

## PHILOSOPHICAL NOTES

*Cause.* A little over thirty years ago the modern quantum theory had its beginning in the mathematical work of Heisenberg and Schroedinger. The indeterminacy principle of Heisenberg was the basis for much writing at that time to the effect that free will was again restored to man. The mechanistic world of Newton was challenged. Because this mechanization was supposed to apply to all things in creation, even to man himself, it was thought by some to mean that there was a predestination in all things. However, as time went on it was gradually realized that entirely too many things were supposed without foundation, so that now we hear very little of the relation of indeterminacy and free will.

Later, however, when people began to realize the fundamental nature of indeterminacy and its application in so many places in physics, another philosophical conclusion began to be drawn. This was that the principle of indeterminacy demonstrated that nature was ruled by chance and not by cause. Thus the very same origin of an argument that was supposed to give scientific grounds for the restoration to man of free will is now supposed to deny to man a philosophy based upon cause and effect relations. Even as it turned out that science had never deprived man of free will in the first place, it might also turn out upon closer examination that the determinacy of Newtonian physics has little to do with causal laws.

What is the origin of this idea that causal relations and Newtonian laws are one and the same thing? Most writers give credit to Hume for the modern concept of cause. Hume could not come to recognize or understand any essential connection between cause and effect in nature. Nevertheless he recognized that cause and effect relations were necessary in thought about nature. One idea in the thought becomes associated with another idea in point of time. One idea of an event is always associated with another such as to follow it in time. For Hume, therefore, the only relation left between cause and effect was that the effect followed the cause in time.

Following this thesis of Hume, modern philosophers have attached to the mathematical relations of Newton, which were functions of time, the sole meaning of cause. Thus causal relations came to depend for their very existence upon Newtonian mechanics.

The differential equations of motion themselves became the formal representation of causal laws. If, therefore, their equations came to be questioned as the true representation of events in nature, so also do the causal concepts attached to them.

Thus, instead of Newtonian laws representing the states in the world of atoms, it was necessary to represent these states with equations that substituted probability functions for space-time coordinates of particle locations and velocities as functions of time. Instead of nature being governed by causal laws it must be governed by laws of probability. Instead of an effect being the result of a cause, an event would happen as a result of chance.

Until very recent times no one of importance in philosophy seriously questioned the existence of cause and effect as important concepts in philosophy. However, throughout history what is meant by cause and effect has been repeatedly subjected to much study. The problem of defining such a fundamental concept as cause has never been adequately solved. In modern times, especially since Hume, the problem has been partially solved for some minds by seriously restricting its meaning.

How much broader was the meaning of cause to Aristotle than it was to Hume? Aristotle identified the understanding of cause with the answering of questions beginning with "why?" He says

"Knowledge is the object of our inquiry, and men do not think they know a thing till they have grasped the 'why' of it (which is to grasp its primary cause)." (*Physics* 194b.)

Aristotle recognized different kinds of causes. He classified them all under four headings. These causes have been variously named. For example they have been called final causes, formal causes, material causes, and efficient causes.

It is important to note that Aristotle's classification of causes is not exclusive. Each of the philosophers, and especially some of the later ones such as Hume, Kant and Hegel, gave to the word certain special meanings not yet implied by Aristotle. Also, the mere naming of a cause does not identify it for all philosophers. For example, consider final cause.

Aristotle himself identifies this cause in general terms in one place by the words "that for the sake of which." By giving illustrations he divides this class of cause into active causes and instrumental causes. (See *Physics* 195a.)

In another place he says:

"That a final cause may exist among unchangeable entities is shown by the distinction of its meaning. For the final cause is: a) some being for whose good an action is done, and b) something at which the action aims; and of these the latter exists among unchangeable entities though the former does not." (*Metaphysics* 107b.)

The possible meaning of cause is so various and so fundamental in the philosophy of Aristotle that it could not be defined in a manner acceptable to all. Its meaning could only be illustrated. And the illustrations he gave were so various as to extend its possible applications beyond the ability of the mind to encompass them all. Spinoza was one of those to limit the definition of cause. Spinoza was enamored of the methods of Euclid in mathematics, and his concept of cause was therefore limited largely to that implied by Aristotle's formal causes.

Although Spinoza did come to limit himself to the consideration of formal causes as a practical matter in science he did not himself deny final causes. (See for example a reference to him by Swedenborg, *A Philosopher's Note Book*, p. 106.) He followed Descartes in his criticism of the use of final cause, who said: it is "audacious to desire to know the purposes of God." (See Windelband, *History of Philosophy* p. 401.)

Swedenborg was well aware of the history of the definitions of cause. See *A Philosopher's Note Book*, pp. 214-218 for quotations copied by him from Aristotle, Spinoza, and Leibnitz. Each of these quotations points up the different definitions for cause leading to the notion that there are several kinds of cause. For example, in the case of Leibnitz there are efficient causes and final causes.

The meaning of final cause, as it is used in *The Infinite and the Final Cause of Creation*, is best represented in Aristotle's list by that cause which is identified by the phrase "that for the sake of which."

Since *The Infinite* was addressed to the rationalists of his day, one might think that as Swedenborg wrote he was thinking in terms of statements made by the rationalists themselves. If this is so, then there is a very considerable difference between two kinds of cause. There is that kind of cause which is modified by the word "necessary." This would include formal causes as an example.

These causes are relations between ideas that result from man's own reason. Conclusions that result from mathematical reasoning are called necessary conclusions. The philosophers of the rationalistic school, Spinoza, Descartes and Leibnitz, were all mathematicians and so were concerned with necessary causes. But necessary causes are not the only causes. Thus, if God be regarded as a final cause, then this is a cause different from necessary causes. For, after all, these latter are only in the minds of men. Thus Swedenborg quotes Leibnitz with reference to these two classes of cause: "The reasons underlying the operations of nature must be sought for either in necessary truths or in laws which God had judged to be conformable to reason. . . ." (*A Philosopher's Note Book*, p. 217.) And in *The Infinite* (sect. III) Swedenborg says: "Were we to seek causes and reasons from any other source than reason, the mind might be turned away in a false direction. . . ." So while reason is essential in both cases, one cause arises in reason and the other conforms to reason.

However many different chains of cause and effect relations there are, and however many links there may be in any given cause and effect chain, there is one cause that is supreme, and this is the final cause. As Swedenborg says:

"The more then we choose to send the mind abroad over the details of the subject and the series; the more we wonder at in nature; the more we heap causes upon causes; the more must we wonder at the first and the least of nature, and the more at the Infinite its cause." (*The Infinite*, § IV.)

Why is the mind led to think of so many causes other than this supreme cause? Because in regarding Aristotle's phrase, "that for the sake of which," we become aware of numerous ends which are natural. To each of these we may apply the phrase as a test and discover a cause. Yet this cause is not the final cause that Swedenborg is talking about because, as he says, the Divine end is not obtained in the ultimate effect, that is, in nature.

The Infinite is the primary end but there are also secondary ends. Chief among these is man himself; and there are others, such as the means for his enjoyment of life. As Swedenborg says:

"But lastly, if the primary end be infinite, and terminates as it begins in the Infinite, for whom alone the world was created, are there not other ends also for the existence of man?" (*The Infinite* § XV.)

It is those secondary ends terminating in man as a finite being of which he is aware and which he can understand. It is by means of these secondary ends and their causes that cause can be understood. As for the supreme final cause, man can acknowledge that it is, but cannot know how or of what quality. Swedenborg says:

"For the greatest master of learning can no better imagine what the infinite is, than the merest vulgar or the least informed of the community."  
(*The Infinite* § VII.)

However, by means of the secondary ends, and the study of their causes, the master of learning can come to understand cause and to instruct the vulgar, and thus bring about a better realization not only that these causes exist but that the final cause which looks to the Infinite also exists.

Thus we see that Aristotle knew that many possibilities reside in the meaning of cause. This very fact was unsatisfactory to later philosophers who wanted to give to cause an exact meaning. Perhaps because of their natural bent toward mathematics, the rationalists attached great importance to formal causes. Because of arguments beginning with Hume, scientists narrowed formal cause even more to the point that it referred only to events in nature to which ordering in time sequence could be given. The best example of this is the differential equations with the independent variable time of Newtonian mechanics. In modern physics a challenge to cause amounts to no more than the acknowledgment that Newtonian mechanics is inadequate to give a complete mathematical picture of the physical world.

Swedenborg in addressing himself to the rationalists in *The Infinite*, on the other hand, uses rationalistic arguments. But in so doing he does not appeal to arguments in terms of formal causes. His discussion is in terms of final causes. The arguments of the scientist are based upon formal causes and are idealistic and subjective. If they are inadequate to describe nature, as they seem to be, then it is that those formal causes are found wanting. On the other hand, if one believes in a Creator, in a real world, in ends which are primary and ends which are secondary, then these ends can only be related through final causes.

E. F. A.