DATA AND PHENOMENA

Stuart Gluck
University of Twente

Bogen and Woodward (1988) have proposed a distinction between data and phenomena which they think is crucial for understanding scientific practice. Loosely speaking, data are the observations reported by experimental scientists, while phenomena are objective, stable features of the world to which scientists infer based on reliable data. Theories predict and explain facts about phenomena, not data, and so claims about phenomena serve as the evidence in support of a theory. Their proposal is important—it was among the first work by analytic philosophers that was attentive to the intricacies of experimental scientific practice—and interesting—it promises a fundamental framework for conceiving of scientific methodology—but it has, surprisingly, generated only a moderate amount of direct discussion in the philosophy of science literature. For example, James R. Brown (1994) endorses it with minor modifications, James McAllister (1997) agrees that it is an important distinction but argues that phenomena must be investigator relative rather than objective features of the world as Bogen and Woodward claim, while Bruce Glymour (2000) argues that the distinction is at best superfluous and at worst misleading. This is a careful consideration of Bogen and Woodward’s proposal, including an evaluation of the criticisms of McAllister and Glymour.

Bogen and Woodward suggest that phenomena do not explain data. This is crucial, since otherwise theories would explain phenomena and phenomena in turn data, effectively making phenomena low-level theories. Instead they characterize the data-phenomena relationship by discussing a number of considerations one can use to justify claims about phenomena from data, which revolve around assessing the reliability of the data. These considerations are justificatory, leaving open the question of how scientists discern or discover phenomena in the first place. The suggestion is that phenomena manifest themselves as patterns in data sets. McAllister argues that there are always infinitely many patterns in any data set, and so the choice of one as being a phenomenon is simply stipulated by the investigator. Glymour suggests that the fact that statistical inferences always move from a claim about sample statistics to the inferred proposition (a sort of double inference) already captures in a formal way anything worthwhile in the data-phenomena distinction. But it seems that treating phenomena as patterns in data sets misses a crucial point Hanson made about the relationship between hypotheses and observations, and which would appear just as relevant for Bogen and Woodward’s account of data and phenomena: phenomena are not merely summaries of the data. If phenomena don’t explain data, then at least there is something more to them than just patterns, summaries, or statistical features. What could this be? Bogen and Woodward suggest they want to devalue a consideration common in philosophy of science which they think is an artifact of British Empiricism, namely, that perception and sense experience have an epistemologically privileged status regarding the justification of beliefs about the natural world. Whether Bogen and Woodward’s distinction can thus be made more cogent in a less empiricist sort of framework will be explored.