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Generalized Empirical Method in the Biological Sciences

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Robert Henman's article, *Can brain scanning and imaging techniques contribute to a theory of thinking?*(Henman, 2013) came to my attention recently. My own work over the years has included applications of mathematics in the biological sciences, collaboration in experimental work in biochemistry, as well as work in the philosophy of the biological sciences. Henman suggests something that, at present, would be out of the ordinary. As I understand it, throughout the paper he develops the view that "reflection on one's own performance" would contribute to helping us move toward an improved heuristics in the biological sciences and, in particular, would help us toward better identifying reductionist views.

In the last section of his article Henman points to what Bernard Lonergan called "generalized empirical method": *Generalized empirical method operates on a combination of both the data of sense and the data of consciousness: it does not treat of objects without taking into account the corresponding operations of the subject: it does not treat of the subject's operations without taking into account the corresponding object* (Lonergan, 1985, p. 141).

A method that would include attention to operations would be new. But, is it needed? Is such a method even feasible? These questions are for the community to gradually sort out. Still, it is possible to draw attention here to questions that, in various ways, continue to surface in the contemporary biological sciences: How are we to assemble, order, hold together, or move forward, with increasingly vast ranges of aggregates of results from developing areas such biophysics; biochemistry; neurochemistry; behavioural science; and cognitive science (Agoritas and Guyatt, 2013),[1] and the many emergent interdisciplinary areas of specialization? The evidence is that they all have important contributions to make. At the same time, each area has its own expertise, its own data, its own understandings and strategies.

Henman suggests the possibility of a development in method for biological sciences that would not only be informed by results from each area, but would include attention on what one is doing in each area to get those results. Such a tandem approach would help meet the challenge described in the previous paragraph. Learning how to implement such a method would, though, be a long term project for the scientific community, and would involve a major shift. Yet, developments in method are not new in the history of science, so that in itself should not discourage. Henman's section on Generalized Empirical Method includes helpful preliminary pointers toward what would be an important development in scientific method. Admittedly, a generalized empirical method is rather remote to present practice. But such a method would be coherent with the essential dynamics of scientific progress, and if implemented, promises to be a way toward new and practical results.

Endnote

1: "…with now more than 2000 articles published in MEDLINE every day… Clinicians therefore need resources that filter, appraise, and synthesize the evidence …" (Agoritsas and Guyatt, 2013, p.448).

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