

## **Mason Tattersall Dissertation Abstract:**

**Oregon State University**

**2015**

My dissertation, *Exploring the Structural Dynamics of Human Understanding: An Historico-Philosophical Analysis of the Problem of Meaning in Heidegger and Bohr*, examines the problem of the nature of meaning and its relation to systems of understanding. My approach to this problem was to begin with two historical case studies that represented moments where particular systems (in this case phenomenological philosophy and quantum physics) reached new interpretive paradigms. Through an analysis of the place of meaning within the thought of the philosopher Martin Heidegger and the physicist Niels Bohr, I attempted to discover general properties of meaning as it functions within systems of understanding. At the same time, my dissertation offers itself up as a methodological example of a potentially fruitful mode of combining historical and philosophical endeavour.

I am intensely interested in the question of just how our understanding works. As we go about our daily lives we are able to make our way around because we understand the world and the phenomena that we encounter within it. But we understand different ranges of phenomena in different ways. And, indeed, we sometimes understand the same phenomena in different ways depending on the standpoint from which we view them. Our understanding employs various different *systems of understanding*, each more or less defined, more or less explicitly recognised, and more or less dominant in a given

situation. Some of these systems, such as scientific systems (physics or biology, for instance), religious systems (such as Hinduism, or Protestant or Catholic Christianity), or philosophical systems (Neo-Kantianism or Hegelianism, for instance), display what we might call a strong degree of order. I am particularly interested in just how these complex, ordered systems of understanding work.

Systems of understanding such as scientific, religious, or philosophical systems are complex structures. They are composed of a great number of parts that stand in relation to each other, but also to the system as a whole. And they are *dynamic*. Systems are structures that are always in motion. They are always *doing* something. Thus, any structural account of a system is, by necessity, an account of its structural dynamics: the relation of parts to each other and of parts to the whole, *as the system operates*. Systems of understanding are not only dynamic by nature, but they also change through time (one need only think of our changing ideas about the physical world from ancient Greece to the present day). And it is for this reason that I believe historical study is particularly important for better understanding such systems.

As a way to begin my exploration of the nature of systems of understanding, I decided to focus on the basic problem of meaning. Meaning is a ground level component of understanding. We understand by way of meanings. Systems of understanding traffic in meanings. And there is no understanding whatsoever without meaning. But the question of the nature of meaning itself is a very difficult one. It is hard to get clear even where to begin with such a problem. To ask: “What does meaning mean?” already implicates us in a strange sort of reflexivity that is hard to make heads or tails of.

This line of thinking brings us to the problem of *access*. If we want to better understand meaning and its relation to understanding where do we begin? What is our way in? My solution to this problem was to begin with something observable. And for this purpose, past philosophical or scientific endeavour – the thought of people from the past – seemed like the most fruitful line of approach.

I decided to focus on two historical case studies, each one an instance in which a profound shift occurred within a particular system of understanding (we could invoke the terminology of Thomas Kuhn and call them moments of paradigm shift). The case studies I chose were the philosophical work of the young Martin Heidegger from the 1910's to 1927, during which he produced a new conception of phenomenological philosophy, and the work of the physicist Niels Bohr, again from the 1910's to 1927 when he introduced his concept of “complementarity” that became the basis for the so-called “Copenhagen interpretation of quantum mechanics.” I chose these two particular figures because each contributed to a massive shift within a system of understanding, in vastly different fields, at almost precisely the same historical moment. But I also chose them because, in each case, the problem of meaning itself and the role it plays in the process of human understanding loomed large. Both figures experienced a profound confrontation with the problem of meaning in this period, which in each case contributed to a ground level re-thinking of our ideas about understanding, language, epistemology, ontology, perception, and the subject/object relation.

After a methodological introduction that familiarises the reader with the general contours of the problem of meaning and with my goals for the project, my dissertation presents an historical and philosophical (hence “historico-philosophical”) analysis of the

young Heidegger's engagement with the problem of meaning from his work as a graduate student until his 1927 opus *Being and Time*. Through this analysis we discover crucial relations between meaning and a constellation of other key concepts: questions of the nature of language, truth, and perception, and to questions of necessity and contingency, and to ultimate ground.

After this historical analysis I present a set of preliminary conclusions, outlining the structural relations amongst these concepts, which will be tested against the second case study, which focuses on Bohr and the development of quantum mechanics. In many ways the second case study represents a radically different problem situation. Not only is physics a very different field, but Bohr's work was intensely collaborative, while Heidegger's decidedly was not. Very different conditions were involved in the development of Bohr's ideas; mathematics played a key role; and the very *physicality* of the phenomena under study presents us with a new range of factors for which to account.

The overall goal of my dissertation was to use the two case studies in order to attempt to arrive at a better understanding of the relationship between meaning and understanding. However, it was very important to me that, should this overall goal fail, the two case studies should be able to stand on their own as historico-philosophical examinations of the place of meaning in the work of Heidegger and Bohr respectively. Thus, by focussing on the place of meaning within his evolving thought I was able to provide a new view into the young Heidegger's development. And I believe this gives us greater insight into his thought more broadly. The same is true, I believe, for my account of Bohr's thought and the history of the development of quantum mechanics.

An important aspect of this for me was to tell the story of the development of quantum mechanics in a new way. There are innumerable histories of quantum theory already in print but many of these fail to capture the depth and complexity of the quantum revolution. I try to put the story into its longer-term context, involving more direct focus on the vital role of mathematics, the relationship between quantum theory and earlier work in mechanics and electrodynamics, and the role that physical devices played in the story. I also wanted to place more stress on primary documents, and particularly to offer new translations into English where existing versions seemed deficient.

The two case studies were meant to be the solid backbone of the dissertation, but the project as a whole was “an experiment” for me. I had no idea when I began the project whether it would lead me to useful results beyond the case studies or not. Thankfully, I believe, it did.

The overall result of my two case studies, preliminary conclusions, and final analyses was a relational concept of meaning that takes meanings to be the very stuff and matter of relationality itself. It is perhaps a strange thing to think of meaning in quantitative terms, as the stuff of exchange, but it also, I hope, makes its own kind of intuitive sense: meaning is the blood within the veins of our understanding. It is as vital to our understanding as our own blood is to our lives. And, at the same time, it serves an overall purpose for the system of understanding itself, along with an infinite number of individual purposes (i.e. relation to parts as well as relation to the whole).

Finally, in addition to presenting two historical studies and a relational account of meaning, my dissertation also tries to make a methodological argument. It presents itself as an example of a potentially fruitful way of approaching difficult philosophical

problems. By pursuing historico-philosophical analysis, where philosophical speculation and historical study go hand in hand, it seeks a way into a difficult world of problems, by providing something to start from in a philosophical region where it is hard to gain any bearings. Rather than shying away from interdisciplinarity, I see it as an asset, not only for bringing the various humanistic and natural scientific disciplines together, but also for providing new modes of ingress into tough problems within individual disciplines.