A MULTI-PASS CONCEPTION OF SCIENTIFIC INQUIRY

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1. The Fall into Discursivity

According to the Biblical story of the Fall, as embellished by Milton’s Paradise Lost, Adam had direct intuitive understanding of the world. For him there was little difference between the order of knowing, that is, the order of inquiry, and the order of being, that is, the order of nature; and for God there was no difference at all. Original sin changed all that, both by throwing the world off its axis, thus making the world less intelligible, and by limiting human cognition. For this double reason, postlapsarian human cognition no longer squares with reality. The Fall increased the difficulty of cognitive problems while diminishing our (human) means of solving them. We must now deal with an appearance-reality distinction that was unproblematic before. Reality is hidden and can be discovered only with the greatest difficulty, if at all. Order of knowing now differs from order of being. In fact, one order is more or less the reverse of the other. As a result, learning is slow. We postlapsarians can gain knowledge of nature only through great effort, expended over time.

In short, the Fall has thrown us and our enterprise of inquiry into discursivity, into history. Because of original sin, human inquiry must have a history, for it can only be conducted step by step, stage by stage, and only at the cost of great labor that exhausts mental and physical resources, including time. This new scarcity of cognitive resources also throws cognition into the realm of economics. Cognitive economy becomes an urgent problem.

Greek culture also distinguished appearance from reality and order of knowing from order of being. In Plato’s Republic only the exceptional individual, after years of inquiry, reaches the stage of direct intellectual intuition of the Forms. Aristotle the “empiricist” went even further toward making the order of inquiry not only different from but the reverse of the order of nature. Later, the
Medieval image of “the great chain of being” (Lovejoy 1936) easily incorpo­rated the ideas of an ascending ladder of the intellect, or ordo cognoscendi, and a descending scala naturae, or ordo essendi. Inquiry ascends toward ultimate reality step by step. What is most evident to us are relatively superficial things, while the deeper (or rather, higher) structures of the universe are most obscure.

For Descartes, perceptual claims remain problematic, no matter how long we inquire; but properly disciplined human reason enables us to recognize ba­sic truths immediately and to gain others through logical and mathematical in­ference – a discursive process. Descartes suggested that, by running over pro­ofs again and again (discursive practice), we could eventually regain some­thing like the original intuitive understanding of the whole proof, in an instant. Leibniz was less sanguine about our ability to overcome discursivity and to compact personal history of inquiry back into an acquired logical intuition. Nevertheless, rational epistemologists, including Locke, made immediate, self-evident intuition the highest form of knowledge, and thereby retained a “God model” of knowledge.

The grand narrative of Darwinian evolution is quite different. From a Dar­winian point of view, traditional epistemologists, in assuming that we are cognitively closer to God than to the snakes, picked up the wrong end of the stick. Motivated by Darwinian conceptions of human origins and cognitive develop­ment, naturalistic epistemologists take an approach quite opposite the theo­logical one. Rather than our being fallen angels, cognitively speaking, we are risen apes, which are in turn risen snakes, and, ultimately, risen one-celled organ­isms. This reference to evolutionary history should remind us that there is not just one cognitive bottleneck, either phylogenetically, ontogenetically, or culture-genetically, but a whole cluster of them (Campbell 1974, 1977; Kitcher 1992, 90ff).

Yet these opposite approaches do have something in common. On both ac­counts we come into the world “prewired” with some definite capacities and expectations that reflect the way the world is, or has been. Theology says that God made the world and then created us to be at home in the world. Evolution­ists say that evolution has created a world that looks just as if it were designed by a great intelligence and that our evolutionary development has tuned us to respond to many patterns of nature relevant to our survival, some of which have been modified by us. However, microphysical laws and other esoterica are not among these, so the basic problem of inquiry is more difficult for the naturalist than for Adam – or for Plato, as expressed in the paradox of the