup>:

- All production of material things and their forms must be judged to be possible in terms of merely mechanical laws.

- Some products of material nature can not be judged to be possible in terms of merely mechanical laws. (Judging them requires a quite different causal law –viz., that of final causes.)

These are maxims for reflective judgment. Here, there is no contradiction between them. For the first maxim is only pointing out that human beings ought always to reflect

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find the cause(s) of an existing state of affairs in the future end(s) for which it is designed to serve; that is why the latter causality is sometimes called final causality.

<sup>15</sup> Kant, *Judgment*, p. 266.

<sup>16</sup> Kant, *Judgment*, p. 267.

on these events in terms of the mere mechanism of nature, and therefore they ought to search for this principle as far as they can. Reflecting on natural products according to the second maxim is not against this principle since such a reflection neither negates nor is empty of a reflection in terms of the first maxim. For the second maxim claims only that human beings –though they may obtain other cognitions of natural laws- can discover no basis for the organized natural products if they reflect on them only in terms of the first maxim.<sup>17</sup> But if these two principles are taken as objective principles for determinative judgment, here arises the problem of contradiction. For, then, they are read as follows<sup>18</sup>:

- All production of material things is possible in terms of merely mechanical laws.
- Some production of material things is not possible in terms of merely mechanical laws.

Now, what is the difference between the first expressions and the second ones stated above, i.e., the difference between being a maxim for reflective judgment and a principle for determinative judgment? The following quotation from Kant will clearly give the exact answer to this question:

There is clearly a big difference between saying that certain things of nature, or even all of nature, could be produced only by a cause that follows intentions in determining itself to action, and saying that the peculiar character of my cognitive powers is such that the only way I can judge how those things are possible and produced is by conceiving, to account for this production, a cause that acts according to intentions, and hence a being that produces (things) in a way analogous to the causality of an understanding. If I say the first, I am trying to decide something about the object, and am obliged to establish that a concept I have assumed has objective reality. If I say the second, reason determines only (how I must) use my cognitive powers commensurately with their peculiarity and with the essential conditions (imposed by) both their range and their limits. Hence the first is an objective principle for determinative judgment, the second a subjective principle for merely reflective judgment and hence a maxim imposed on it by reason.<sup>19</sup>

Thus, the root of contradiction, according to Kant, is to take the two principles as objective principles for determinative judgment while they are subjective ones for reflective judgment. In other words, the contradiction mentioned here is not a real contradiction, but a “dialectical illusion which arises from our making the subjective conditions of our thinking objective conditions of objects themselves, and from making an hypothesis necessary for the satisfaction of our reason into a dogma”<sup>20</sup>.

<sup>17</sup> Kant, *Judgment*, p. 268.

<sup>18</sup> Ibid.

<sup>19</sup> Kant, *Judgment*, p. 280.

<sup>20</sup> Kant, *Prolegomena*, p. 96.

But one may still ask the question: 'Is nature itself not purposive? If it is so, how can a principle which is based on a purposiveness ascribed to nature, i.e., the principle of teleology, be a subjective one?' Kant's answer to this question would be as follows: As mentioned in the quotation above, the concept of an objective purposiveness of nature is a *critical* –not a dogmatic– principle of reason for our reflective judgment<sup>21</sup>; that is to say, "we consider it only in relation to our cognitive power, and hence in relation to the subjective conditions under which we think it, without venturing to decide anything about its object"<sup>22</sup>. Another meaning of purposiveness introduced by Kant, which is quite different from the meaning pointed out earlier, explains the kind of purposiveness nature has. Kant describes this meaning in the following way: "We do call objects, states of mind, or acts purposive even if their possibility does not necessarily presuppose the presentation of a purpose; we do this merely because we can explain and grasp them only if we assume that they are based on a causality that operates according to purposes"<sup>23</sup>. If we consider natural products as being purposive in this way, we can say that we are able to find, without presupposing the concept of the object as a real basis of its possibility, that certain objects which occur in nature are purposive in the mere empirical apprehension of them in intuition, namely, purposive merely in relation to the subjective conditions of the power of judgment. Thus, in judging natural products aesthetically, we neither make an objective judgment concerning their possibility nor claim that they are natural purposes, but declare them only purposive in relation to the subject's presentational power. Here, the principle of purposiveness functions only as a *heuristic* maxim, not as a constitutive or determinative maxim.<sup>24</sup> In other words, "the concept of purposiveness is not at all a constitutive concept of experience; it is not a concept that can determine an appearance and so belong to an empirical concept of the object; for it is not a category. Rather, we perceive purposiveness in our power of judgment insofar as it merely reflects on a given object. ... So, it is actually *the power of judgment* that is technical, [i.e., purposive]; nature is presented as technical only insofar as it harmonizes with, and so necessitates, that technical procedure of judgment"<sup>25</sup>. But is it not the case in a teleological judgment

<sup>21</sup> Kant, *Judgment*, p. 280.

<sup>22</sup> Kant, *Judgment*, p. 277.

<sup>23</sup> Kant, *Judgment*, p. 65. W.T. Jones calls this notion of Kant's 'purposiveness-without-purpose'; see Jones, pp. 96-97.

<sup>24</sup> Heimsoeth, pp. 178-179. It is interesting that Kant seems to be on the side of mechanism in our investigation of organic nature more than some contemporary positivist philosophers of science do. For he suggests that the essential and constitutive principle in our investigation of organisms must be the principle of mechanism, and the principle of teleology should have only an auxiliary (or complementary) and a heuristic function in this investigation whereas some contemporary philosophers of science, Carl G. Hempel, for instance, suggest that the principle of mechanism is best construed as a heuristic principle in our explanation of biological processes. See Carl G. Hempel, *Philosophy of Natural Science*, Englewood Cliffs 1966, p. 106.

<sup>25</sup> Kant, *Judgment*, p. 408.

that we presuppose a concept of the object and judge how the object is possible in terms of a law governing the connection of causes and effects? If this is the case, then, is it not that the purposiveness here is not merely for the way we present them but for the possibility of things themselves? Now, before passing on to the solution of this problem, an important point should be made clear. The point is this: Saying that certain natural products are purposive is quite different from saying that they are natural purposes in the sense of *natural intentions*. That is why Kant admits the purposiveness of natural products as the purposiveness for their possibility in an objective sense and calls it 'the organic technic of nature' though he does not admit these products as natural intentions.<sup>26</sup> For experience can show us that certain natural products are or all nature is purposive, but it can not show anything with regard to their being intentions. "So whenever we encounter, in experience, something belonging to teleology", says Kant, "it refers objects of experience solely to judgment, namely, to a principle of this power by which, as reflective judgment, it legislates to itself (not to nature)"<sup>27</sup>. Thus, the concept of final causes about natural products belongs merely to our reflective judgment, and the principle of teleology is a subjective principle in this sense.

Now, we know from experience that investigation of most natural products leads us to judge that they are aggregates, and that natural causal laws work among them. Nonetheless, a complete explanation of nature requires us to judge that another kind of causality must be working in nature since the natural causal laws neither can articulate the purposiveness of nature in order that it be investigated by the human mind nor can provide sufficient explanation for *all* of natural products. So, "insofar as nature's products are aggregates, nature proceeds *mechanically, as a mere nature*; but insofar as its products are systems, -e.g., crystal formations, various shapes of flowers, or the inner structure of plants and animals- nature proceeds *technically, i.e., it proceeds also as art*"<sup>28</sup>. Such a distinction between two ways of judging nature's products is something that only reflective judgment can do. For the task of determinative judgment is to determine appearances under the guidance of categories supplied by the understanding, that is, its nature is such that it wishes to have everything reduced to a mechanical kind of explanation and does not allow to make the foregoing distinction concerning the possibility of things themselves. Thus, there is no contradiction or inconsistency between a mechanical explanation of an appearance, which is the task of determinative judgment performed in terms of objective principles called categories given by the understanding, and a technical rule for judging the same appearance in terms of

<sup>26</sup> Kant, *Judgment*, p. 423.

<sup>27</sup> *Ibid.*

<sup>28</sup> Kant, *Judgment*, pp. 405-406. For a detailed analysis and a good evaluation of seeing nature in these two different ways, as an aggregate or a complex system, see Alfred North Whitehead, *Concept of Nature*, Cambridge 1964.



subjective principles of reflection on this appearance.<sup>29</sup> In other words, the function of the principle of teleology which is a regulative principle for the knowledge of nature is entirely different from the function of the principle of mechanism of nature which is a constitutive principle for this knowledge. The most important point characterizing each of these two ways of judging nature, as Kant himself points out, is that every concept concerning teleology belongs to reflective judgment and is subjective since it is based on judgment's own principle which does not concern the possibility of things themselves but concerns our logical use of the power of judgment, whereas every concept concerning the mechanism of nature belongs to determinative judgment and is objective since it is based on the objective principles of understanding which concern the possibility of things themselves –i.e., categories as the objective constitutive principles of appearances.<sup>30</sup>

Kant insistently gives the evaluation of these two ways of judging nature as subjective and objective considerations, i.e., the teleological way as subjective and the mechanical way as objective. Here arises another problem with regard to this evaluation. Why is the teleological way of judging described as a subjective one and the mechanical way of judging as an objective while both the power of judgment and the understanding, which provide, in turn, the principles on which these ways are based, belong to human beings? To put it in another way, why is the explanation of nature on the basis of categories an objective explanation and the explanation of it on the basis of purposiveness a subjective judging of nature; even more strictly speaking, why is the principle of purposiveness accepted as a subjective principle while the categories are allowed to be objective principles though the roots of both principles are human beings? And what does Kant mean by the terms 'subjective' and 'objective'? To determine, first, the meaning of the foregoing terms in Kant's usage here will be helpful for the solution of the problem concerning his evaluation of the two ways of judging nature.

Kant gives two criteria to be used to determine whether a claim to knowledge is subjectively or objectively valid: Universality and necessity. Accordingly, a claim to knowledge is objectively valid if it is *universally* and *necessarily* valid, for all thinking and knowing beings; but it is subjectively valid if it is valid only for some of these beings, valid for human beings only.<sup>31</sup> In this case, the mechanical explanation of nature will be valid for all thinking and knowing beings whereas the teleological explanation, for only human beings. That is to say, since the categories represent the conditions for the possibility of an experience of an objective world, every being capable of experiencing an objective world experiences it, i.e., constitutes its experience, necessarily in terms of the conceptual structures called categories whereas the principle

<sup>29</sup> Kant, *Judgment*, pp. 405-406.

<sup>30</sup> Kant, *Judgment*, p. 402, and also p. 423.

<sup>31</sup> Kraft, M., "Thinking the Physico-Teleological Prof," *International Journal for Philosophy of Religion* 12 (1981), p. 66.

of purposiveness is not necessary for the constitution of every such experience, but is necessary only for human experience of that world. Thus, the way in which we judge teleologically is an explanation made only from a human point of view while the mechanical explanation is made from a universal point of view. But an important point should be made clear, here, that the subjectivity of the teleological explanation does not mean that it is an arbitrary or a relative fiction; on the contrary, this explanation claims the assent of all human beings, and its subjectivity signifies only that the validity of this claim is restricted to humankind.<sup>32</sup> Kant's statements quoted below indicate this issue: "Indeed, absolutely no human reason (nor any finite reason similar to ours in quality, no matter how much it may surpass ours in degree) can hope to understand, in terms of nothing but mechanical causes, how so much as a mere blade of grass is produced. For it seems that judgment is quite unable to study ... how such objects are possible, without using the teleological connection of causes and effects. ... It seems that there is absolutely no possibility for us to obtain, from nature itself, bases with which to explain combinations in terms of purposes; rather, the character of human cognitive power forces us to seek the supreme basis for such combinations in an original understanding".<sup>33</sup> Now, our problem concerning Kant's evaluation of the mechanistic and teleological principles has turned out to be the problem of how Kant asserts that the categories are valid principles for all thinking and cognizing beings, no matter how they think and cognize, without restricting them to human beings. Indeed, I am a little bit doubtful about whether this is a fair or justifiable generalization of the situation of human understanding to all other thinking beings by using human reason as a paradigm. On what ground does Kant claim that our way is the only way of understanding and cognizing nature? Is it not possible that another kind of cognizing being can experience an objective world in a different way from ours? From just the opposite side of the issue, these questions are also valid for Kant's restriction of the principle of teleology to human species alone. The solution of this problem surpasses the limits of this paper since it requires an examination of the whole argument of Kant's philosophy. But we can say, at least, that we can not know and therefore judge on these principles as Kant does because we do not know the epistemic nature of other possible cognizing beings as we do ours.

Let us turn to how Kant applies both the mechanical and the teleological approaches to natural products and nature itself. It has been said that Kant considers categories and, therefore, the principle of mechanism of nature, which is based on them, as the constitutive principle, and thinks that the principle of teleology is a regulative principle, -even though it is accepted as a constitutive principle for human comprehension and thinking of nature- for an objective knowledge or experience of nature. But when and to what extent will we use each principle, according to Kant?

<sup>32</sup> Kraft, M., "Kant's Theory of Teleology," *International Philosophical Quarterly* 22 (1982), p. 48.

<sup>33</sup> Kant, *Judgment*, p. 294.

Kant's restriction of the use of the teleological principle gives the answer to this question. He maintains that all possible mechanical explanations should be tried and exhausted before the invocation of the teleological explanation; that is, the teleological principle is called for and given a chance only after no mechanical explanation works any more. Kant points out this manner of employment as follows: "In our empirical investigation of nature in its causal connection, we can and should endeavor to [proceed] in terms of nature's merely mechanical laws as far as we can, for in these laws lie the true physical bases for [an] explanation [of nature, the bases] which [in their] coherence constitute what scientific knowledge of nature we have through reason"<sup>34</sup>. Here, one may ask the question 'how we know that all possible mechanical explanations have been exhausted and the way of explanation by means of teleological principle should be tried'. Kant would answer this question in this way: If we identify the object or the natural product before us as an object of teleological investigation, we can decide that we should use the teleological principle to explain it. Since to be a particular object of teleological investigation means to be a natural purpose, Kant articulates what makes an object a natural purpose. A thing or an object is a natural purpose if it is both cause and effect of itself.<sup>35</sup> He clarifies this paradoxical definition by an example, a tree, and gives three criteria of being such an object or a thing. So, an object is a natural purpose if it has the following characteristics: 1-It should preserve itself as a species. A tree generates itself ceaselessly in its species; thus, it is both cause and effect of itself. 2-It also should reproduce itself as an individual, by means of its growth. Since a tree assimilates other elements until they have the quality peculiar to its species –a quality that the natural mechanism outside the tree can not supply, its growth is –in some sense– a reproduction of itself individually. 3-There should be a mutual dependence both among various parts of it and between these parts and the whole for their maintenance. The life of leaves depends on both branches and tree, and vice versa.<sup>36</sup> Thus, the object of teleological investigation is an organized individual being –not an aggregate– which reproduces itself by means of its species and grows from within organically by metabolizing elements from the environment –does not increase in size by simple additions– and survives because of a mutual functional dependency between its organs and itself.

Since the investigation of nature is reason's execution of its spontaneous activity in nature, an examination of this execution means the examination of this investigation; that is, an inquiry of how reason carries out its activity in nature is a study of the method of the investigation of nature. That is why Kant's explanation of the way reason works in an empirical investigation also articulates how he applies both the mechanical and the teleological approaches to nature as a sum total of all experiences. According to Kant,

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<sup>34</sup> Kant, *Judgment*, p. 424. See also Heimsoeth, pp. 177-178.

<sup>35</sup> Kant, *Judgment*, p. 249.

<sup>36</sup> Kant, *Judgment*, pp. 249-250.

reason's relation to objects is never an immediate relation. It comes into a relation to objects by means of its subordinate powers such as the understanding, judgment, imagination, senses and etc. In the case of empirical employment of it, reason's direct and immediate relation is to the understanding; through the understanding it provides its connection with empirical objects. It is the understanding which creates the concepts of these objects. So, it may be said that the power in terms of which we obtain the empirical knowledge of nature by means of its concepts is the understanding.<sup>37</sup> But what is the function peculiar to reason itself with regard to this knowledge? Reason's function is to order and harmonize the concepts of the understanding and to give them a unity in terms of ideas; in Kant's own statements, "just as the understanding unifies the manifold in the object by means of concepts, so reason unifies the manifold of concepts by means of ideas, positing a certain collective unity as the goal of the activities of the understanding, which otherwise are concerned solely with distributive unity"<sup>38</sup>. In other words, "it [i.e., reason] prescribes and seeks to achieve its systematisation, that is, to exhibit the connection of its parts in conformity with a single principle"<sup>39</sup>. Now, neither the understanding itself directly connects its categories with the empirical concepts of the object nor does reason itself directly unify the manifold of concepts. Here, the power of judgment comes into the process to do this dual task. If it constitutes the empirical concepts in conformity with categories, we call it 'determinative judgment'; but if it combines various concepts in a systematic unity in conformity with ideas, we call it 'reflective judgment'. It is called 'determinative' in the first case because its guide is a category –the category of causality in terms of natural laws in the case of nature- to which a correspondent can be found in nature whereas it is referred to as 'reflective' in the second case since its guide is an idea –the idea of teleology in the case of nature- to which a correspondent can not be found in nature, but only in human reason. Thus, what we call 'the mechanical approach to nature' is the first kind of explanation of it and 'the teleological approach', the second kind. To put it another way, reason demands that we should explain the series of conditions given to us in our consciousness with regard to the experience of the world. But the demand of reason does not stop here, but goes beyond and wants us to complete the series. For "human reason has a natural tendency to transgress these limits"<sup>40</sup>, i.e., the limits of possible experience. Indeed, "what reason is really seeking in this serial, regressively continued, synthesis of conditions, is solely the unconditioned"<sup>41</sup> from which the series could be derived. For otherwise the series would not be completed. Thus, the activity of reason reaches a higher unity in a problematic universal idea in such a completion. Kant elucidates the two ways of using

<sup>37</sup> Kant, *Prolegomena*, p. 69.

<sup>38</sup> I. Kant, *Critique of Pure Reason*, B672.

<sup>39</sup> *Ibid*, B673.

<sup>40</sup> *Ibid*, B670.

<sup>41</sup> *Ibid*, B444.

reason in this process as follows: If the universal is already given and certain in itself, then, we use our reason to reduce the particular from the universal in a necessary manner by means of determinative judgment. Kant entitles such a usage the *apodeictic* use of reason.<sup>42</sup> The outcome of this usage is called *knowledge*. But if what is certain and given is only the particular, then, both the universal itself and the universality of the rule of which the particular is a consequence, are problematic. In this case, we examine whether several certain particulars follow from the universal according to the rule. If it seems that all particulars follow from it, we justify its universality and hypothetically extend it to all possible particulars, even to those that are not themselves given. Kant calls this kind of usage the *hypothetical* employment of reason.<sup>43</sup> The result of this usage is named thinking, which is based on an idea viewed as a problematic concept. The universality of the second case is not as strict as the first one because we can not be sure about it on the basis of certain given particulars. In fact, it is what inductive arguments do in sciences. As is known, the universality of an inductive argument is never an absolute universality, but only a hypothetical universality. That is why this principle is a regulative --not constitutive- principle; and "its sole aim is, so far as may be possible, to bring unity into the body of our detailed knowledge, and thereby to *approximate* the rule to universality"<sup>44</sup>. For this unity is the criterion of the truth of the rules of the understanding.<sup>45</sup>

In conclusion, a teleological explanation of nature does not contradict to a mechanical explanation of it; on the contrary, it helps to attain a complete explanation of nature by overcoming the inadequacies in the ability of mechanical explanation to do so. But there is a condition for such a consideration. The condition is to use each principle of explanation where and how it should be used. Therefore, since one explanation --i.e., the mechanical- restricts the capacity of human reason to knowledge of non-organisms alone and the other can not find strict empirical bases for itself in nature, we can leave out neither the mechanical nor the teleological approach to nature if we would like to have a complete explanation of it by using our rational capacity entirely. Furthermore, as we see earlier, this much is certain that the character of our reason forces us to subordinate all those mechanical bases to a teleological principle.<sup>46</sup> Thus, a complete and a unitary explanation of nature requires us using entire capacity of our reason --i.e., including both the regulative and the constitutive use of our reason; but this is possible only applying properly, without confusing them by using one instead of the other, both the mechanical and the teleological approaches to nature at the same

<sup>42</sup> Ibid, B674.

<sup>43</sup> Ibid.

<sup>44</sup> Ibid, B675.

<sup>45</sup> Ibid.

<sup>46</sup> *Judgment*, p. 300.

time. This is both the only and the best method, according to Kant, for our scientific investigation of nature.

### ÖZET

Bilimsel doğa araştırması için en iyi felsefi yöntem nedir? Düşünce tarihi boyunca bu soruya verilen cevaplar, iki temel kategori altında sınıflanabilirler: Doğaya yapılan *Teleolojik* ve *Mekanik* yaklaşımlar. Bu yaklaşımların çeşitli izahlarından anlaşılmaktadır ki her bir yaklaşım, onunla çatıştığı gerekçesiyle, diğerini dışlayan bir alternatif olarak sunulmaktadır. Fakat, Aydınlanma felsefesinin köşe taşlarından biri olan İmmanuel Kant, bilimsel doğa araştırması için en iyi felsefi yöntemin bu iki yaklaşımın her ikisinin de doğaya uygulanması olduğunu ve bunu gerçekleştirmenin de zannedildiği gibi çatışkılı/çelişkili bir durum olmadığını ileri sürmektedir. Bu makale, Kant'ın bu işi, yani, görünürde çatışkılı olan bu iki yaklaşımı doğaya uygulama işini, niçin ve nasıl gerçekleştirdiğini analiz etmeyi amaçlamaktadır.

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