



DIALOGUES

Generalized Empirical Method: is it needed?

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In responding to my article (Henman, 2014), Quinn (2014) raises the question of development in science and scientific method. He picks up on the topic of the last section of my paper, and suggests that “generalized empirical method” will be “coherent with the essential dynamics of scientific progress.” He points out that, if implemented, such an extended method “promises to be a way toward new and practical results” (Quinn, 2014).

I happen to agree with Quinn. As a nudge toward realizing the potential of such an extended empirical method, it may be helpful to connect these comments with an example from contemporary neuroscience. Quinn’s background includes mathematics, so I thought it might interest him and potential readers if I called attention to a recent result about neural activity in those who enjoy mathematics.

“Results showed that the experience of mathematical beauty correlates parametrically with activity in the same part of the emotional brain, namely field A1 of the medial orbito-frontal cortex (mOFC), as the experience of beauty derived from other sources.” (Semir Zekil et al, 2014, p.1).

In its most elementary form, generalized empirical method asks that the scientist appeal to all available data. That sounds simple enough, and it would be difficult to deny the importance of such a precept. What, though, are the data? Part of the challenge in the contemporary context is that there are diverse sources of data - in biophysics, biochemistry, and so on. Indeed, one must look to sensitive consciousness, for even data of functional magnetic reso-

nance imaging can be identified as data of sense within the sensitive psyche of the investigator. But, also part of the investigator’s experience is the understanding attained, the understanding reached by attending to data of sense.

In one respect, this is not new, but is a restatement in the modern context of observations made by both Aristotle and Thomas Aquinas, by adverting to their own thinking: “The faculty of thinking then thinks the forms in the images” (Aristotle); and “it is impossible for our intellect to understand anything except by turning to the phantasms” (Aquinas).

But, in the modern context, what precisely are the images needed by the investigator? And, what are the thinking and understandings reached? A biophysicist can reach an understanding of data of sense obtained through functional magnetic resonance imaging techniques. But, the biochemist reaches an understanding of rather different data, thus revealing not biophysical correlates, but biochemical correlates of human brain function. And what of the data that is the researcher’s experience of observing, inquiring and understanding data, and even appreciating that understanding? The results of Semir Zekil et al. (2014) confirm that all sources here are relevant to reaching a balanced understanding of human brain function.

Therefore, in partial answer to Quinn’s rhetorical question, the “need” is evident, that is, the need of an extended method that allows us to begin to integrate these layerings of data and understandings in the complexity of contemporary results. What, for example, will be fMRI correlates of one who not only appreciates mathematics, but appreciates the complex biochemical unity that is a whole person who understands mathematics? Or, within neuroscience itself, what are the fMRI results for one who appreciates an understanding of the magnetic imaging? As Quinn implies, going beyond such elementary observations will, no doubt, take quite some

time. At this juncture in history, I would suggest that a fruitful beginning would be making the ef-

fort to attend to and identify recurrent patternings of key moments in one's scientific performance.

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