

PHILOSOPHICAL HOLISM

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Summary

Holism is a view about the internal organization of certain systems. The claim can be summed up in this way: Holistic systems are such that their constituent parts have some of the properties that are characteristic of these things only if they are organized in such a way that they constitute a whole of the kind in question.

Holism is widely accepted in epistemology. Systems of beliefs of persons, scientific theories and finally our system of knowledge as a whole are considered to be holistic systems. It is claimed that experience cannot confirm or refute single beliefs or statements in isolation. Experience always confirms or refutes a whole system of beliefs or statements. What is more, the meaning – and the justification – of a belief or a statement consists in inferential relations to other beliefs or statements within a whole system of beliefs or statements. If these inferential relations are taken to be determined by social practices, social holism ensues.

Methodological holism is the view that systems have to be studied by considering the things that are their parts in the context of the whole. Holism as methodology applies to holistic systems in the first place; but it may also be an appropriate heuristic approach to study other systems. Methodological holism is widespread in the human sciences. In ontology, holism is the last resort the claim that the whole world is one holistic system in the described sense.

1. Introduction

This article considers holism insofar as it is a philosophical position, defended by rational argument. It first goes into examples of holism in specific areas of today's philosophy, namely in epistemology and semantics (section 2), in methodology (section 3), and in ontology (section 4). It then sums up these examples in a philosophical characterization of holism (section 5). In the field of transdisciplinary knowledge ontological holism is the most prominent form of holism, but epistemological and methodological holism are also discussed (see *Unity of Knowledge and Transdisciplinarity: Contexts of Definition, Theory and the New Discourse of Problem Solving*).

The examples of holism in the sciences are considered in detail in a separate article (see *Holism in the Sciences*).

2. Holism in epistemology and semantics

2.1 Confirmation holism

Holism is a position that is widely accepted in today's epistemology. The best way to introduce holism in epistemology is to consider the confirmation of statements or beliefs by experience. The claim of holism in that respect is that a statement cannot be confirmed or refuted by experience in isolation. What is confirmed or refuted by experience always is a whole system of statements, that is, a whole theory, and finally the system of our knowledge as a whole. This position is known as epistemological holism, or, more precisely, *confirmation holism*.

The contemporary discussion on confirmation holism goes back to the French scientist and philosopher of science Pierre Duhem (1861–1916). In his work on the object and the structure of the physical theory, Duhem maintains that it is not possible to put a hypothesis of physics to the test in isolation. Every experiment involves assumptions about the way in which the measuring instruments function, and these assumptions, in turn, imply physical laws. Therefore, Duhem claims that an ensemble of hypotheses or theories is put to the test in any experiment. If the experimental results do not agree with our predictions, we only know that at least one of the hypotheses in question is false. But we do not know which hypothesis or which hypotheses are false. We have a number of options for changing our theory in such a way that it accords with the experimental results. Duhem proposes *bon sens* as a criterion for deciding which option should be endorsed.

Consequently, even the first principles of physics are subject to empirical control in the same way as all the other statements that are contained in a physical theory. If a conflict with experimental evidence occurs, it is not logically determined which statements are to be rejected. It may be reasonable to change even fundamental hypotheses of physics subsequent to the results of experiments. Duhem concludes that the entire physics is one theory that is confronted as a whole with the whole of the experimental facts. Experience does hence not determine a unique system of physics. There may be several logically possible systems of physics that all agree with the whole of the experimental data that are at our disposal.

Duhem refers only to physics. He excludes common sense knowledge as well as sciences such as physiology on the one hand and logic and mathematics on the other hand from his thesis about confirmation. The American philosopher Willard V. O. Quine (1908–2000) generalizes Duhem's thesis in such a way that it applies to all sorts of knowledge, including common sense statements as well as logical laws. However, Duhem's holism is not Quine's background. In his famous paper "Two Dogmas of Empiricism" (1951), Quine sets out confirmation holism in opposition to the logical empiricism of the twenties and the thirties. Quine maintains that there is no separation between analytic statements of logic and mathematics, which are true or false independently of the way the world is, and synthetic, empirical statements about the way the world is. It is not possible to reduce empirical statements to logical constructs upon statements that describe sense experience and that can be directly confirmed or refuted by sense experience. What is confirmed or refuted by experience – be it scientific experience, be it common sense experience – is a whole system of statements. Consequently, no statement is immune against revision as a result of experience. Even statements that are regarded as logical laws can be abrogated in order to accommodate new experience. The demarcation between what counts as logic and what counts as empirical science can hence be subject to change. One famous example of this demarcation being variable is the debate about abrogating logical laws such as the law of the excluded middle consequent upon new experience in the domain of quantum physics.

Quine suggests regarding our system of knowledge as a seamless web. This web touches experience at its edges. Statements such as "There are brick houses on Elm Street" are on the periphery of this web. Statements of logic are located in its center. This web is not determined by experience: If a conflict with experience occurs, we have several options for adjusting the web to experience. Quine proposes a pragmatic attitude: It is rational to opt for those changes which imply the slightest perturbation within our system of knowledge as a whole in order to accommodate this system to new experience. Hence, this position implies not only that experience cannot confirm or refute any statement taken in isolation, but also that there is no separation between science and philosophy in the sense of metaphysics. Paying tribute to both Duhem and Quine, confirmation holism is often referred to as the *Duhem–Quine thesis*.

To put the matter in a nutshell, confirmation holism is the claim that experience – be it common sense experience, be it scientific experience – cannot confirm or refute statements in isolation. What is confirmed or refuted by experience is a whole system of statements and in the last resort the system of our knowledge as a whole. Consequently, (a) there is no separation between empirical statements about the way the world is and statements of logic, which are taken to be true come what may. Furthermore, (b) experience does not determine a unique system of knowledge. There are always rival logical possibilities to account for the same experience.

Although confirmation holism is widely accepted in today's philosophy, a precise conceptualization of this position faces a number of problems. The most important problems are the following two ones:

- What is the methodology of science to which confirmation holism leads? The point of confirmation holism is not a psychological theory about the way in

which persons change their beliefs in reaction to experience. The issue is the normative one how we shall change knowledge that is shared in our culture consequent upon new scientific experience. It is granted that there always are several logical possibilities for adapting shared knowledge to new experience. The point at issue is whether there are rational criteria that distinguish particular ways as being the plausible ones, or, ideally, one particular way as the true one. Relativists deny that there are such criteria. Scientific realists, by contrast, are committed to the view that there are such rational criteria, although we may ignore them at present.

- What is experience so that experience can be the way in which a system of knowledge responds to the world? Again, the point of confirmation holism is not a story about how experience causally induces changes to the systems of beliefs of persons. The point is how experience can be a reason for changes to a system of knowledge that is shared by a community. The point thus is how there can be a rational relation between experience and knowledge. Confirmation holism faces the following dilemma: If experience is conceived as a mere sensual happening, it is not intelligible how it can be a reason for changes to a system of knowledge. If, however, experience is conceived as being conceptual itself and thus as consisting in observation statements, it is itself part of the system of knowledge. How can it then exercise a check on a system of knowledge?

2.2 Holism about justification

Holism about justification can be seen as one answer to the last question. The claim is that (a) only other statements or beliefs can justify a statement or a belief and that (b) a statement or a belief is justified if and only if it coheres with other statements or beliefs. Holism of justification therefore is a coherence theory of justification. According to this position, insofar as experience is relevant to knowledge, it is itself conceptual and consists in observation statements. These statements are acquired without making any inferences. But they are not immune to revision, because they are part and parcel of our system of knowledge. They exercise a check on knowledge in the sense of general statements from within the system. The view thus is that our knowledge as a whole is one coherent system that relates to the world by including observation statements.

There are two ways of conceptualizing holism about justification: One can say that coherence is in the first place a property of a system of knowledge as a whole. If the justification of a statement that is called into question consists in showing that this statement is integrated into a coherent system of statements, then one can maintain that justification is, like coherence, a property which is, strictly speaking, a property only of a whole system of statements. Nonetheless, the property of justification of the whole indicates the way in which its parts—that is, single statements—are related with each other as regards justification. This property of the whole indicates in how far its parts cohere with one another, although the property of justification does not apply to single statements. Such an account of justification thus moves from the coherence of the overall system to the justification of that system and from there to the justification of particular statements by virtue of their membership in the system.

However, one can also conceptualize holism about justification in such a way that coherence is not a property of a whole system in the first place, but the way in which

single statements fit together with other statements in a system of statements. In this case, justification is a property of single statements in the first place, albeit a relational one, consisting in relations to other statements within a system of statements. The system as a whole is justified, because its parts have the property of being justified by cohering with one another.

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Biographical Sketch

Michael Esfeld, born 1966, is Private-docent in Philosophy at the University of Konstanz and Heisenberg Fellow of the German Research Council. His main areas of research are epistemology, the

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