

Thomas Vinci

Review Article

Perceiving and Representing: Reflections on Ian Hacking's recent book *Representing and Intervening*.

You remember those horror films from the '50's. A pleasant-looking woman gets out of her station wagon in front of a pleasant-looking house carrying a bag of groceries. She pats her not so pleasant looking children on the head and starts up the stairs. Things go on like this for a while but sooner or later you know that something shocking and ridiculous is going to happen. Recently, the same sort of thing has been happening to me in some of my reading in the Philosophy of Science. Observation is theory-laden. What you see is what your theory says you'll see. So if your theory says you will see six elephants in this room, then you will see six elephants in this room. Or something like that. You know those tables and chairs you thought you had in your dining room? Think again. As for that thought you thought you had . . . or, best of all, consider the cat you just referred to. For all you know it could just as well have been a piece of fruit. Or the number 38. Therefore, the world doesn't exist—logicians have proved it. And so it goes.

It was natural, therefore, that when I first picked up Hacking's new book in the Philosophy of Science I turned each page gingerly, wondering when the giant winged-turtle would suddenly take flight. Page after page crossed my scrutiny, each containing reasonable, sensible stuff. I began to get worried. Fortunately a shadow appeared around page 27 in the form of a distinction between entity realism and theory-realism. Hacking draws this distinction in terms of three "ingredients" of Newton Smith's:

1. *An ontological ingredient*: scientific theories are either true or false, and that which a given theory is, is in virtue of how the world is.
2. *A casual ingredient*: if a theory is true, the theoretical terms of the theory denote theoretical entities which are causally responsible for

the observable phenomena. 3. *An epistemological ingredient*: we can have warranted belief in theories or in entities (at least in principle).¹

“Roughly speaking” says Hacking, “Newton-Smith’s ontological and epistemological ingredients add up to my realism about entities”². This is a rather strange equation, and I surmise that it is in fact a misprint: for “realism about entities” read “realism about theories”.³ Realism about entities, however, though close to comprising the causal and the epistemological ingredients, is not exactly that, for the former ingredient seems to imply that “belief in such entities depends on a belief in the theory in which they are embedded”⁴ and this belief is mistaken, says Hacking. Theory-realism can thus be separated from entity-realism. Hacking observes that the separation can work in the other direction too: as Russell showed you might accept the truth of theories while contextually eliminating the objects they seem to countenance.⁴

Hacking’s main theme in the book is that one should embrace entity realism but reject theory realism. I must confess that I have found it difficult to gain a footing in the flow of discussion around this theme. Certain sub-themes emerge, however. One is that our belief in entities depends on our intervening with them and their intervening with us.⁵ Another is that “one wants a notion of reference that is not tied to any specific, binding theory about what is referred to . . . [This] is the kind of theory that scientific realists about entities need.”⁶ A third is Hacking’s idea that originally we construct representations then, finding that various inconsistent representations of the same thing can be constructed, we introduce the concept of the real or right representation. “First there is representation, then there is ‘real’”, as he puts it.⁷

These three sub-themes never quite come into focus for me, at least not when I try to superimpose them on the main theme. Let me start, therefore, with representation by itself.

Representations are not in general intended to say how it is. They can be portrayals or delights. After our recent obsession with words it is well to reflect on pictures and carvings . . . Pictures are seldom, and statues are almost never used to say how things are. At the same time there is a core to representation that enables archaeologists millennia later to pick out certain objects in the debris of an ancient site, and to see them as likenesses. Doubtless ‘likeness’ is the wrong word, because the ‘art’ objects will surely include products of the imagination, pretties and uglies made for their own sake, for the sake of revenge, wealth, understanding, courtship or terror. But within them all there is a notion of representation that harks back to likeness. Likeness stands alone. It is not a relation. It creates the terms in a relation. There is first of all likeness, and then likeness to something or other. First there is a representation, and then there is ‘real’.⁸

But “likeness” is the wrong word. What is the right word? I suggest a phrase: “having a content”. Pictures have contents whether we paint the picture to say how things are in reality, how we wish they were or just for the sake of amusement. The concept of reality arises as soon as we began to produce different, competing representations. This is what Hacking says and it fits treating the core notion of representation as the notion of having a content.

Hacking does not, however, mean to restrict representations or their contents to objects alone, allowing that theories or theoretical models can be representations as well. We might naturally infer from his slogan “First there is representation then there is ‘real’”, that the difference between entity realism and theory realism comes down to differences between object representation and theory representation. Hacking’s skepticism about theory-realism stems from his belief that what some think of as *The Book of Nature* is in fact a compendium of monographs, each representing a model, some of which are in competition with one another, none of which have better claims to truth than any others. So we might now infer that Hacking’s enthusiasm for entity realism has something to do with the fact that object representations either do not compete with one another or, if they do, there are some that have objectively superior claims to reality. If this inference is correct two questions force themselves upon us: Will not a resolution of a competition involve us in deciding whether some set of predicates is objectively true of the object?; and, if the answer is ‘Yes’, will this not commit us to a form of theory realism? Hacking’s answer to the first question is indeed a qualified ‘Yes’ but his answer to the second is negative.

It will ultimately transpire that the entity-realism/theory-realism distinction is tenable for Hacking only if theories are presented to us as representations and objects are not. To see how this works for the objects it will be helpful to consider another question: How do representations get to compete with one another? A necessary condition is that they be about the same subject. *Aboutness* is, clearly, a different notion from content and we might naturally look to the notion of reference for elucidation. Here causal theories are popular and Hacking may endorse a form of them. However I am skeptical about their adequacy. Even Putnam, once a firm advocate of causal theories of reference now seems to have thought better of the idea: “For me”, he says “there is little to say about what reference is other than these tautologies [*viz*, the word “extraterrestrial” refers to extraterrestrials]. The idea that causal connection is necessary is refuted by the fact that ‘extraterrestrial’ certainly refers to extraterrestrials whether we have causally interacted with any extraterrestrials or not!”¹⁰

Let's try another approach. N. R. Hanson wanted to undermine our belief in a strong theory/observation distinction by considering gestalt pairs. Gestalt pairs are pairs of objects that are seen as excluding one another. One either sees the cube in one three-dimensional array or in another, but we cannot see them both as aspects of a single object. Most of these phenomena are elicited by cleverly constructed line drawings and it may therefore seem as if there *is* one single object taken to be various different things, viz., the line drawing itself. Hanson would reject this account, replying that when we see the line drawing as a complex of lines we have a gestalt different from either of the above two. I am inclined to agree with Hanson.

Hanson went on to treat the way in which, for example, a seasoned physicist and a novice lab assistant see the "same" x-ray tube as a gestalt pair, arguing that differences in knowledge shape the differences in seeing. Having got us to concede that there is no common perceptual object present in the original gestalt pairs, he now asks us to concede the same for these pairs and thus accept the radical "theory-ladenness" of what we see. This argument is pretty obviously a bad one. If it convinces us of anything, it convinces us of the extent to which what we see is stable under competing intellectual representations. Still, Hanson has the merit of drawing our attention to a perceptual sense in which competing conceptual representations can be about the same subject.

The connection between representations and perception is not a topic Hacking says very much about but what he does say comes into focus, appropriately, in his chapter on the microscope. Hacking takes one of the key reasons for being a realist about micro-entities to be the fact that you can see them under a microscope. This appears to raise problems for one trying to endorse entity realism and reject theory-realism. How could you accept as true the proposition that you see micro-entities and their properties in a microscope unless you accept-as-true the theory specifying the particular details of the physics of the microscope? Hacking answers this apparent difficulty by denying the strong doctrine of the theory-ladenness of observation on which he believes the difficulty rests.

He does not deny that we may need to accept some theory as true if we are to decide what we may be observing on at least some occasions. He does deny that when we are testing a theory, T, we allow that T itself determines what we are seeing. He also notes that "In the case of seeing tables, our statements similarly contain no theoretical assumptions connected with the objects under inquiry, namely tables, even if (by an abuse of the words 'theory' and 'contain') they contain theoretical assumptions about vision."¹¹ His idea is that we can tell whether

what we see under the microscope is real or an artifact of the instrument without having the right or, indeed, any theory of its physics. Notice that here we are concerned with the question whether certain perceived objects are *real* and we might ask again whether a real object is that represented by the objectively best of a set of competing representations. Thinking of representations as *perceptual*, the answer would seem to be negative for, *pace* Hanson, we don't seem to have competing perceptual representations one of which we are trying to select as real. Indeed what is competing are not representations of any kind but the predications "in the instrument" and "in the specimen". Since they compete they must be about the same subject, *viz.*, what we see. It is the relative independence of what we see from our judgements about whether what we see is real that allows for the independence of entity realism from theory realism. We now settle the question whether what we see is in the instrument or in the specimen by common sense procedures akin to those we ordinarily use to distinguish, for example, mirages from puddles of water on the highway.

How, precisely, does this work for the microscope. This is a loose end that may threaten to unravel the whole fabric of Hacking's argument. It shows up in clearest relief in the passage where Hacking summarizes his account of what we see when we look at things under a microscope:

When an image is a map of interactions between the specimen and the image of radiation, and the map is a good one, then we are seeing with a microscope. What is a good map? After discarding or disregarding aberrations or artifacts, the map should represent some structure in the specimen in essentially the same two-or-three dimensional set of relationships as are actually present in the specimen.¹²

What is the first kind of image? Sometimes it might be a photograph or other physical object, but ordinarily it will not be. Are they, then, sensations? Like most contemporary scientists Hacking wants to sit on the fence about the metaphysics of perception, speaking vaguely of 'visual configurations' or 'visual elements'¹³. Scientists of earlier times were more forthright. Almost without exception those working in optics explicitly followed Descartes' lead in treating visible properties like colour as features of sensations. For Clerk Maxwell, who did a lot of work on the three-colour theory in the nineteenth century, this "truism" had metaphysical implications. This is how he put it:

. . . In the eye we have on the one hand light falling on this wonderful structure [the rods and cones] and on the other we have the sensation of sight. We cannot compare these two things; they belong to opposite categories. The whole of metaphysics lies like a great gulf between them.¹⁴

For a scientist interested in optics or perception not to take a stand on metaphysics is to accept by default the Cartesian metaphysics built into the foundation of modern optics.

What you may ask, is wrong with Cartesian metaphysics? One thing that is wrong with it is that it leads to a form of perceptual representationalism where what we see when we see things are sensory images. I take the conservative view that, if this were the case we would not see physical objects. The difficulty for Hacking with this conclusion is that it threatens to make observation theory laden and thus to obviate his separation of entity realism from theory realism.

Hacking, however, takes a liberal view. Does the jet pilot who sees information about the terrain displayed on the cockpit window see the terrain? "Yes" replies Hacking. Do we see events represented on the screen of a television? Yes, again, only this time Hacking remarks that we see the events with, that is with the aid of, the T.V. Rather like seeing objects with the aid of one's glasses I suppose. Hacking notes that we do not *say* that we see the events with television, rather we say we see them *on* television, but "that is a mere idiom, inherited from 'I heard it on the radio' ".¹⁵ There are, of course, many other such constructions, e.g., "I saw it in the picture", "in the mirror", "in my dreams". All mere idioms?

My own view is that these constructions are a kind of metaphorical operator indicating both that the experience is like a primary seeing in some way, hard to put into words, and yet is not *really* seeing. I am reminded in this connection of Hacking's comment earlier quoted. "First there is representation and then there is "real". In any case, ordinary language is not with Hacking on his treatment of these cases.

Hacking, however, would not be impressed. "It would be silly" he says, "to debate the ordinary use of the word 'see', especially given the usages quoted at the end of the last chapter, where we see 'most of the fermions' or 'observe' the sun's core with neutrinos.¹⁶ I would have thought that it would be crucial to enter this debate precisely because of these usages. Then there are Hacking's remarks about J.L. Austin in connection with the latter's investigations of the nature of reality:

He [Austin] cared deeply about common speech, and thought we often prance off into airy-fairy philosophical theories without recollecting what we are saying. In Chapter 7 of his lectures, *Sense and Sensibilia*, he writes about reality: We must not dismiss as beneath contempt such humble but familiar phrases as 'not real cream'.¹⁷

Hacking is, thus, selective in his distaste for ordinary language. But is ordinary language unambiguously with the conservative view? What, for example, of Maxwell's slippery slopes: if we fail to see an object represented in a microscope, do we also fail to see things through a

pane of glass? In fact, I think that such slippery slopes provide confirmation for this view: doubts about where to draw the line between seeing an object and not seeing it are correlative with doubts about whether what we see is an image or the intended object. Underlying the conservative view is a conception of seeing wherein seeing something presents us with a nexus of an object and certain qualities: we don't see an object unless we see at least some of its colour and shape; we don't see such properties unless we see them as properties of an object. Perception, then, gives us information about objects in the form of a relation between a perceiver and a nexus of an object with its visible qualities.

This, at least, is the naive view, a view held largely in dispute these days. One reason for this centers on the appearance-reality distinction. The objection begins something like this: Things often look different from the way they really are; under some conditions a penny can look elliptical even though we know it really is round. In order for us to make this judgment justifiably we need a lot of collateral information. Even deciding that the penny is real requires such information. A naive realist would do well to concede this but wonder how the objection is supposed to continue. Does it continue, ". . . therefore, on the naive view of perception, perception does not give anything to epistemic warrant"?; or does it go, ". . . therefore perception does not give an object-property nexus"? The answer is "No" to both. True, the qualities given us may not be the *real* qualities of the object, the object itself may not even be a real X, but it is only if we are Quineans of a rather orthodox strain that we see a collapse between the real and the existent. To see the shape of the penny, both the penny and the shape must exist, though they may or may not be real according to some relevant criteria. "First there is perception, then there is 'real' ", we might say.

This view fits into a foundational epistemology somewhat as follows: if we perceive an object, o, in nexus with a quality, q, we are *prima facie* justified in judging that o is q. This also gives us a clear sense in which perceptual judgments are unlike theoretical judgments: the latter derive their warrant essentially from explanatory or probabilistic considerations, the former do not. Theories enter only when we are concerned to adjudicate questions of reality. This gives us a distinction between belief in the existence of objects and belief in the truth of theories, if not exactly Hacking's distinction.

A good deal of work would be required to turn this sketch of naive realism into a fully developed theory. Fortunately, most of the work has already been done, with a transcendental twist, by Kant. Here are some of the highlights.

In the first sentence of the text of the first *Critique* Kant tells us what an intuition is:

In whatever manner and by whatever means a mode of knowledge may relate to objects *intuition* is that through which it is in immediate relation to them, and to which all thought as a means is directed.¹⁸

Intuition is a special case of a *representation*. Kemp Smith reports that before writing the first *Critique* Kant toyed with the idea that representation was a causal relation.¹⁹ This would make the relation between a representation and its object an external relation. Fortunately Kant abandoned this idea replacing it, I think, with the idea that representation was an internal relation: the intuition contains its object. This, indeed, is definitive of Kant's notion of an intuition. What is it about intuitions that makes them have *objects* as their contents? Kant says that the form of intuition is spatial and I think that the objectual content of intuition must be somehow analyzed in terms of this form together with its matter, colour. The object then emerges as a kind of feature of the intuition.

The emphasis here is on objects and not on propositions or judgments about objects. It is easy to miss this distinction, for Kant tends to move rather too easily from talk of objects to talk of objectivity, the latter being a feature of judgments or experience. This is especially true in the *Prolegomena*. Nevertheless, Kant's official doctrine in the *Critique* is that causal principles *regulate our judgements of objective experience* while mathematical principles help in part to *constitute our intuitions*. This means that the objectual content of intuitions and, hence, of the phenomenal world has nothing essentially to do with the objective content of experience. Causal principles are, thus, *a priori* versions of Russell's postulates: they serve as the central core of theoretical research programmes.

The point of this discussion is to bring out an analogy between Kant and Hacking on the separation of entity realism from theory-realism. As I have construed Kant, the separation between intuitions and judgments of experience would sustain this analogy within the phenomenal world if Kant's categorical conception of regulative principles was replaced by a pragmatic conception. (Cf. Lewis' exploration of a phenomenalist version of this conception in *Mind and the World Order*.)²⁰ The idea would be that though an object exists if it is the object of an intuition, its being real or predications made of it being *objectively* true would not be a matter of fact but a matter of choice.²¹

NOTES

1. I. Hacking, *Representing and Intervening*, Oxford, 1983, pg. 28.
2. *Ibid.*, pg. 29.
3. I am not certain that the surmise is correct but when I read this piece to a symposium at which Hacking was present he did not object.
4. *Ibid.*, pg. 27.
5. *Ibid.*, This theme is introduced on pg. 22.
6. *Ibid.*, pg. 91.
7. *Ibid.*, pg. 139.
8. *Ibid.*, pp. 138-139.
9. *Ibid.*, pg. 132.
10. H. Putnam, *Reason, Truth and History*, Cambridge, 1981, pg. 52.
11. *Op. cit.*, pg. 184-185.
12. *Ibid.*, p. 208.
13. *Ibid.*, pg. 205.
14. J.C. Maxwell "On Colour Vision", reprinted in D.L. MacAdam *Sources of Color Science* (MIT, 1970), pg. 82.
15. I. Hacking, *Representing and Intervening*, Oxford, 1983, pg. 208.
16. *Ibid.*, pg. 207.
17. *Ibid.*, pg. 32.
18. Immanuel Kant, *The Critique of Pure Reason*, Kemp Smith translation (MacMillan, 1929), pg. 65.
19. N.K. Smith, *A Commentary to Kant's 'Critique of Pure Reason'* (Humanities Press, 1962), pgs. 206-207.
20. C.I. Lewis, *Mind and the World Order* (Dover, 1929).
21. This paper was first read in a symposium on Hacking's book held at the Canadian Philosophical Association's annual meeting in Guelph, 1984.