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#### THE PROBLEM OF CAUSALITY IN KANT AND WHITEHEAD

In my opinion two major trends prevail at the present time in the reflection on the gnoseological problem of perception: One is the representative theory of perception, which deals with the manner of relating two distinct and unrelated kinds of entities. They include, on the one hand, perceptive phenomena such as psychic or, more generally, mental phenomena, and, on the other hand, perceived objects such as external and self-subsistent objects. The other point of view, a decidedly new trend in the history of philosophical thought, purviews scientific and mathematical advancements. From this perspective, perception is analysed as a physical phenomenon closely related to all other aspects of reality and, as such, analysable by the same instruments used for physics.

Yet, both of these perspectives - each equally functional within its given frame - represent only a partial view of the perception phenomenon in its entirety. It is thus my principal aim in this paper to demonstrate how the two can be considered together to provide a more complete analysis through their "complementarity". I should like to point out here that complementarity does not refer to the mere alternation nor to the simple synthesis of the two concepts. Rather, it refers to the interpretative criterion that has been elaborated in modern physics to replace the causality concept, deemed too rigid and unitary a scheme for interpreting phenomena which require a complex and stratified evaluation.<sup>1</sup>

In terms of semiotical theory, this study can be considered as an analysis of the cognitive "repertoire of medium" from a historical perspective, as well as in the light of how it has been characterized in the present stage of philosophical thought.<sup>2</sup>

As such, it can be defined as pre-semiotical, although the possibility of developments leading to a strictly semiotical analysis should be excluded.

It should be obvious then why I have chosen to compare two authors so divergent both historically and conceptually as Kant and Whitehead. I shall

first discuss an aspect of Kant's criticism which constitutes a historical overview of representation theory I consider still valid for the rigour as well as geniality of the problems posed. I shall then compare him with Whitehead, whose scientifically motivated reflection aims at refuting the theoretical premises of representation theory culminating in Kant.

I should like to make an initial consideration regarding the Kantian theory, which has been reputed as marking the end of scepticism and the dawning of a rigorously objective and scientific movement. In my opinion, this holds true only for philosophical and scientific thought, while it does not apply to the problem of common knowledge and purely perceptive ordinary experience. In fact, the causality concept, proposed by Kant to solve the problem of the relationship between the representation of things and things themselves, can be considered an element inherent in scientific judgments. Valid as such, despite its limitations, it cannot, however, be applied to ordinary experience, insofar as it fails to provide the ultimate explanation for knowledge data.

It is thus necessary to refer to the part in which Kant arrives at a demonstration of the law of causality in the *Kritik der reinen Vernunft* where he states that the synthetic unit of the "sinnliche Mannigfaltigkeit", which constitutes the essential part of a knowledge of objects of the sense, cannot be given by perception itself because "... die Wahrnehmungen nur zufälligerweise zueinanderkommen, so daß keine Notwendigkeit ihrer Verknüpfung aus Wahrnehmungen selbst erhellt, noch erhellen kann..."<sup>3</sup>

Kantian argumentation relative to the law of causality can be viewed in three parts. Firstly, it is asserted that perception alone cannot determine the "objektive Verhältnis" of phenomena because it does not establish the necessity of their succeeding one another, next, it is explained that, as a result, the "Verhältnis der Ursache und Wirkung" is only an intellectual concept that cannot be found in direct and immediate experience (furthermore in the gnoseological process described by the *Kritik der reinen Vernunft*, the causality category - as do all intellectual categories - corresponds to the second phase of Kant's critical-cognitive itinerary) only after it has been recognised as an intellectual law for explaining phenomena can the causality relationship become a constitutive condition for their occurrence, and neither can it extend beyond this purely transcendental function, all being

resolved within the field of phenomenological experience.<sup>4</sup>

From a semiotical point of view, perception belongs to Peirce's category of "Firstness" as, occurring "first" in experience, it constitutes the immediate cognition of that which is not clearly differentiated. The causality concept instead is a function that can be redirected into the category of "Secondness" which is, in my opinion, the typical modality of scientific knowledge: that which succeeds a given firstness, defined as the only possible cognitive range.

To confirm this thesis, it would be necessary to refer to the whole *Transzendental Analytik* in which Kant states that the "sinnliche Mannigfaltigkeit" or the "raumzeitliche Anschauungen" or "Erscheinungen"<sup>5</sup> - all of which can be assigned to the firstness category - are the sole legitimate object for the arrangement and patterning of the intellect.

However, I shall refer to only one part which is particularly relevant to a certain type of objection, while representing one of the most characteristic elements of Kantian criticism.

It is within the very context of the demonstration of the law of causality that Kant states that men deal only with their own representations and that the way things can be in themselves (without referring to their representations - the way which they impress men) is absolutely beyond men's cognitive sphere. According to this transcendental view, it is not possible to explain how things in themselves can condition knowledge.<sup>6</sup> Rather, this impossibility - far from presenting a limitation for knowledge - is what guarantees its objectivity. This is true insofar as object is defined as that which in phenomena contains the condition of this necessary rule<sup>7</sup>, that is, the rule of the unification of the *sinnliche Mannigfaltigkeit*: in the case in question, the category of causality. It should be noted that the "transcendental" point of view is not the common one, the one dealing with direct and immediate experience and with objects, the material existence of which cannot be denied, but rather it is the view of the philosopher or scientist who consider objects of reflection as being this first gnoseological stage.

The gnoseological perspective by Kant is open to two kinds of objections: the first, that it is incompatible with a series of phenomena found in the most

primitive and not "transcendental" realm of experience, and the second, that is equally unsuitable for interpreting knowledge derived from the most recent theories of physics. With reference to the latter objection, it seems to me that Kant's causality concept does not supersede the mechanistic and deterministic theories of the physics of his day. Nonetheless, the innovative elements in his system - which I do not intend to deny or underestimate - are to be sought elsewhere. This view sharply contrasts with that of the majority of Kant's critics who have identified the causality principle as one of the elements that upset the Cartesian and Newtonian conception of space, laying the theoretical groundwork for modern physics.<sup>8</sup>

The first objection that can be made is that modern physics have already brought about a significant change within the definition of the causality principle itself, which states that all changes occur according to the law of cause and effect.<sup>9</sup> The second objection is that the character of synthetic unity, which is constitutive of the concept of causality, as Kant has repeated throughout his work, is incompatible with atom physics in which it has been replaced by the "principle of complementarity".

Today, it is accepted that atomic-nuclei do not exhibit stability even when external influences are lacking. Observations made from experimental data based on the breakdown of atomic nuclei subject to no external intervention have led physicists to replace the term "change", a concept closely related to cause, with a term that adheres more to the interpretation of the phenomenon: that of transition processes between two stationary states.<sup>10</sup>

In order to avoid arriving at a unitary scheme for explaining phenomena through the principle of causality, the following clarification should be made. Whereas the theory of relativity was confined to acknowledging and evaluating the different mode in which observers in relative motion perceive the same object, maintaining the validity of the causality principle, atom physics has gone a step further by demonstrating that the inevitable interplay between measurement instruments and objects makes it impossible to consider the behaviour of atomic objects independently from their observational tools.

On the level of atomic theory, Heisenberg had already formulated, as a consequence, the "principle of indetermination", which expressed the impossibility of simultaneously measuring both the position and motion

quantity of an atomic particle in any restricted area of space. In the field of philosophical thought, on the contrary, the effects have been felt in the consideration of the impossibility of reuniting data from experience into one objective scheme.

The differing points of views between classical physics and modern physics is outlined by Niels Bohr as follows:

"In classical physics, all the characteristic properties of a given object can be determined by one experimental tool, although it is often convenient to use different devices for studying different aspects of phenomena. In fact, the data obtained in this way are integrated with one another and can be unified into a coherent description of the behaviour of the object in consideration. In quantum theory, instead, data dealing with atomic systems obtained in different ways can manifest an new kind of relation of complementarity. In fact, it can be noted that these data, which appear contradictory when trying to fit them into a single frame, account for all that is knowable around the object. Far from limiting the demands that can be placed on nature in the form of experiments, the notion of complementarity simply characterizes the answers that can be obtained every time the interaction between the measurement instruments and the objects is an integral part of the phenomenon."<sup>11</sup>

That which has been outlined above presents a kind of problem that differs essentially from Kant's conceptual unity based on the synthetic unity of the cause principle as a guarantee of the whole physical world. This does not imply, however, that observational data are not meant to be organised: instead of rejecting the problem of the objectivity of knowledge through the principle of complementarity, modern physics offers a more general and more comprehensive scheme than does the causality principle. In spite of how contrasting they might seem, manifestations of atomic systems under different experimental conditions must be considered *complementary* in the sense that they are all perfectly defined and together exhaust all the possible knowledge relative to the objects in consideration.<sup>12</sup> This reference to the methodological criteria used in physics should clarify the reason why I have proposed that the complementarity principle should be adopted for explaining the problem of causality in philosophical thought

Moving ahead to Whitehead's thesis on causality one will find that it does, in fact, fulfill the requirements of phenomena, in total contrast to Kant's thesis, which is equally valid for characterizing another type of phenomena. Fundamentally, Whitehead purports that perception in its primary form is consciousness of the "causal efficacy" of the external world, that is, the

pure, simple, and undeniable reception of an external datum.<sup>12</sup> Instead, he uses the term "presentational immediacy" to indicate ordinary perception through the senses,<sup>14</sup> referring not to the most primitive or immediate mode of perception, but rather to that belonging to the complex modes of functioning.<sup>15</sup>

In the light of this definition, the traditional terms relating to the relationship between perception and causality are turned upside down. According to Whitehead, this relationship has always been approached through the misunderstanding generated by the inversion of the real constitution of experience.<sup>16</sup>

Kant and Hume merely rearranged ideas their predecessors had already elaborated, for example the ideas of Locke and Descartes, not to mention their medieval forerunners. These ideas concerned presentational immediacy as the primary fact of perception and that any apprehension of causality necessarily has in some way to arise from this primary fact.<sup>17</sup> It is my opinion that this pattern of thinking has led to three kinds of solutions and, as a result, to three major trends in philosophical thought. At one end, there is the rationalistic trend which is founded ultimately on the belief in a preordained harmony between things and their representations. At the other end, there is the sceptic trend led by Hume. The third is Kant's critical solution which, while the most rigorous, is confined to the reality of phenomena insofar as it is the object of science, in which objects - as the cause of representation - remain confined within an irreducible external appearance.

Only the last solution relates to the area of concern of this discussion and thus merits further comment. Although Kant's causality category has already been discussed as an intellectual category, I should like now to analyse this position from the point of view of Whitehead. If the purpose of the categories is to unify the sense-data, then ordered experience is the result of an arrangement of modes of thought regarding substance, quality, and quantity which make use of a large number of disconnected and unrelated data.

This thesis can be refuted, according to Whitehead, by analysing it from the perspective of blind and instinctive experience, doubtless the most primitive of all organisms, high-grade or low. In spite of what has typically been

held true in philosophical tradition, it can be proven that every organism exhibits a behaviour which discloses the perception of a form of causality that relates it to external events. This kind of causality is quite different from what we have been dealing with up to this point.

Far from an intellectual and rational category discovered *a posteriori* through investigations into the relationship between things, this type of causality can be defined as a physiological phenomenon implicit in sense-perception. Thus, Whitehead's example of the phenomenon of reflex action, whereby a man suddenly blinks upon the switching-on of an electric light<sup>18</sup>, can be explained only in terms of "causal efficacy", that is to say, in terms of external stimuli acting upon the perceptive organs.

Whitehead offers a further confirmation of the primitiveness of causal efficacy by using the example of low grade animals such as the medusa or even a plant such as the tulip which adjust their movements to the environment they live in. Descending the scale of organisms to its lowest levels, even the slightest sense of the causality relationship with the external world can be noticed, whereas perception in the mode of presentational immediacy-perception of form, colour, spatial relations and other similar characteristics cannot be found.

In this manner, data received rather than perceived, given that perception from this perspective is seen as a more complex phenomenon than mere receptivity, display as their inherent characteristic a *vectorial* dimension<sup>19</sup>. Whitehead, who was a scientist endeavouring to draw more general theoretical inferences from his scientific work, has intentionally borrowed this term from physics to describe a datum in its simplest form as an entity inherited from the past. This term permits him to arrive at an explanation which goes beyond the mere acceptance of the sense-data as elements that cannot be further broken down (as Kant held). In fact, he states that objects are "given" for the experience of the subject and that their being given arises from the functioning of the existing physical body of the subject. In other words, the body, with its "compresence" acts as mediator between real entities and the perceiving subject in a very significant way, because the body contains in itself the influence of the common past shared by both the subject and the real entities<sup>20</sup>.

It is only upon data thus constituted through causal efficacy that the other mode of perception can be linked. Defined by Whitehead as presentational immediacy, this mode develops and clarifies what was ill-defined and of little importance in causal efficacy.<sup>21</sup> Furthermore with respect to the former, it is considered a complex phenomenon, consisting among other things in the perception of the contemporary world and its spatial relations and qualitative characteristics.

Although the features of this second modality of perception offer interesting possibilities for further analysis, I should like at this point to arrive at an initial semiotical kind of conclusion, and then to a more general conclusion, relative to the comparison between Kant and Whitehead.

That which has emerged from the perspective opened by Whitehead's theorizing on two model of perception - only the second of which I referred to when I defined perception semiotically through Peirce's Firstness category - seems to contradict this interpretation. This is so, because perception has been characterized as anything but a simple and primitive phenomenon of experience. However, the following consideration must be made. The category of Firstness - like Peirce's other two fundamental categories: Secondness and Thirdness - can be further differentiated, as pointed out by Elisabeth Walther, giving rise to a Firstness of Firstness, Secondness of Firstness, and Thirdness of Firstness.<sup>22</sup>

Thus, that which at first appeared to be a contradiction can be explained by identifying two levels of differentiation within the perceptive phenomenon generally characterized as Firstness. One is an instinctive and unconscious reception corresponding to causal efficacy, which is semiotically classified as a Firstness of Firstness. The other is a conscious sense-perception corresponding to presentational immediacy, which represents a Secondness of Firstness.

With regard to Kant and Whitehead and their concepts of causality, I should now like to conclude by clarifying my reason for maintaining that the two perspectives are "complementarity". Just as the Kantian view is only partial, insofar as it is confined within the range of intellectual experience manifested by data arising from contemporary reality, so Whitehead's concept of causal efficacy is confined to the sphere of sense-reception occurring as

the influence of the past on contemporary givenness.

Furtermore, while the Kantian concept does not provide a way for explaining physiological phenomena which exhibit a causal connection, nor does it explain the problem of constitution or origin of sense-data, Whitehead presents, on the other hand, a concept of causality totally excluded from the realm of presentational immediacy<sup>23</sup>, an unacceptable conclusion that most contemporary science departs from observational data in establishing causal laws.

The two perspectives can consequently be considered conflicting and at the same time complementary. They are conflicting from the point of view of their theoretical premises and final objective. They are complementary when considered as elements which, like data resulting from physical observation that are dependent on the tools used to measure them, provide each time equally defined and indispensable information.

#### Notes

- 1 This will become clearer during the course of the analysis when the complementarity principle will be explained and evaluated with respect to its consequences in the field of theory of knowledge.
- 2 The concept of "repertoire of media" is studied in depth by Elisabeth Walther in Teoria generale di segni, Roma 1980, p. 62.
- 3 Immanuel Kant, Kritik der reinen Vernunft, Hamburg, 1956, p. 230.
- 4 Immanuel Kant, *op. cit.*, p. 241-244.
- 5 It should be specified that for Kant these are not simple synonyms for indicating the same meaning; only from a semiotical point of view a certain equivalence can be found between them on account of the fact, as mentioned above, that they belong to the same category of Firstness.
- 6 Of the many meanings Kant applies to the term "transcendental", the one relevant to this discussion is found in the Transcendental Analytik, in particular on p. 243.
- 7 *Ibidem*, p. 244.
- 8 Typical in this sense is the position of a famous Italian student of Kant, Luigi Scaravelli, who has dedicated more than one study to the relationship between Kantian thought and modern physics. See L. Scaravelli, Scritti Kantiani, Firenze 1968, p. 33.
- 9 I. Kant, *op. cit.* p. 241.

- 10 Niels Bohr, I quanti e la vita, Torino 1965, p. 16-17.
- 11 *Ibidem*, p. 104.
- 12 *Ibidem*, p. 85.
- 13 Alfred North Whitehead, Il processo e la realtà, Milano 1965, p. 251.
- 14 *Ibidem*, p. 151.
- 15 *Ibidem*, p. 241.
- 16 *Ibidem*, p. 346.
- 17 *Ibidem*, p. 240.
- 18 *Ibidem*, p. 348.
- 19 *Ibidem*, p. 245-246.
- 20 *Ibidem*, p. 153.
- 21 *Ibidem*, p. 345.
- 22 E. Walther, *op. cit.*, p. 58.
- 23 To confirm this, see the part in Whitehead's Il processo e la realtà, where the author states that real entities, as they are given in the mode of presentational immediacy, are causally independent from one another (*op. cit.* p. 258).

#### SUMMARY

With this article, it is intended to show that the problem of causality can be considered from two different but complementary points of view. One, according to Kant, states that causality is an intellectual category, and the other, according to Whitehead, considers causality as a physiological mode of functioning, belonging to low-grade organisms as well as to the primitive experiences of the highest organisms.

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