

APPENDIX A

'Anthropomorphic science'

Since we did not desire to narrow our audience to exclude non-specialists in the following matter, the author has chosen to relegate to this appended section the treatment of certain topics relevant to Chapter VI, "The reproduction of man." To indicate the fuller scope of relevance of the technical difficulties addressed in this Appendix, we excerpt two passages from a writing by Max Planck.

In his 1947 scientific autobiography (New York: Philosophical Library), Max Planck writes (pp. 144-145):

It could be maintained that a relationship possessing such profound significance as the causal connection between two successive events ought to be independent by its very nature from the human intellect which is considering it. Instead, we have not only linked, at the very outset, the concept of causality to the human intellect, specifically to the ability of man to predict an occurrence; but we have been able to carry through the deterministic viewpoint, only with the expedient of replacing the directly given sense world by the picture of physics, that is, by a provisional and alterable creation of the human power of imagination. These are anthropomorphic traits which ill-befit fundamental concepts of physics, and the question therefore arises whether it is not possible to give the concept of causality a deeper meaning by divesting it as far as it can be of its anthropomorphic character, and to make it independent of human artifacts, such as the world picture of physics.

Now we come to a second quote (pp. 149-150):

The law of causality which immediately impresses the awakening soul of the child and plants the untiring question, "Why?" into his mouth, remains a lifelong companion of the scientist, and confronts him constantly with new problems. For science is not contemplative repose amidst knowledge already gained, but is indefatigable work and an ever-progressive development.

The fact, that a "non-anthropomorphic science" is a contradiction in terms, did not prevent that catch-phrase from gaining today a widespread, and stubbornly persisting popularity within academic and other strata. In the chapter from which we have just quoted, Planck is much too generous with his positivist adversaries on this point. A more precise treatment of the issue bears directly on the material within Chapter VI, above.

First, a matter of terminology.

To define the word *science* in the first approximation, we restrict initial inquiry to the domain of so-called *physical science*, or, earlier, *natural philosophy*. It is useful, because of a relevant dispute between the followers of Leibniz and the Kantians, to equate physical science, in first approxima-

tion, to the nineteenth-century usage of the German term *Naturwissenschaft*. Later, we shall complement our initial case by integrating the remaining aspect of science in general: what is named in German, *Geisteswissenschaft*.

The term, *modern physical science*, covers the period of, initially, European history beginning the early fifteenth century's, Italy-centered *Golden Renaissance*. By modern physical science so defined historically, we signify what is better described as physical geometry, a study of physical principles from the standpoint of demonstrable geometrical constructions.

The essence of *physical economy*, and therefore also of *political-economy*, is subsumed in conception by the single fact of the human species' absolute separation from, and superiority and proper dominion over, all other species of organic and inorganic processes. Unlike the animal species, mankind exists by means of a process expressed as scientific and technological progress.

This fact, this process of scientific and technological progress, is tested in practice by the yardstick of human-reproductive requirements. As we have already indicated in the text above, these requirements are associated with the need for a rise in the average, per capita, physical-productive powers of labor, and also a corresponding increase in the physical standard of human consumption, longevity, and health combined. This requires coordinate improvements in nature, to the effect that those improvements, combined with a rise in per capita productivity, represents a durable, continuing rise in the potential population-density of the human species.

Those facts summarized, lead us to the following proofs respecting the essential characteristics of human scientific knowledge. These proofs bear directly upon the relationship between Christian principles and sound principles of economy.

As we have identified that policy in the text above, everything we say rightly respecting the potential scientific-creative powers of the individual human mind, is also implicitly a statement respecting the role and activity of those same processes in the generation of classical artistic beauty. With that point so emphasized once again, we proceed as follows.

As is shown in other published locations, the ordering of scientific progress consistent with increase of mankind's potential population-density is an ordering susceptible of intelligible representation. This intelligible representation of the principle of that successive ordering, is itself out of the character of a cardinal notion, a *transfinite cardinality*. Strictly speaking, the name of physical science ought to be restricted in definition by direct and exclusive reference to this notion of transfinite cardinality.

At this point, we ought to take our conscious processes, in progress here, socratically, as objects of our consciousness. We have just shown, implicitly, that the idea of "objective science" is a contradiction in terms, an absurdity. We

have just said, implicitly, that absolute scientific truth exists only *subjectively!* We have said, implicitly, that ~~there~~ exists no science, or possibility of knowledge by any person, apart from the subjective instrument, the individual creative reason, by means of which socratic method, scientific knowledge of the transfinite cardinality is acquired.

Let us describe this process as follows.

First, through either crucial experimental or equally significant observation, we discern some *axiomatic* flaw in principles of established physical science. The identity of such a flaw is sought by means of the same method permeating Plato's socratic dialogue. The *Parmenides* dialogue is a beautiful, and relatively simple, illustration of this method.

Second, this socratic treatment of established physics implies hereditarily efficient axioms and postulates, points us toward a potential form of creative solution through the detected error. That solution is in the form of an hypothesis, as hypothesis is explicitly and implicitly defined by Plato's dialogues as a whole.

Third, this hypothesis is subjected to either crucial-experimental or comparably significant tests. This test is initially addressed to the particular case or cases which had led us to discover the axiomatic error in established physics. If the result of that is satisfactory, we must also test the appropriateness of the hypothesis for physics in general.

Fourth, if the latter shows the hypothesis not only to correct the prompting error, but to increase practically the power of physics in general, the new principle is established, and the activity leading to the success is viewed as a successful revolution in physics.

This increase in the power of physics means a demonstrable sort of potential increase of the power of the human species over the universe as a whole. This measurement is implicit in terms of *rate of increase of potential population-density*.

Such a success is a reflection of the *divine spark of reason* sovereignly situated within the individual personality. In other words, this is that *Minimum*, the creative individual, the Leibnizian *monad*, which is in relationship to the *Maximum*, the Creator.

As is shown among my published locations treating this matter, the successive successful revolutions in physical science, insofar as they are cases rigorously in conformity with what we have illustrated by the step-wise form, just above, defines within science historically a series of transformations which do satisfy this requirement. The revolutionary work of Cusa, Leonardo da Vinci, Kepler, and Leibniz is exemplary. This typifies the notion of succession of successful scientific revolution. That notion of succession implies the relevant notion of a governing, *transfinite* ordering. The notion of that self-developing ordering as a cardinality, is the proper notion of *science in general*.

That *science in general*, is associated with man's potential power over the universe. Thus, as long as we adhere

to this rigor, the idea of separating the subjective from the objective is absurd. There exists nothing "objective" outside the realm of this rigorous kind of "subjectivity."

There is no possibility of a true science which is not of this rigorously *subjective*, or "anthropomorphic" form. We see, in science, efficient forms of *subjective* certainty of the Creator's universal natural law. By that means, we increase the potential population-density of our species *in this universe as a whole*. The implicit increase of potential population-density is the proof of the *anthropocentric* experiment on which even the mere possibility of science depends. Since this science is produced by the sovereign faculty on which account the individual person resembles the Creator, the potential creative reason, the only possible form of science is in that image, that *anthropomorphic* image.

APPENDIX B

Physics and natural law