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OBSERVATION AND CONCEPTUAL INTERPRETATION

Most people will agree that observation and conceptual interpretation constitute two major ways through which human beings engage the world. Questions about the character of observation and the nature of concepts, however, have received far fewer unanimous answers. The same applies to claims about the interaction and possible interdependence of observation and conceptual interpretation. In particular, the claims that observation presupposes conceptual interpretation and that concepts can be abstracted from observations have been the subject of fierce philosophical debates.

In this book, I take a fresh look at the nature and role of observation and conceptual interpretation. My approach can be characterized by two general features. First, the slash in the title of the book suggests that observation and conceptual interpretation are not separate issues, but should be seen as interconnected. Indeed, the two principal claims of this book are that materially realized observational processes are always conceptually interpreted and that the meaning of concepts depends on the way they structure observational processes and abstract from them. Of course, the view that observation and interpretation are interconnected has been advocated by quite a few philosophers. I think, however, that the specific articulation of this view, as summarized in its two main claims, may make a useful, novel contribution to the philosophical debate on the subject.

The second general characteristic of the book is its attempt to provide an integrated account of scientific and ordinary life observations and concepts. Hence the book discusses and assesses views from both philosophy of science and other branches of philosophy. There is a certain bias toward philosophy of science, though. This bias is reflected in two ways. First, in line with many contemporary approaches in philosophy of science, the theoretical-philosophical arguments employ results from a variety of studies of concrete observational and conceptual practices. Thus the main claims

about the use and meaning of concepts emerge from a discussion of a specific experiment about the development of novel concepts. Such an approach contrasts with philosophical accounts that are supported only by fictitious examples or by unreflectively used illustrations from everyday life. Second, the discussion of both observation and concept formation exploits certain analogies between scientific practice and ordinary life. Several insights from the philosophy of scientific experimentation, in particular concerning the use of instruments and the replicability of experimental results, prove to be fruitful in analyzing human observation and conceptual interpretation more generally. Thus the general analysis of the meaning of concepts draws on an important analogy between the replicability of experimental results and the extensibility of concepts.

Quite a few philosophers who address the problem of observation and conceptual interpretation narrow it down to an exclusively epistemological problem. From this perspective, the main issues are said to be, first, whether observational beliefs of individual human beings may provide us with justified knowledge about an independent world or whether this knowledge is always relative to particular and contingent conceptual frameworks, and second, whether the epistemic value of (direct) observation is superior to the value of (theoretical) conceptualization, as empiricists claim, or the other way round, as rationalists assume.

Although these issues of relativism, empiricism, and rationalism come up occasionally, they are not central to this book. Instead, the focus is on the nature of observation itself and, more particularly, on the conditions of the possibility of human observation. In exclusively epistemological debates this subject is too often taken for granted or inadequately conceptualized. As to concepts, the focus is on the ontological questions of the role of concepts in abstracting from particular observations and the status of concepts as abstract entities. As is demonstrated by the philosophy of language, such questions can be fruitfully discussed without first solving the epistemological problem of relativism, empiricism, or rationalism.

The two major parts of this book address the relationship between observation and conceptual interpretation, but they focus on different aspects of this relationship. Part 2 proposes a novel account of how concepts abstract

from particular observations and what this implies for the meaning of these concepts. For this purpose, we first need to develop an appropriate understanding of the notion of observation. This is the primary aim of part 1. It explains this notion as the material realization and conceptual interpretation of observational processes. The principal philosophical thesis of the book may then be concisely phrased as follows. While making observations essentially depends on local material realizations and specific conceptual interpretations, the meaning of the concepts that may be abstracted from these observations is nonetheless nonlocal and open-ended. Put differently and even more concisely: through our concepts we transcend the world as we see it.

While the two parts constitute the main body of the book, the epilogue provides some general reflections on its principal results and on the methods by which these results have been achieved. It relates the proposed notion of observation to wider views of human experience, and it briefly reflects on the position of the book with respect to the metaphilosophical issues of naturalism and critique.

The Material Realization and Conceptual Interpretation of Observational Processes

Observation, whether scientific or ordinary, plays a significant role in many philosophical views. In such views, however, the processes by which observations are made and the conditions that make observations meaningful are often taken for granted or deemed evident. Moreover, in those cases where observation is taken up as a topic of serious research, the resulting analyses and interpretations are diverse and none of them is fully satisfactory.

Thus there is every reason for taking a closer look at the issue of observation. In chapter 7, I provide a philosophical account of observation in terms of the notions of the material realization and conceptual interpretation of observational processes. This account emerges from a critical analysis of several alternative views of the notion of observation (and similar notions, such as experience and perception; in chapters 2–6, I follow these views in their usage of the closely related notions of observation, experience, and

perception as being more or less interchangeable). Thus chapters 2–6 discuss and evaluate the accounts of observation given by a number of prominent philosophers of science: Bas van Fraassen, Norwood Hanson, Peter Kosso, Paul Churchland, and Patrick Heelan. Like these authors, I focus on visual observation; the role of the other senses is discussed only occasionally. Furthermore, most of these accounts are embedded in wider views of what it is to observe (or to perceive or experience) something. Accordingly, they do not involve a sharp contrast between ordinary and scientific observation, which is also the position that I take in this book. Chapters 2–6 are ordered according to the (increasing) measure of agreement between the account of observation of the philosopher under discussion and the account of observation proposed in chapter 7.

Chapter 2 starts with a brief discussion of the remarkable lack of philosophical interest in (visual) experience in some empiricist philosophies of science. By way of example, Van Fraassen's views on observation and observability are discussed in some detail. From my perspective, a major problem of empiricist views is the striking contrast between the great significance ascribed to observation, on the one hand, and the absence of a substantive and convincing account of observation, on the other.

The third chapter addresses Hanson's conceptual analysis of observation and, in particular, the debate on the theory ladenness of observation. The claim that observation is theory laden is also part of Kosso's more naturalistic interaction-information theory of scientific observability and observation, which is discussed in chapter 4. The fifth chapter deals with the claims, made by some philosophers of cognitive science (especially Churchland), that connectionism offers an adequate account of observation and that it supports the idea that all observation is theory laden. In these chapters, I argue that the doctrine of theory ladenness can be maintained if it is reformulated as the claim that all observation is conceptually interpreted. Other aspects of the views of Hanson, Kosso, and Churchland, however, are shown to be rather questionable. This applies, in particular, to their complete neglect of the role of human action in making observations.

In phenomenological and hermeneutical philosophy, perception has been a traditional focus of reflection. More recently, some philosophers

have applied phenomenological and hermeneutical analyses to scientific observation. In chapter 6, I describe one of these approaches—that proposed by Heelan. In its general outline, this approach puts forward a mostly adequate account of the role of both conceptual interpretation and human action in ordinary and scientific observation. A problem, however, is that Heelan's use of the general notions of interpretation and action in his discussion of more specific subjects is not always satisfactory. This holds, in particular, for his theory of hyperbolic vision.

Chapter 7 employs the results of the preceding chapters in arguing for an account of observation as the material realization and conceptual interpretation of observational processes. The central elements of this account are the notions of an observational process and its material realization and conceptual interpretation. These notions, which arise out of the more specific analyses in chapters 2–6, are explained in a more systematic fashion here. Furthermore, three basic arguments for the claim that all observation requires conceptual interpretation are put forward, and some counterarguments to this claim are discussed and refuted. In addition, the chapter explores an analogy between human observers and scientific instruments. It argues that a human observer may be seen as a self-interpreting observational instrument, which has been brought about in the course of a material and sociocultural evolution and which actively engages the world in attempts at materially realizing and conceptually interpreting observational processes. The chapter concludes with a summarizing account of what it means for an individual observer to observe a particular object or fact.

How Concepts Both Structure the World and Abstract from It

The second part of the book revisits the relationship between (materially realized) observational processes and their conceptual interpretations, but it examines this relationship from a different perspective. The focus is on the meaning of the concepts that are, or may be, employed in interpreting the results of (materially realized) observational processes. More particularly, I discuss the relationship between concepts and the world, where the latter has to be understood as the phenomenal world or the world "as we see it."

In the history of philosophy, two opposing views about the relationship between concepts and the world can be found. One view—deriving from Immanuel Kant and endorsed by Karl Popper, among many others—claims that in forming and using concepts we structure the world. Concepts produce or increase order. Hence the world, in so far as it is knowable by human beings, is necessarily a conceptually structured world. The second, still older view—represented by the (later) Aristotelian tradition and by John Locke, for example—holds that concepts are formed by abstracting from the particularities of the world. By leaving out the spatiotemporality and the accidental or irrelevant features of particular entities, we abstract a concept as a general representative of a (natural) kind.

The principal claim of part 2 of this book is that concepts both structure the world and abstract from it. At first sight, the two parts of this statement appear to be incompatible. I argue, however, not only that they are compatible but that both are necessary to obtain a plausible account of the relationship between concepts and the world. The focus of part 2 is on the problem of abstraction, while the claim that concepts structure the world is dealt with more briefly. I introduce, develop, and vindicate a new account of abstraction that differs from the so-called classical doctrine of abstraction. Central to this account is the idea of the extensibility of concepts to (completely) novel observational processes. The ontological implications of this account are discussed in detail. An important conclusion is that extensible concepts possess a nonlocal meaning.

Chapters 8–11 present the basic ideas about the relationship between concepts and the world. The starting point (chapter 8) is a rendering of Herman Koningsveld's views of the formation and nature of concepts. It involves, in particular, a discussion of an elementary but instructive experiment by which Koningsveld illustrates his view that concepts structure the world. The next chapter proposes a potential replication of this experiment by means of a new observational process. The analysis of Koningsveld's experiment and its suggested replication leads to the introduction of the notions of extensible concepts and their nonlocal meanings. With the help of these notions, I argue that concepts do not just structure the world but also abstract from it. Chapter 10 explains this idea of abstraction in detail and

investigates its applicability to the ontological categories of extensible concepts and their referents, the "nonlocals." Among other things, it results in a concise definition of the notion of extensible concepts. Chapter 11 discusses some of the wider philosophical implications of the theory of extensible concepts, abstraction, and nonlocals.

The aim of the next four chapters is to position this theory more precisely with respect to a number of alternative accounts of the issues under discussion. These chapters provide an analysis and evaluation of four alternative views on the nature and function of (scientific and ordinary) concepts and abstraction. Chapter 12 assesses John Haugeland's artificial intelligence account of the related notions of abstraction, formalization, and digitization. Chapter 13 addresses Nancy Cartwright's views on the role of Aristotelian abstraction in scientific theorizing. Bruno Latour's notion of translation and his account of the role of abstract laws and theories are examined in chapter 14. Chapter 15 deals with the theory of meaning finitism, which is advocated by sociologists of scientific knowledge Barry Barnes and David Bloor, among others. Although all four alternatives have their merits, their views of the nature and function of concepts and abstraction are shown to be deficient as compared to the theory of abstraction and nonlocal meaning proposed in this book.

The last chapter of part 2 offers a critique of the concept and practice of a specific kind of patenting, which is called product patenting. The timeliness of this critique derives from the many recent cases of the product patenting of genes. My main point is that what is being patented in this kind of patent is abstract or conceptual possibilities rather than concrete technological inventions. This specific normative critique of the concept and practice of product patenting is shown to follow smoothly from the theoretical-philosophical account of extensible concepts and abstraction.