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Article Summary

Ian Hacking (born in 1936, Vancouver, British Columbia) is most well-known for his work in the philosophy of the natural and social sciences, but his contributions to philosophy are broad, spanning many areas and traditions. In his detailed case studies of the development of probabilistic and statistical reasoning, Hacking pioneered the naturalistic approach in the philosophy of science. Hacking's research on social constructionism, transient mental illnesses and the looping effect of the human kinds make use of historical materials to shed light on how developments in the social, medical, and behavioral sciences have shaped our contemporary conceptions of identity and agency. Hacking's other contributions to philosophy include his work on the philosophy of mathematics (Hacking 2014), philosophy of statistics, philosophy of logic, inductive logic (Hacking 1965; 1979; 2001) and natural kinds (Hacking 1991, 2007a).

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1 Naturalism in the philosophy of science

Ian Hacking completed his first degree, a BA in mathematics and physics, at the University of British Columbia in 1956. He earned his PhD from Cambridge, where he studied under the direction of Casimir Lewy, a former student of Ludwig Wittgenstein (De Sousa 1992; Vagelli 2014). After holding various positions both in the US and in Europe, in 1982 he was granted a professorship at the University of Toronto. In 2001–2006 Hacking became the first anglophone scholar to be appointed to a permanent chair at Collège de France.

Hacking characterizes himself as Cambridge analytic philosopher and his philosophical method as conceptual analysis. His way of doing conceptual analysis is, however, non-traditional and it can be seen to reflect the influence of the two quite different philosophers who Hacking mentions as having influenced him the most, Ludwig Wittgenstein and Michel Foucault (De Sousa 1992). Hacking treats concepts not as abstract objects but as words used in their sites, and he is particularly interested in scientific concepts, because they best represent the knowledge of our day (Hacking 2002, p.24; Vagelli 2014). Hacking's approach to studying the sciences falls squarely in the naturalistic tradition initiated by Thomas Kuhn: In order to understand how scientific concepts function, one must study the sciences in detail. Accordingly, Hacking's contributions to the philosophy of science often arise from historical or contemporary case studies of scientific episodes. These contributions can, roughly, be divided into two parts. First, Hacking's work on styles of scientific reasoning concerns the emergence of new domains of human knowledge. Second, his studies of social construction and the looping effect of human kinds (i.e. the mutual influence between classificatory knowledge and the behavior of the people classified) show how scientific research not only represents its targets but also interacts with them. Particularly in the social and behavioral sciences, research often reproduces, influences, and even makes up phenomena.

2 Styles of reasoning

The Emergence of Probability (1975) marked the starting point for a new field of research, history of probability. Hacking's striking claim in the book is that our modern notion of probability emerged circa 1660 in the work of authors such as Pascal, Huygens and Leibniz. Although various practices and conceptual elements which we now collect under the rubric of probability had existed already in Renaissance thought, Hacking argues that the conceptual scheme of the time did not have a place for a notion of probability unifying those distinct elements. However, by extending to other areas of life concepts and reasoning practices that had originally been applied to uncertainty in gambling, a quantified notion of knowing by degrees was created. This notion, characterized by an ambiguity between an aleatory and epistemic interpretation (chance vs. degree of certainty), opened up a spectrum between (demonstrative) knowledge and (non-demonstrative) opinion, in place of the Platonic sharp disjunction of the two (Daston 2007). According to Hacking, the modern theories of probability require a certain conceptual space, a set of conceptual preconditions, which have remained quite stable from the late 17th century to the present. Hacking (1975, Ch 19) also argues that the Humean problem of induction is a product of the same era: the problem could only appear after the transformations required by the emergence of the concept of probability had taken place.

    The Taming of Chance (1990) tracks the subsequent stages of the development of probabilistic and statistical reasoning. It shows how the idea of chance transformed from a "superstition of the vulgar" to a foundational part of our conception of both the natural and social world. Laplacian determinism gave way to the possibility of autonomous and explanatory statistical laws about phenomena. Hacking argues that such conceptual shifts occurred in tandem with changing material practices. The 19th-century "avalanche of numbers" about births, deaths, sickness, deviance and suicide collected by the new nation states as well as the emerging social sciences functioned as

a precondition for the detection of population-level regularities in human behavior and for the development of statistical inference methods. Somewhat paradoxically, the indeterminism of chancy phenomena, when tamed under statistical laws, made higher levels of control possible (Hacking 1990, Ch 1).

Hacking's historical inquiries are motivated by the attempt to understand the present. They show that our concepts and reasoning, although often seemingly inevitable, have a history. Hacking characterizes probability and statistics as "styles of reasoning", as "ways of finding out" (Hacking 1982; 1992; 2012). Following the historian C.A. Crombie (1994), he suggests that the history of Western science has been characterized by a small number of distinct styles: the method of postulation exemplified by the Greek mathematicians, early modern introduction of systematic experimentation, hypothetical modeling, probability, taxonomy, and historico-genetic explanation. Each style comes with a new domain of objects, new kinds of evidence, propositions, laws and modalities, and ways of classifying and explaining phenomena (Hacking 1992). Although many everyday propositions ("my skin is warm") make sense regardless of any style, the propositions that do belong to a style become candidates for being true-or-false only after we have ways to reason about them. This gives styles of reasoning a self-authenticating character. They are autonomous in the sense that they do not answer to a standard of truth beyond themselves (Hacking 2012). This does not imply subjectivism, however: whereas a style makes a proposition up for grabs as true-or-false, it is the world that determines its truth value.

Representing and Intervening (1983), although written as a textbook in the philosophy of science, brings into focus another style critical to modern science, the experimental method. Hacking argues that experimentation forms an aspect of scientific inquiry which had often been overlooked by theory-oriented philosophers of science. The well-known slogan "if you can spray them, then they are real" (1983, p. 23) summarizes Hacking's practice-oriented take on the question of scientific

realism.

3 Making up people

In Representing and Intervening, Hacking shows how scientific observation and theoretical description of phenomena are deeply intertwined with the practices of interacting with and intervening on the world. This new emphasis on the concept of intervention surely helped to legitimize its role in subsequent philosophical discussions on causation. Furthermore, both natural and social sciences often create new phenomena. In the medical, behavioral and social sciences, in particular, the ways of classifying and controlling people associated with a style of reasoning often have consequences for how people think about themselves, and for the range of possible actions available to them. In *The Social Construction of What* (1999), Hacking argues that the vocabulary of social constructionism often does not provide a useful perspective on the underlying issues.

At least at times, Hacking seems to think that making up people constitutes a significant difference between the natural and social sciences. Whereas quarks do not care about how they are described and classified, new possibilities for human action are created when new descriptions of behavior are put forward (Hacking 1999, p.108). Again, Hacking utilizes historical case studies to address the question of how the availability of new scientific descriptions and classifications alter the possible ways of being a person. The most extended case studies concern the multiple personality disorder (*Rewriting the Soul*, 1995) and dissociative fugue (*Mad Travelers*, 1998). Both are *transient mental illnesses*, psychiatric phenomena that appeared in a certain cultural context, became epidemics, and then all but disappeared. In order to direct attention away from inconclusive general ontological debates about whether such phenomena should be considered real or not, Hacking (1998) introduces the metaphor of an *ecological niche*. In order to thrive, a transient mental illness requires a niche,

that is, it must be appropriately positioned with respect to four socio-cultural dimensions: medical taxonomy, cultural polarity, observability, and release. For example, in late 19th-century France, dissociative fugue was situated as follows: the medical controversy regarding its nature drew public attention to the disorder; it was morally ambiguous between virtue and vice (tourism and vagrancy); it was a directly observable phenomenon; and a diagnosis provided a kind of release from social responsibility that was not available elsewhere in the culture.

Hacking employs the metaphor of ecological niche to introduce more structure to the debates concerning realism about social phenomena. The metaphor helps to articulate the idea that perfectly 'real' phenomena can also be local by depending on a specific set of socio-cultural preconditions. More generally, Hacking describes his view of the ontology of categories in the human sciences as *dynamical nominalism*. Instead of there being a pre-existing category that is merely labeled by a new classification (realism), or a set of disunified things being collected under a common label (nominalism), dynamical nominalism states that often categories and classifications emerge hand in hand, "a kind of person coming into being at the same time as the kind itself was invented" (Hacking 2002b, p.106). This interplay between classifications and people underlies the *looping effect of human kinds* (Hacking 1995b; 2007b): people are often aware of the scientific classifications applied to them (e.g., psychiatric disorders, sexual orientation, genius). Such classifications are typically morally loaded; they are kinds that people may or may not want to belong to. Furthermore, people are often bound to describe their experience by using the conceptual resources and classifications provided to them by (scientific) experts (Hacking 1995a, p.35; 1995b). Consequently, people may react to classifications by behaving in new ways. The new behavior, in turn, creates a need for further scientific research on the kind, which may, again, have behavioral effects in the people classified. Through such a feedback mechanism, the classificatory knowledge and the kind itself are set into motion. Human kinds (like autism or multiple personality disorder) can be moving targets.

6

In Hacking's view, the possibility of such looping effects distinguishes the *interactive kinds* in the human sciences from the *indifferent kinds* often studied by the natural sciences (Hacking 2007a).

Although Hacking's studies of making up people and the looping effect make use of somewhat sensational case-examples, their aim is to provide insight into our contemporary ways of thinking about the human mind, identity, and personhood, and how those conceptions have been molded by the development of the human sciences (Hacking 2002b, p. 110).

List of works

Hacking, I. (1965/2016). *Logic of statistical inference.* Cambridge University Press. 2nd edition (A philosophical study of the foundations of frequentist statistical inference.)

Hacking, I. (1975/2006). *The emergence of probability: A philosophical study of early ideas about probability, induction and statistical inference*. Cambridge University Press.
(Argues that the concept of probability, as we know it, emerged in 17th-century thought.)

Hacking, I. (1979). What is logic? *The Journal of Philosophy*, 76(6), 285–319.
(Proposes a demarcation of logical constants.)

Hacking, I. (1982) Language, truth and reason. In Martin Hollis & Steven Lukes (eds.), *Rationality and Relativism.* MIT Press. pp. 48–66 (1982). Reprinted in *Historical Ontology* (2002), pp. 159–177.
(Introduces the idea of styles of reasoning.)

Hacking, I. (1983). *Representing and intervening: Introductory topics in the philosophy of natural science.* Cambridge University Press.

(A textbook in the philosophy of science with a focus on the role of experiments in science and scientific realism)

Hacking, I. (1990). *The taming of chance.* Cambridge University Press.
(Documents the 19th-century developments leading to the erosion of determinism and the emergence of the idea of statistical laws.)

Hacking, I. (1991). A tradition of natural kinds. *Philosophical Studies*, 61(1), 109–126.
(An overview and analysis of different usages of 'natural kind' from Mill to Kripke.)

Hacking, I. (1992). 'Style' for historians and philosophers. *Studies in History and Philosophy of Science Part A*, 23(1), 1–20. Reprinted in Hacking 2002, 178—199.
(A slightly more extensive treatment (see Hacking 1982) of the idea of styles of scientific reasoning and its implications on scientific objectivity.)

Hacking, I. (1995a). *Rewriting the soul: multiple personality and the sciences of memory.* Princeton: Princeton University Press.
(A philosophical case study on the reality of transient mental illnesses.)

Hacking, I. (1995b). The looping effects of human kinds. In *Causal Cognition. A Multidisciplinary Debate*, edited by D. Sperber, D. Premack, and A. J. Premack. Oxford: Clarendon Press, pp. 351–94.
(Hacking's most systematic take on the looping-effect phenomenon.)

Hacking, I. (1998). *Mad travelers: Reflections on the reality of transient mental illnesses.* University of Virginia Press.
(Hacking's second extended case study on looping effects and transient mental illness.)

Hacking, I. (1999). *The social construction of what?* Harvard University Press.

(A philosophical intervention to the debates on social constructivism.)

Hacking, I. (2001). *An introduction to probability and inductive logic.* Cambridge University Press.

(An accessible textbook on probability and induction.)

Hacking, I. (2002a) *Historical ontology.* Harvard University Press.

(A collection of essays from 1973–1999. As the title suggests, the essays concern the historical constitution of objects (e.g., concepts, phenomena, kinds of people) and objectivity.)

Hacking I. (2002b). Making up people. In Hacking 2002a, pp. 99–114.

(An essay on how practices of classifying people can create new possibilities of action and new ways of being a person.)

Hacking, I. (2007a). Natural kinds: Rosy dawn, scholastic twilight. *Royal Institute of Philosophy Supplements*, 61, 203–239.

(Argues that the tradition of natural kinds has fragmented into so many different notions of natural kind that the concept no longer serves its purpose).

Hacking, I. (2007b). Kinds of people: Moving targets. In *Proceedings of the British Academy* (Vol. 151). Oxford University Press.

(Proposes a framework within which to think about making up people and the looping effect)

Hacking, I. (2012). 'Language, truth and reason' 30 years later. *Studies in History and Philosophy of Science Part A*, 43(4), 599–609.

(A summary of the styles-of-reasoning project.)

Hacking, I. (2014). *Why is there philosophy of mathematics at all?* Cambridge University Press.

(Discusses mathematics as the target of philosophical attention, focusing on questions of proof and application.)

References and further reading

Crombie, A. C. (1994). *Styles of scientific thinking in the European tradition*. 3 volumes. London: Duckworth.

(Original inspiration for the styles-of-reasoning project.)

Daston, L. (2007). The history of emergences. *Isis*, 98(4), 801–808.

(A review essay about The emergence of probability, written after the publication of the second edition. Includes a discussion of the reception and influence of the work.)

De Sousa, R.B. (1992). Ian Hacking: an interview. *Toronto Philosophy News*, 1:2. pp.4–6. URL: https://philosophy.utoronto.ca/wp-content/uploads/1992-Winter-Philosophy-News.pdf

(An interview from 1992 where Hacking talks about his philosophical influences and his ways of working).

Vagelli, M. (2014). An Interview with Ian Hacking. The Philosopher of the Present. *Iride,* 27(2), 239–272.

(An interview looking back at Hacking's career)