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The Skeptical Inquirer

Ryan D. Tweney

The Psychology of Science and the Origins of the Scientific Mind. Gregory J. Feist. xx + 316 pp. Yale University Press, 2006. $38.

As the title implies, Gregory Feist's new book covers two broad topics. The first and longest part is an extended argument that a large body of recent work implicitly falls under the rubric "psychology of science." Feist reviews studies from neuroscience, developmental psychology, cognitive psychology, personality psychology and social psychology to support his assertion. The second part of the book presents a novel theory of the origins of science as the outgrowth of evolutionary processes.

Feist's central claim in the first section centers on a disciplinary puzzle. Why, given the institutionalization of the history of science, the philosophy of science and the sociology of science, has there been no comparable development of the psychology of science? There are no departments, journals or Ph.D. programs dedicated to the subject, but Feist thinks there should be. Toward that end, he draws on a huge literature to show that such a subdiscipline already exists on an implicit level. In a brief historical review, he argues that this largely invisible field has already passed through two distinct periods: The first was "isolation" (up to 1980), during which single authors made isolated contributions, followed by "identification" (over the remainder of the 1980s), characterized by several small but seminal conferences, most notably one at Memphis State University in 1986. Like its sibling subdisciplines, the psychology of science is now poised to enter a period of "institutionalization."

Six chapters (more than 100 pages) are next devoted to a review of literature that supports Feist's position. Even a casual browse will uncover many fascinating findings. Did you know, for example, that, in spite of an overall lack of religiousness, most scientists come from Protestant or Jewish families, but few have Catholic backgrounds? Or that parents accompanying children in a science museum are three times more likely to provide explanations to boys than to girls? Or that the ability to distinguish between theory and evidence (a necessary component for scientific thinking!) shows a clear developmental trend from childhood, but that some adults never attain it?

In spite of the many hundreds of studies that are covered, I easily thought of still others that could have been included—a tribute to the validity of Feist's thesis that the psychology of science is a rich and growing domain, even though it is currently "dormant, latent, and implicit." Feist's own work on the personality dimensions of scientists is reflected in the overall emphasis given to the issues of who becomes a scientist and how scientific talent can be identified, nurtured and retained.

Some readers may be bothered by the book's "psychology-centric" viewpoint and may assume that Feist thinks other fields (the history of science, say) have nothing to contribute. I suspect that Feist believes nothing of the sort, although his review of psychological research has a depth and scope lacking in his coverage of other fields.

The second part of the book, on the evolutionary origins of scientific thinking, builds on recent work in evolutionary psychology, cognitive anthropology and evolutionary biology, applying concepts from all of these areas to sketch a theory of how the modern scientific mind could have evolved. Drawing from such writers as Mervin Donald and Steven Mithen, Feist proposes four stages, beginning with "preverbal science," originating perhaps two million years ago, in which predictive folk science operated. The evolution of language (which took place perhaps 50,000 years ago) triggered a second phase, "verbal science," in which storytelling, myth and cosmological explanations appeared, followed by the emergence of externalized representations (about 30,000 years ago—think cave paintings). These depictions signaled the beginning of a phase of applied science in which units of measurement, rudimentary mathematical operations, archaic forms of astronomy and the like were developed, culminating in the engineering achievements of ancient Egypt and Mesopotamia. The final stage, that of "pure science," then emerged with the ancient Greeks (around 2,600 years ago), opening the door to science as we think of it today.

Is all this really science? Feist's evolutionary model inspires contemplation on this issue because he is clearly defining science very broadly, especially in the second part of the book. Science as an abstract body of thought and method is different from the cognitive, social and cultural processes that constitute scientific thinking, and the question of who counts as a scientist adds still more complexity to these distinctions. After all, it's not hard to figure out that acorns produce oaks. Is making this observation the same as doing science? If so, how do we distinguish botanists from gardeners?

For Feist, "science" includes much thinking that others would count as prescientific or nonscientific, which brings up the general question of how best to carve up the domain of knowledge-seeking processes. To my mind, the available categories are richer than just science and bunk. For example, the folk classifications of plants and animals used widely today are increasingly removed from scientific classifications but nevertheless function well for some purposes.

Feist is clearly grappling with the issue of what constitutes science and being a scientist. In particular, he ends his book with the chapter "Science, Pseudoscience, and Antiscience." Here he distinguishes these categories using the criterion of "the scientific attitude," defined as "open skepticism." Science requires a predisposition toward skepticism (such that authority does not suffice to establish the truth of a claim), but this attitude must be held in check, as Feist points out by quoting Carl Sagan: "If you are only skeptical, then no new ideas make it through to you." Thus, adherents of pseudosciences (such as astrology) are insufficiently skeptical, and those who harbor antiscience feelings (like some postmodernists) are insufficiently open. This criterion seems like an appropriate one, but the issue of what counts as science is nonetheless still confusing, given the far more inclusive categorization Feist uses in his evolutionary model.

This short review only touches on the many merits of this rich and diverse book. At times its scope is so grand that the reader is left yearning for greater detail, but this is scant cause for complaint—Feist provides an extensive bibliography for anyone wanting more.

Reviewer Information

Ryan D. Tweney is emeritus professor of psychology at Bowling Green State University in Ohio. His continuing research on the psychology of science includes efforts to analyze Michael Faraday's cognitive processes and to replicate some of his pioneering laboratory experiments.

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