Notes and Comments

Swedenborg's Philosophy of Science

Chapter 1 of Swedenborg's *Principia* is entitled "On the means which conduce to true philosophy, and on the true philosopher," and in it, the author presents his methodology of philosophic thought. This has been the subject of recent Philosophical Notes.

But what of Swedenborg's philosophy of science? Although he published no work devoted specifically to it, he did reveal his philosophy in his scientific works. For example, I recently encountered a statement of his methodology in the little work *Miscellaneous Observations* published in Latin in 1722, and later in English in 1847, translated by Charles Edward Strutt.

In Part 111, under the heading "A hypothesis of the figure and different magnitudes of Elementary Particles," he says:

> The following rules appear to be conducive to the knowledge of those secrets of nature which are involved in the natural mechanisms of particles. 1. Let us assume that nature acts by the simplest means, and that the particles of such elements are of the simplest and least artificial form. 2. Let us take for granted that the beginning of nature is identical with that of geometry; in other words, that the origin of natural particles is due to mathematical points;... the reason being, that there is nothing in nature but [what] is geometrical, and *vice versa.* 3. Let us assume that all these elements can be put in motion at one and the same time,. . . . If we found our principles upon these three propositions as axioms, I believe that we shall be more readily admitted to an exploration of physics, in which there is nothing artificial, or opposed to the rules of mechanism; nevertheless the exploration necessarily presupposes that, 4. Established facts be taken as a basis, and that we do not stir an inch without their guidance. Of this we may be certain, that whoever attempts to make nature out of the figments of his own mind, and to arrive *a priori* at the knowledge of effects in the posterior sphere,... must either be wise as a divinity, or embrace the deepest shadows of darkness for light (p. 84).

In addition to this, two passing remarks in nearby sections add to, or reinforce, the principles stated above. First, in discussing water crystals he remarks: "Hence, from a single germination of this kind, we have the greatest difficulty in examining, or rather *conjecturing,* the mechanism and form of the particles" (p. 82, emphasis added). And second, after exploring the nature of his elementary particles, he says: "Still, however, let this be considered hypothetical, and exceedingly doubtful, until every experiment that has been made, or can be made, shall be found to coincide with the mechanism of our particles" (pp. 86-87).

Two aspects of these statements are particularly interesting. The first has to do with Swedenborg's initial approach to the exploration of nature, an approach which begins with conjectures or hypotheses. In this, Sir Karl Popper, a notable 20th century philosopher, is in agreement with Swedenborg, for in Popper's view discoveries are "guided by theories," and are not "due to observation." And both of these men stand apart from Francis Bacon's inductive method as the *modus operandi* of science.

The other aspect of Swedenborg's philosophy that is striking here is his commitment to the idea that, while hypotheses are necessary as starting points, they stand or fall on the testimony of experience (experiment or observation). In this regard, too, Popper is on common ground with Swedenborg; and no demonstration is needed to show that this recourse to experiment is at the core of all present-day scientific endeavors.

Noteworthy also is that his first two rules were part of classical Greek thought as well as that of the present day. With regard to the rule of simplicity, we find Aristotle employing it in his reasoned attempt to arrive at the number of "principles" necessary for the construction of substances in nature (see *Physica,* Book 1:6). And today the scientific theories that are most widely accepted are those that have an elegant simplicity.

Likewise, his presumption that the beginning of nature is geometrical harks back to the Pythagoreans, for whom number was the essential character of the universe. And the role of mathematics in modern science needs no elaboration. One may ask if Swedenborg's open affirmation in 1722 of the experimental method remained with him in later years, particularly after his conscious introduction into the life of the spiritual world from the early 1740s to the end of his life in this world. From a statement early *in Arcana Coelestia* (129) it is clear that he did preserve his belief in the validity of the scientific study of the world, although with qualification.

> [I]t is by no means forbidden to learn the sciences, since they are useful to his life and delightful; nor is he who is in faith prohibited from thinking and speaking as do the learned of the world; but it must be from this principle—to believe the Word of the Lord, and, so far as possible, confirm spiritual and celestial truths by natural truths, in terms familiar to the learned world. Thus his starting-point must be the Lord, and not himself; for the former is life, but the latter is death.

And noteworthy, too, is that in his accounts of the spiritual world he states repeatedly that the things he describes he knew from much experience in that world, just as an explorer, upon his return, would describe a distant land from his travels in it. And hence the title of his main work on the spiritual world reads: *Heaven and Its Wonders and Hell From Things Heard and Seen.*

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