

## SGEME 8: Generalizing Functional Specialization

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The question of how to implement functional specialization in the natural and formal sciences (mathematics and logic) is problematic to some Lonergan scholars because meaning as constitutive is not an object in these sciences as it is in the human sciences, philosophy and theology. Because constitutive meaning is not an object per se in the natural sciences it is difficult to understand what role history and dialectic play, how the specialties of doctrines and systematics correspond to their natural scientific correlates and how the eight specialties cycle to provide cumulative and progressive results when they do not, *prima facie*, correspond to most accounts of scientific method. After addressing the role meaning plays in natural science versus the human sciences, I will provide some reflections on the specializations that will enable us to understand the ideal cycling of a natural science and indicate some of the mutual self-mediations that can occur among the specializations.

The first series of reflections regards the understanding of meaning. Intelligibility is the content of a direct insight. Meaning is what is understood via signs. Thus meaning is a type of intelligibility. Signs have reference. This does not mean that they “stand for” something, though some do. It means that they need to be understood to be signs and that what is understood is not simply the sign but something else also. Signs are creations, an artifice, created via insight. They have reference, though it can be extremely nuanced. There is a sense, then, in which meaning is meant and it is meant via signs. This notion of signs is general, encompassing both the objects of semiotics and linguistics. Thus, the notion of meaning is not confined to linguistic meaning. Nor is the notion of semiotics confined to the culturally conventional. It refers to any *meant* expression intended to convey a meaning beyond the expression itself. What is meant and mediated by signs is the intelligibility grasped via insight.

Some intelligibility can only be grasped via signs. There is the trivial case of understanding signs themselves. There is the more profound case of understanding the unimaginable. The simplest examples are in mathematics.

In human living meaning can be constitutive of social relationships and institutions. Acts of meaning are part of the institution itself as they also can be of games and rituals. Sociological understanding involves a hermeneutics to interpret meanings from the way we dress to forms of dance to the changing meaning in corporations. Thus, when Lonergan conceives of method in theology as having a functional specialization, Interpretation, and primarily discusses hermeneutics, it is easy to transpose that specialization to the human sciences, but not so easy to do so with the natural sciences.

If we turn to the general schema where the functional specializations correspond to a doubling of cognitional structure, then interpretation corresponds to understanding. We all know that natural scientists do research and understand that research. Their goal is not to understand what is meant, as in a hermeneutical interpretation. Rather it is to understand the intelligibility of natural processes. While the intelligibility of the natural process may not be meaningful in itself, it is understood via signs and that understanding

is meaningful. Because the understanding is meaningful, the results of interpretation of research can mesh with the other functional specialties since they all, in some fashion, regard the control of meaning.<sup>1</sup>

A second series of distinctions regard history. The chapters on history in Method focus more on the philosophy of history and historical method, than on history as a functional specialty in theology. The latter is specialized history focusing on a field. Lonergan provides an account of that in Chapter 10 of Topics in Education. In physics, and to some extent in genetics, it is possible for the order of education to follow the order of discovery. Thus, one can start with Newtonian mechanics in high school and move on to statistical and then quantum mechanics. Likewise, one can start with Darwin and natural selection, move on to Mendel and then to population genetics. A similar course can be followed in understanding the gene via an understanding of Darwin, Mendel and the discovery of DNA and subsequent research. What is the value or role of specialized history? It provides a large part of the context for understanding the state of the science. If you have discovered something a major question within any discipline is, “Is it original?” Without history you would not know.

It is more common that the order of learning is not the same as the order of discovery. This does not devalue the role of history. If we turn to a field such as philosophy where an effective history is virtually non-existent, the history that is available typically illustrates to the perceptive student, that many of the same issues are continually revisited with little progress being made. This indicates that the question “Is it original?” is often not effectively answered.

This leads us to the nub of the issue confronting the emergence of functional specialization. Effective history is critical, or evaluational, history. Critical history in the third stage of meaning is capable of distinguishing between progress and decline in the context of authenticity and inauthenticity. It thereby can recognize heuristic value in present achievements providing some critical anticipation of major productive trends .

We can consider functional specialization as eight stages in a communal process where the first stage passes results to the second, the second to the third and so on. But each of these stages occurs within a set of contexts. The proximate context is the set of operations and horizon specific to the stage. The broader context is the cumulative results of prior cyclings. Thus, an effective critical history requires the mature results of foundations. There is a mutual self mediation among the specialties. Typically a structure that relies on self mediating parts has moments of emergence where those mutual relationships come into being as a whole. We are at a stage in history where functional specialization has been conceived, but not implemented. The conception itself calls for further elaboration and development. This brings us to another series of reflections; this time regarding science in general.

For Lonergan “A science emerges with the discovery that gives it a well-defined field and method.” (p. 241, Topics) In theology this began with the discovery of the supernatural around 1230 by Philip, Chancellor of the University of Paris. Thomas Kuhn adds the sociological criterion that it be accepted by the practitioners of the science. So in physics, chemistry and some biology, including genetics, you have central, socially dominant, paradigms that provide the context and methods for research. But there is a fly in the ointment. When we reach the human sciences there are points where the field and method are one and one’s account of the field increasingly is derived from, and

differentiated by, method, not as conclusions following from premises, but as results accumulating from structured operations. The accounts of those operations are found in cognitional theory which is where the key issues lie, for, depending on one's development, you are an empiricist, an idealist, a realist or a critical realist. Thus, lest the whole scientific community adopt a single epistemology, there will be philosophical divisions within the science which affect one's acceptance of alternative interpretations which claim to answer the same question. It is identifying these alternatives where opposition has a methodological root that is the task of dialectic. To consider a discipline a science simply in terms of having a communally accepted paradigm glosses over the far more troubling issues regarding acceptance of scientific results. If these issues could be resolved, there would be an increased dynamism and more rapid lasting progress. For example, we may not need the old guard to pass on to have a new paradigm accepted

So quickly, then, foundations provides the principles of selection for the alternatives presented by dialectic. Doctrines does the selection. Systematics casts the results from doctrines into an explanatory account. Communications, ideally, provides an account of these results for all communities, including the particular science in question providing an enriched context for research.

If we look at natural science today we find insufficient distinctions between: research and interpretation; interpretation, doctrines and systematics; and history and communications, to point out the most glaring items. In addition, foundations as embodied in the philosophy of science is ineffective and dialectic as proposed by Lonergan is virtually non-existent. The sciences are truncated. This suggests that the emergence of functional specialization will transform the sciences. The further question arises of how this will be done.

The first moment is the conceptualization of functional specialization. In our case it arose as method in theology. A second moment is its generalization to all the sciences. This is in process. In the mean time communications takes a lead role since the value of functional specialization needs to be communicated and understood for its adoption to begin. I suggest that for the mature critical realist, the most effective area to focus is dialectic, assuming one has the skill and disposition to do so. This requires grounding in foundations and knowledge of the science in question, a tall order. I suggest dialectic because I think it is the quickest way to address the truncation of the sciences. Without intellectual conversion everything else is likely to be misread. For example, critical history, read uncritically, is not critical history in act. Dialectic, as putting oppositions in terms of authenticity raises the critical question while pointing to the mode of resolution. Though it requires a group to be a truly going concern, it can start with individuals and grow as the body of work is developed. But that is just a suggestion. What the third moment is remains to be seen.

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<sup>i</sup> The understanding of the role of meaning is the basic move for transitioning from interpretation as hermenutics to interpretation as understanding natural process thereby providing an opening for incorporating natural science into functional specialization conceptually. There also is the de facto need for method, the role of method in mediating scientific results such as the understanding of the Heisenberg uncertainty principle and in understanding how the sciences play complementary roles in understanding a common object. When that object is consciousness, for example, the need of a physics of consciousness for dialectic and foundations becomes more evident.