Studying Perception

OLLI LAGERSPETZ

Abstract
Empirical studies of perception must use the logic of everyday non-technical conceptions of perception as their unquestioned background. This is because the phenomena to be studied are defined and individuated on the basis of such basic understanding. Thus the methods of neurobiology exclude reductionist accounts from the outset, implicitly if not explicitly. It is further argued that the concepts of neural and mental representation, while not confused *per se*, presuppose a general picture where perception as a whole is viewed in the light of teleology. References are made to discussions by Bennett and Hacker, Paul Churchland, and Peter Winch.

0. Preliminary Remark

The present essay relates to current debate on the demarcation between empirical and conceptual issues in studies of the mind. However, the aim is to insert the question mark earlier and ask: What *is* it to conduct a study of the mind, empirically or otherwise? What presuppositions must *obviously* be there when research gets started? More specifically, the essay will discuss perception, as that must have a central role in any reasonable account of human consciousness.

Neurobiology, like other sciences, may be said to involve certain starting points as a self-evident background. I will suggest that, in studies of perception, some of this background not only goes unacknowledged but is often explicitly denied. It is *not* my purpose to tell neurobiologists to change their starting points, nor indeed to tell them at all what they should do. Instead, I am addressing those (philosophers, neurobiologists, psychologists, and others) who *interpret, discuss*, and *write about* what neurobiologists do. The study of perception seems to be one of those areas where many of us are tempted for philosophical reasons to insist on descriptions that fly in the face, not only of everyday experience, but of existing scientific practice as well.

In a sense, it is an aim of this essay to defend 'folk' or 'pre-scientific' conceptions of perception. However, the point is really that these are also *scientific* conceptions, as arguably they are indispensable for scientific studies of perception.

First I will make a general methodological point about the use of mind-related concepts in studies of the mind; and then elucidate

doi:10.1017/S0031819108000466 ©2008 The Royal Institute of Philosophy

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

this by way of a discussion of recent objections raised by Paul Churchland to *The Philosophical Foundations of Neuroscience*, a book by M. R. Bennett and P. M. S. Hacker. That discussion will primarily be about how to apply the concept of representation.

1.i. Methodological Remark: 'Inside' vs. 'Outside' Understanding

At least one important part of the philosophy of mind should treat the role of mind-related concepts in non-technical contexts. (I would go as far as saying that this is the most important part, but that is not essential for the present argument.) In other words, there will be use for analyses of how we normally relate to concepts like seeing, hearing, or feeling; or belief, intention, representation, or mental image.

However, at present such studies have not had much of an impact on cognitive science or neurobiology, nor indeed on philosophy. According to a typical view, the use of mind-related vocabulary in ordinary language relies on folk theories about the mind. And these may turn out to involve mistaken ideas about how the brain works. On that view, the task of scientific studies of the mind is consequently not to vindicate folk conceptions but to find out what it *really is* to see, feel, believe, intend, and so on.[1] Thus the study of everyday mind-related concepts might at best constitute a preliminary to more serious work. An additional reason for scepticism is no doubt the feeling that we more or less know anyway how mind-related concepts are used in everyday situations.

But it seems to me, first of all, that it is for the most part confused to think that folk theories, or any theories, lie behind our everyday use of mind-related concepts. These concepts are not only employed for prediction or theoretical explanation of behaviour but, more importantly, they are *constitutive of* our meaningful activities (as, for instance, Robert A. Sharpe has argued).[2] I will return to this.

On the other hand, in a sense it is true that neurobiologists and cognitive scientists already know how we usually speak of seeing, feeling,

[1] E.g., Paul M. Churchland (1981), 'Eliminative Materialism and the Propositional Attitudes,' *Journal of Philosophy* 78, pp. 67–90; Peter Carruthers (2000), *Phenomenal Consiousness: A Naturalistic Theory* (Cambridge: Cambridge University Press), pp. 119, 185 (fn 3).

[2] Robert A. Sharpe (1991), 'Minds Made Up,' *Inquiry* 34, pp. 91–106; Robert A. Sharpe (1988), 'The Very Idea of a Folk Psychology,' *Inquiry* 30, pp. 381–393.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

believing, and so on. Thus their frustration at suggestions of further inquiry would be understandable. They understand these concepts, not because they are scientists but because they are much more; namely, human beings. Simply by virtue of being fully socialised adults they, like the rest of us, will have a good practical grasp of all this. However, this does not necessarily mean that the scientists have a clear picture of how this understanding relates to their own studies.

The situation, I suggest, is analogous to that of the social sciences, as analysed in 1958 by Peter Winch in *The Idea of a Social Science and its Relation to Philosophy*. Winch compared the situations of a natural and a social scientist.

For both, their ability to conduct meaningful empirical studies depends on their employment of what Winch called 'judgments of identity'. They must be able to say, of two phenomena, that they fall under the same description (in other words, that they are in some respect instances of the same thing) if they are to include them both as instances of some generalising statement of the kind that their research is expected to produce.

But Winch argued that there will be a difference between the natural and the social scientist. Identity judgments by the natural scientist will need to take account of prevailing theory and tradition within his field, say nuclear physics. But the sociologist will investigate a situation where, moreover, the research subjects themselves have ideas about their activities. And *their* ways of identifying the situation will shape their behaviour. Thus, in Winch's words,

> The concepts and criteria according to which the sociologist judges that, in two situations, the same thing has happened, or the same action performed, must be understood *in relation to the rules governing sociological investigation*. But here we run into a difficulty; for whereas in the case of the natural scientist we have to deal with only one set of rules, namely those governing the scientist's investigation itself, here *what the sociologist is studying*, as well as his study of it, is a human activity and is therefore carried out according to rules. And it is these rules, rather than those which govern the sociologist's investigation, which specify what is to count as 'doing the same kind of thing' in relation to that kind of activity.[3]

[3] Peter Winch (1990), *The Idea of a Social Science and its Relation to Philosophy* (London: Routledge & Kegan Paul; original year of publication 1958), pp. 86–87. Italics in the original.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

Perhaps I should add that the main point in this context has to do, not with the role of rule following, but with the frame of reference for one's ways of identifying and individuating social phenomena.[4] In order to *identify* given meaningful activities the sociologist must have an idea of how the participants would look at what they are doing.

Winch concludes that, in order to study meaningful behaviour at all, the sociologist must have *inside understanding* of the type of behaviour she is investigating. If you write, say, on the sociology of art you must have some aesthetic sense in order to grasp the concerns and choices that face artists and their public.

This obviously underscores the importance of 'participatory' approaches to social research. However, a second lesson we can gather from Winch's argument is that all social research worth the name already *is* participatory at least in a minimal sense. When a sociologist identifies human behaviour in one way rather than another (for instance, as artistic activity) *ipso facto* she employs her existing understanding of the type of meaningful behaviour in question. Positivist social scientists were simply not aware of the 'inside understanding' that they both possessed and employed. For this reason – as they *thought* they were simply describing data out there – they ran the risk of unreflectively imposing their prejudices on the material.

The lesson is that there is no neat line of separation between 'positivist' and 'understanding' social science. Research insofar as it concerns social phenomena at all *will* involve a minimum of *Verstehen*, or understanding in a hermeneutic, humanistic sense, even if the positivist's official story is different. What one needs is greater awareness of what one is doing.

The thesis of the present paper is that there is an analogy to be drawn between that discussion and the present state of cognitive and neurobiological studies. Perhaps surprisingly, the neurobiologist falls on the same side of Winch's methodological divide as the sociologist. The neurobiologist has 'inside understanding' of the phenomena she is studying. In the case of perception, this is the understanding of perception she has acquired by living in a world where we orient ourselves by using our senses; by being one such person; and by participating in a community of speakers who employ these concepts.

Neurobiologists, psychologists and philosophers who study perception thus in some sense already know from the outset what it is

[4] Also see Winch's introduction to the 1990 edition of his book (*ibid.*, ix–xviii).

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

to perceive something. Not only can they usually *do* the things that they are studying (such as seeing and hearing and touching, and more specifically, distinguishing between colours, pitches, temperatures, distances, objects, movements, and so on). They also have an idea of the kinds of thing one may sensibly say about perception, and of the kinds of claim that can be justified by referring to it. And they use this understanding in their research as they *identify* the relevant phenomena. It is thus at least implicit in the very task they have set themselves.

1.ii. Example: Perception and Knowledge Claims

To mention a central instance of our shared understanding of perception concepts, consider some ways in which perception functions as a source of knowledge. Your report of what you have seen on some occasion may be used as evidence in a court of law. Reports of your hallucinations and dreams typically cannot – even if sometimes it will be important for the court to know *that* you were hallucinating. And, connecting to this: several people may have seen or heard the same thing; and a thing may be observed from various distances and perspectives.

These facts all point to the same direction. Real disagreements between witnesses will raise questions about *what has happened*. They are not simply indicative of differences between people's inner experiences. There is typically no neat distinction between questions about someone's perception and about what there was to perceive. These issues are internally related, as the truth of the one report will be dependent on the truth of the other and vice versa.

Here, and indeed typically, perception verbs (such as 'see' and 'hear') have what one may call *success grammar*.[5] (This is also typical, for instance, of 'recalling'.) The paradigm for 'seeing' and 'hearing' is the successful case, or the taking in of facts that are there to perceive.[6] Perception is distinguished from illusion and mistakes, in witness boxes, laboratory experiments, and elsewhere, by looking for correspondences between what the witness thinks he has perceived and what else is known about the case.

[5] C. A. J. Coady (1992), *Testimony: A Philosophical Study* (Oxford: Clarendon Press), p. 134.

[6] This is not to say that 'see' and 'hear' are *never* used in other ways. For the present argument it is sufficient to recognise that perception verbs have success grammar in many *central* cases. – See Coady, *loc. cit.*

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

Thus it may be true that the witness saw the Queen walking down the street only if it is true that the Queen was there at the time. Otherwise, we will say the witness *thought* he saw the Queen. Or, in a different kind of case, perhaps he saw the Queen without realising he did. And what you can see you can also miss, while (in the sense now relevant) you cannot miss dreams or hallucinations. The question of what the witness saw will thus turn into questions about what happened. The points just made describe aspects of what has been called the 'aboutness', or intentionality, of perception.

1.iii. Methodological Remark: Explaining Perception

Scientific accounts that do not *preserve* such crucial features of our perception concepts would obviously not be accounts of the activity we normally call 'perception'. They might be good descriptions of something else; perhaps of processes more or less closely related to perception – say, of dreams. *That* relation would now remain to be explicated.

Thus it would, for instance, constitute *reductio ad absurdum* to give an account of perception that supposedly shows we *cannot* be aware of the immediate surroundings that we are normally said to perceive or miss. Similarly, that would be true of accounts according to which two observers can never be aware of the same object.

Yet such descriptions are surprisingly influential. In *Descartes' Error*, Antonio Damasio writes,

> If you look out the window at the autumn landscape, or listen to the music playing in the background, or run your fingers over a smooth metal surface, [...] you are perceiving, and thereby forming images of varied sensory modalities. The images so formed are called *perceptual images*. [... Perceptual images] are constructions of your organism's brain. All that you can know for certain is that they are real to your self, and that other beings make comparable images. [...] If our organisms were designed differently, the constructions we make of the world around us would be different as well. We do not know, and it is improbable that we will ever know, what 'absolute' reality is like.[7]

[7] Antonio Damasio (1996), *Descartes' Error* (London: Macmillan), pp. 96–97.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

Damasio presents the last quoted sentence (about our probable ignorance of '"absolute" reality') as if it was a conclusion from his preceding argument. But in one sense – as a conjecture of empirical character – the claim has already been falsified. Scientific descriptions exist of physical phenomena that are relatively independent of any sensory modality; for instance, accounts of how vibrations produce sound. On the other hand, he might be making the (Kantian inspired) claim that there are limits to human cognitive powers. But then there are better ways to state the philosophical point. One might say there is no such thing as describing what reality, say, *looks like* apart from describing what it would look like to someone who is *looking*. The idea of 'absolute reality' has no fixed meaning, to be identified once and for all regardless of the relevant context of inquiry.

But that does not lend support to the claim that all you can perceive is constructed images. The quoted passages indeed start with a description that takes perception for granted. You are not imagining, remembering or hallucinating the landscape outside your window. This gives us the distinction between what Damasio calls 'perceptual' and 'recalled' images.[8] But further down in the quote, the description implies you have no way of knowing that the initial description is true, as all these images are just constructions of your brain. This collapses the initial distinction between perception and hallucination. Nor are we told why you should believe that other beings 'make comparable images', or exist at all or, indeed, that your brain exists. Yet the argument as a whole rests on the initial description that takes perception to be both possible and distinct from hallucination. It exploits our tacit commitment to what it moves on to deny.

One might try to defend Damasio in the following way. It is true that Damasio's is not an account of perception as that word is normally understood. But might that not be just because the concept of perception, *as normally understood*, involves serious confusion? And if this is right, while what is produced is not an account of perception, perhaps this is simply because there *is* no coherent account to be given of *that*? Even if the everyday conception is the starting point of the inquiry, is there any reason to trust that the eventual results preserve the assumptions that furnish the starting point?[9]

However, this objection can be met without an explicit argument to legitimize our present everyday concept of perception. One only needs to rehearse the existing points of agreement between

[8] *Ibid*., pp. 96–97.
[9] Questions raised by David Cockburn.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

Damasio and the everyday conception. Both would *individuate* the relevant phenomena in the same way.

Here the analogy with Winch's argument is especially illuminating. The scientist must make 'judgments of identity' in order to pick out instances of what should count as the *same* phenomenon. He will describe certain occurrences as instances of seeing, hearing, or touching, and some others as hallucination or imagination. But this is not because he has studied the mind sciences but because he is a human being, familiar with the general role of perception in human life.

Nor is our general agreement about the logic of the perception concepts simply incidental. One might say these concepts are just too important for our lives for there to be any chance of a serious revision of them. But in fact their role goes beyond mere importance. Perhaps one should say it cannot really be assessed in terms of importance or lack thereof. The logic of our perception concepts is constitutive of there being a shared world in the first place, a world that we may find things out about. In Damasio's case, this means there will be agreement about basic facts of human anatomy, the environment, and the setup of the relevant experiments, as well as the shared understanding that these facts can be established intersubjectively by means of perception.

In other words: First, the scientist identifies a particular instance of perception on a common-sense basis. Someone knocks at the door and we hear it. *Afterwards*, there is an investigation of acoustic and physiological processes involved in this event. But the *event* has already been carved out of a larger whole and defined as *a* specific event. This is something we do because we understand what is relevant in it. And this gives rise to the task that the neurobiologist sets herself. We can ask questions about relevant processes because there is consensus about what it (roughly) means to say that a person hears something.

Neurobiology wants to keep track of causal processes that make perception possible. In the case of hearing, a vibrating object causes the air to vibrate, the air causes the eardrum to vibrate, and physiological changes stimulated by this are transmitted to parts of the brain. One may work out a more detailed sequence, among other things, by looking at dysfunctions. But in the background there is the normal case where the subject is able to hear correctly. Given this overall picture, the normal brain is described as a functional system that makes hearing possible.

Clearly this is nothing new in neurobiology, only this fundamental agreement is seldom made explicit. The neurobiologist is not

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

studying brain processes at random. Her description of hearing singles out *some* causal relations between the sound source and various parts of the auditory system(s) as belonging to the relevant 'causal chains'.[10]

Still expressing the main point in another way: Neurobiological descriptions of perception do not reduce mental events to physiological processes. In fact they *cannot* do so, because the phenomena they describe are themselves *individuated* on the basis of mental,[11] not physiological criteria. Thus the method itself excludes reduction.[12] In sum, the neurobiologist explains physiological data in terms of perception, not the other way around.[13] She expands our knowledge of the unknown, namely the role of certain physiological changes, by relating it to what is known, namely perception.

2.i. Representation, and Churchland, and Bennett & Hacker

Like Damasio, cognitive scientists and neurobiologists generally subscribe to the theory that, in perception, the perceiving agent's brain creates *representations* of whatever he or she perceives.[14] The presence of representations supposedly accounts for the fact that we perceive the things represented.

In their book, M. R. Bennett and P. M. S. Hacker criticise the idea that the brain might contain representations.[15] That idea, they argue,

[10] However, on the idea of a causal chain, see Norwood Russell Hanson (1958), *Patterns of Discovery* (Cambridge: Cambridge University Press), pp. 50–69.

[11] By 'mental criteria' I refer to the fact that descriptions of what a person sees, hears, etc., belong to descriptions of what goes on in that person's mind. This is not to contrast 'the mental' with 'behaviour,' as arguably these categories are internally related. See e.g., Ludwig Wittgenstein (1953), *Philosophical Investigations* (Oxford: Blackwell), I: §§ 244, 257, 281, 293–294, 304).

[12] A related point on the status of reduction is made in Thomas Nagel (1974), 'What Is It Like to Be a Bat?' *The Philosophical Review* 83, pp. 435–450, p. 445.

[13] An expression by Hannes Nykänen, in discussion.

[14] Jan Slaby, Graham Katz, Kai-Uwe Kühberger, & Achim Stephan (2006), 'Embodied Targets, or the Origins of Mind-Tools,' *Philosophical Psychology* 19:1, pp. 103–118, p. 105; e.g., Damasio, *Descartes' Error*, pp. 90, 98–100.

[15] M. R. Bennett & P. M. S. Hacker (2003), *The Philosophical Foundations of Neuroscience* (Basil Blackwell, Oxford), p. 143; cf Paul

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

would presuppose that someone inside the brain *perceives the representations* (as when someone reads a map) and interprets the symbols employed in them in accordance with a set of conventions.[16] And this, they maintain, is to commit what is known as mereological fallacy; which is the mistake of ascribing to the brain, or to parts of it, capabilities that one may only properly attribute to entire living beings.

One problem here is that empirical neurobiologists are unlikely to be moved by the mere imputation of a 'fallacy' as long as they find that the notion of representation is *helpful* in their research.

In reply to the accusation of mereological fallacy, Churchland refers to empirical results. Neurobiologists have discovered mechanisms that help the animal (a cat) to react to sudden changes in the visual, auditory, or tactile input by redirecting its gaze accordingly.[17] He argues it would be natural, in the context, to speak of a part of the cat's brain as discovering a change in the environment and making the eyes move. These are activities that Bennett and Hacker would only ascribe to the entire living being. Churchland also points out that computers already work with symbols, without that implying a conscious being inside the machine reading them.[18] He claims, furthermore, that scientists have located neural maps in the brain (in the Superior Colliculus).[19]

Churchland argues that the meanings of given concepts, including those of representation, map, and symbol, are simply not as rigid as Bennett and Hacker make them out to be. Bennett and Hacker, he thinks, have set up current linguistic usage as the norm while they should really be alive to the *new* meanings that these concepts acquire in cognitive neuroscience.[20]

M. Churchland (2005), 'Cleansing Science,' *Inquiry* 48:5, pp. 464–477, p. 469.

[16] Bennett & Hacker, *The Philosophical Foundations of Neuroscience*, p. 80.

[17] Churchland, 'Cleansing Science,' pp. 470–471.

[18] *Ibid*., 469–470.

[19] *Ibid*., 470.

[20] For Bennett & Hacker's replies to objections of this type, see M. R. Bennett & P. M. S. Hacker (2005), 'Reply to Professor Dennett and Professor Searle.' Lecture, APA Eastern Division, New York, 28th December 2005. Downloaded from Professor Hacker's web page, http://info.sjc.ox.ac.uk/scr/hacker/docs/Reply%20to%20Dennett%##20and%20Searle.pdf.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

À propos of representations, Churchland also points out an empirical finding that may surprise non-neurobiologists, even if it does not strictly furnish a philosophical argument against Bennett and Hacker.–Remember that Descartes thought the brain helps the soul see via the projection of actual physical images onto a part of the brain, from which the soul retrieves them.[21] This is not usually taken very seriously, as philosophers do not generally believe that the brain contains physical images. However, in an experiment, a monkey was made to look at a flickering geometrical figure (a simple spider web pattern). In its primary visual cortex one could find an activation pattern that may well be called a physical image of what the animal saw at the moment it was killed.[22]

Strictly this does not constitute an argument against Bennett and Hacker. The activation pattern apparently functions as a causal intermediary between two parts of the brain. However, Bennett and Hacker did not claim there can be no such causal intermediaries, only that it would be wrong to call them representations. One may call the activation pattern a *trace* in the same way as shoes may leave traces on a carpet. Just as a detective may, from a footprint, find out who was standing in the room, the neurobiologist may, from the trace, find out what the monkey was looking at. (On the other hand, the activation pattern reproduced in Churchland's article is not a *good* likeness of the original stimulus; and whatever visual similarities there are can only be discerned because tissue has been taken out of the skull, dyed, and exposed to light.)

Are the traces on the carpet and in the brain then *representations?* Well, what follows if we answer one way or the other?

To say that one thing represents another is perhaps to say that the one is made to stand proxy for the other; or perhaps, that someone is employing it in order to convey an idea of the other thing, or to find out something about it. The traces represent something to the detective and to the neurobiologist. Thus it is very natural for the neurobiologist to say that the monkey's primary visual cortex contained a representation. *She* may use the trace to derive information about what the monkey was looking at.

[21] René Descartes (1999), 'The Passions of the Soul,' in *The Philosophical Writings of Descartes*, Volume I, trans. John Cottingham, Robert Stoothoff & Dugald Murdoch (Cambridge: Cambridge University Press; original year of publication 1649), pp. 325–404. See I: 31.

[22] The picture, from Roger Tootell, is reproduced in Churchland, 'Cleansing Science,' p. 467 and in Damasio, *Descartes' Error*, p. 104.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

Bennett and Hacker point out that a dendrochronologist, too, will use concentric layers inside a tree trunk to derive information about summers and winters in the past, without that implying that information is encoded in them.[23] But the fact remains that the concept of representation looks like a potentially useful tool for handling certain questions about neural activation patterns, or indeed about tree trunks. It is not confused to say of a given layer that it represents the summer of 1647. While Churchland's example does not constitute a proof that 'there are' representations in the brain, it does make one wonder why it would *have* to be nonsensical to use this kind of language.

What we need to see is that the concept of representation belongs to problem solving, not to ontology. Thus it resembles the concept of a tool. One cannot meaningfully ask, in the abstract, whether a stone 'as such' is a tool. Objects are tools in relation to given tasks and available methods. Similarly, there is no context-free answer to the question whether or not one thing should be called a representation of another. The question is then not whether the brain *really* contains representations but rather what are the possible gains and confusions that this way of talking may produce. Thus it is not analogous to empirical questions such as, 'Are there such-and-such neural activation patterns in the brain?', nor yet to the metaphysical question, 'Does consciousness reside in the brain?' It is more akin to the question, 'Will *this* be a good way, in *these* circumstances, to look for regularities in the functioning of the brain?' To some extent, it must be left to the neurobiologist to decide.

It may (to repeat: *may*) then be useful to speak of representations in the brain. But we also need to see why this should be. Clearly not all traces of causal influences on the brain will be called representations. Brain damage is not called a representation of the thing that hit the patient on the head. In the experiment just cited, the neurobiologist *looks for* a likeness in the brain. She also has an idea of where to look, namely in the part of the brain previously identified as one connected with vision. Visual likenesses accidentally found somewhere else in the brain or elsewhere in the animal's body would have to be explained in some other way.

The idea that the brain activation pattern represents the stimulus belongs to a general picture where the overall role of perception for the animal is taken to be self evident. Speaking of representations is meaningful in the context of a given *teleology*. The brain is treated as a functional device, a tool in the service of the living being. As Damasio indeed puts it,

[23] See Bennett & Hacker, 'Reply . . .,' p. 6.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

> To a first approximation, the overall *function* of the brain is to be *well informed* about what goes on in the rest of the body, the body proper; about what goes on in itself; and about the environment surrounding the organism, *so that suitable, survivable* accommodations *can be achieved* between organism and environment.[24]

Such obviously teleological approaches are perhaps not very different from a medical practitioner's normal attitude to human organs such as eyes and ears, or the heart or the lungs. Medical practice as a whole is based on an understanding of the body in the light of the good and the bad, of sickness and health. The lungs are for breathing and sound lungs will perform that task well.

The tool metaphor has, on the other hand, some obvious limitations.[25] For instance, it is not possible to elaborate the metaphor in a way that intelligibly specifies a *user*, in any way closely analogous to the relation between a hammer and a carpenter. But the question to be addressed is, after all, not whether human organs are *really* tools. It is rather, 'What is achieved or lost if human organs, for the sake of the investigation, are treated as functional devices?'

The point I am making is that this is how neurobiology today *does* treat the sense organs and the brain. Physiological processes in those organs are seen in the light of their contribution to given tasks. Thus the image of *pathways* causally transmitting representations from sense organs to specific areas of the brain (like chords connecting the switch with the light bulb) knowingly leaves out other causal influences. Those other influences are just not part of the task that the brain is agreed to have.[26] In sum, the *causal* description in

[24] Damasio, *Descartes' Error*, p. 90, italics added. – In Chapter 6 (*ibid.*, pp. 114–126), the role of the brain is described in terms of ensuring the animal's survival. See esp. pp. 116–117.

[25] Cf.: 'As long as we use technical models in biology without being fully aware that by applying these models we just imply that nature performs according to the projected human requirements and guidelines, we are "blind for the significance" (*bedeutungsblind*) as Jakob von Uexküll expressed it.' Thure von Uexküll, in Jakob von Uexküll (1980), *Kompositionslehre der Natur. Biologie als undogmatische Naturwissenschaft. Ausgewählte Schriften Jakob von Uexkülls*. Hrsgg. u. eingeleitet von Thure von Uexküll (Frankfurt a.M.: Ullstein), p. 42. Quoted and trans. in Torsten Rüting (forthcoming), 'Jakob von Uexküll – Theoretical Biology, Biocybernetics and Biosemiotics,' to appear in: *European Communications in Mathematical and Theoretical Biology (ECMTB)*.

[26] See Hanson, *Patterns of Discovery*, p. 68 for an analogous argument on causal chains.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

neurobiology is *subordinate to* another description where teleology is assumed. It derives its intelligibility from it.

2.ii. The 'Nature' of Perception vs. the 'Nature' of Water

Summing up again, the neurobiologist will address questions such as, 'What happens in the brain when we are perceiving?', 'What brain processes are necessary for perception?' – not: 'What *is* perception?' The latter question falls outside science. Not because there are no good answers, but because the neurobiologist must start on the assumption that the question has already been dealt with.

The question, 'What is perception?' is, in this context, not analogous to 'What is water?' where the answer is 'H_2O'. It is more like the question, 'What is water?' when the answer is an explanation of what *is meant by* the word 'water'. This may involve describing the taste and look of water and where to find it, or giving someone a sample, or telling them that ice in one sense is water and in another is not; or that sea water *is* water while milk *contains* water.

'The nature of water' is certainly in one sense explained by describing its chemical makeup. That will, for instance, explain why water is a liquid that freezes at 0°C, expands when frozen, and dissolves some substances but not others. On the other hand, the question what is meant by 'water' concerns *the nature of water* in another sense. Not everything that is correctly called water outside technical contexts is H_2O and nothing but H_2O. Yet this does not cause major philosophical confusion. This is because there is no uncertainty about the general *kind* of thing that is meant. Water is a substance and there are established ways to discuss and find out what a substance is made of.

The nature of perception is also in some sense explained scientifically, or in terms of the functioning of the sense organs and the brain. Such descriptions will explain the fact that only certain frequencies of vibrations are audible to humans; and they may explain dysfunctions and dissociations like blindsight (see below). This reflects the shared understanding that perception may be studied by investigating how the sense organs are affected causally by the thing perceived and how they in turn influence the rest of the nervous system. However, this consensus does not yield anything similar to the definition of water as H_2O. It does not lead to the conclusion, 'Perception *is* the process where sense organs are affected causally and in turn influence the rest of the nervous system.' Neither the neurobiologist nor anyone else would call *all* such

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

processes 'perception'. The sense organs may be affected in other ways too; by disease, for instance. One might try to add qualifying clauses like 'perception is the process where sense organs are affected *in the relevant sense*'. But one would now just be taking for granted that everyone knows what is meant by 'relevant' here; which in turn presupposes that the main question is already solved. Indeed, our tacit understanding of the nature of perception is already evident in the ease with which we are usually able to identify organs as *sense* organs.

2.iii. Representation and Intentionality

In philosophy, the question, 'What is perception?' must roughly be read as: 'What *is meant* when we speak of perception?' We answer that question by looking at the logic of our perception vocabulary.

This involves understanding in terms of how a living being reaches out to its environment and finds out about it; or in terms of directedness, aboutness, or intentionality. But this also points to one way in which it may *not* be helpful to employ the concept of representation. Talk of representation is frequently adopted as a comfortable way to avoid discussion of the more fundamental concept of intentionality. As Slaby *et al*. suggest:

> The leading cognitive science paradigm maintains that cognition essentially involves or is based on the capacity of agents to *represent* their world. [. . .] [But] 'representation' is just the now-fashionable, scientifically approved term for the ultimately significant relation between experiencing agents and the world they experience.[27]

However, it is not as if the word 'representation' is a *good* way to pin down what these writers want to get hold of. A crucial problem has to do with the ambiguous status of the term. It is employed to cover both neural and mental 'representation'.

As was just argued, the term 'neural representation' simply stands for certain physiological modifications of the brain. The neurobiologist singles them out on the basis of their causal role as intermediaries between sense organs and other parts of the nervous system. But as long as our description is given in exclusively causal terms there will be no room for good or bad, correct or incorrect, successful or unsuccessful causation. Such expressions would presuppose that

[27] Slaby *et al*., 'Embodied Targets . . .,' p. 105.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

the process itself be viewed teleologically, or in the light of goals and strivings.[28] By using the term 'representation', scientists may be trying to help themselves to both causality and teleology at once without proper acknowledgment.

Many writers would also say that perceiving subjects use *mental* representations (or 'images').[29] Supposedly they are the subject's way to achieve the *right, truthful* kind of relation to the surrounding reality. Thus the relationship is conceived in teleological terms.

Neurobiologists commonly assume that mental representations are needed for normal perception to occur. Perception assumedly consists in the production of mental representations or images in the subjects' minds. As Damasio puts it, there must be 'a process whereby *neural* representations [...] become *images* in our minds'; images that 'we each experience as belonging to us.'[30]

The concept of mental representation introduces an additional risk of confusion because, as we saw earlier, it tends to convey the impression that perception and imagination are somehow almost the same. But it should be obvious that 'images' and 'representations' must be very different in these different cases. Sometimes I literally think in images. I might visualise the walk from one part of my hometown to another. Here my mental images literally represent something. I am using them in planning, to stand proxy for real streets and buildings. But when I really walk and look around, what I am seeing is not images but shops, cars, people, events, and whatever there is for me to look at. (And *pace* Damasio, I do not experience those things and events as *belonging to me*.) One wonders why I should speak of 'seeing images' or 'using representations' here at all unless I have some theoretical fish to fry.

2.iv. The Role of Empirical Results

I am arguing that we already have a shared understanding of what it means to see, hear, touch, and so on; and moreover, that empirical research does not challenge the basics of this understanding. This

[28] I argued above that this process is implicitly seen as goal oriented. However, the official idea is that neural representations can be identified independently of this. Alternatively, it is assumed that goal orientedness can somehow be accounted for in terms of functional, and ultimately causal, concepts (see Carruthers, *Phenomenal Consciousness*, pp. 97–101).

[29] Damasio, *Descartes' Error*, p. 106.

[30] *Ibid*., p. 90. Italics added.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

is simply because that research does not even get started without at first implicitly committing itself to ordinary perception concepts.

Even if this point is granted, however, an important (and I think to some extent justified) objection exists to certain ways of framing the claim that 'the *nature* of perception' is the same as 'what is *meant* by perception' in ordinary speech.[31] 'Perception' is itself originally a term of art. Laymen's descriptions of how they understand *the word* are likely to reflect their *speculation* about perception. But what I have called our shared understanding of perception is not the simple sum of our most popular prejudices about perception. The study of perception must concern itself with our *lives with* perception. It concerns the ways in which our lives are shaped by the fact that we can feel, hear, see, and so on.

But this does not rule out that empirical studies might not only expand our knowledge of facts but also provide an antidote against prejudices posing as conceptual truths.

Consider the condition known as blindsight, as, for instance, described in a well-known study by the neurobiologists *Goodale and Milner*.[32] Due to brain damage, the blindsighted patient has no (conscious) visual experience from certain parts of her visual field. When things are 'shown' to her in the 'blind' areas she says she sees nothing. Yet in other ways she reacts as if she *could* see the things shown. Might blindsight constitute a phenomenon that, as has been suggested,[33] forces us to revise our concepts of perception?

Neurobiologically, blindsight is explained by the existence of two visual systems in the brain. Two 'pathways' (known as the ventral and dorsal streams) are identified as leading from the primary visual cortex to separate parts of the brain (the inferior temporal lobe and the posterior parietal lobe, respectively). The one stream can be described as resulting in 'vision for conscious[34] perception'

[31] A question by Michael McGhee (discussion 18th July 2007) has occasioned the following clarification.

[32] M. A. Goodale & A. D. Milner (2004), *Sight Unseen: An Exploration of Conscious and Unconscious Vision* (Oxford: Oxford University Press); M. A. Goodale & A. D. Milner, 'One Brain – Two Visual Systems,' *The Psychologist*, Vol. 19 No. 11 (November 2006), pp. 660–663.

[33] Supposed philosophical implications are discussed in Carruthers, *Phenomenal Consciousness*, pp. 148, 155–161; Antti Revonsuo (1995), *On the Nature of Consciousness: Theoretical and Empirical Explorations* (Turku: Annales Universitatis Turkuensis. Ser. B Tom. 209), pp. 19–21, 25.

[34] Here I am departing from Goodale & Milner, 'One Brain . . .,' p. 661. The authors simply speak of 'vision *for perception*'. I wish to signal the possibility of including Goodale & Milner's two aspects of vision as belonging to

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

and the other in 'vision for action'. Damage to the one but not the other will result in the impairment of the one, but not the other, aspect of vision. Goodale and Milner note that this contradicts what may look like a natural assumption, namely, that *one* visual experience corresponds to *one* visual system.[35]

But while this does set limits to future theorizing and speculation, it does not involve departure from the ordinary concept of sight. Our present use of that concept does not commit us to specific views on the question how many 'visual pathways' there are in the brain.

The assessment of how the results relate to the concept of sight faces a further complication, as it is not obvious that blindsight constitutes a case of seeing at all.[36] The best solution is probably to call it an abnormal case, a deficiency. But this also demonstrates that descriptions of blindsight rely on the ordinary concept of sight. The scientist discovers blindsight by comparing the patient's performance with what should be expected in the normal case.

The experiments are nevertheless a good reminder of an aspect of visual perception that is frequently lost in the theoretical literature; namely, the fact that seeing essentially involves practical engagement with one's surroundings. Thus in Norwood Russell Hanson's words, 'there is more to seeing than meets the eyeball.'[37] This is not to contradict the ordinary conception, but it is a reminder of a neglected aspect of it.

Conceptual studies of perception should not ignore factual findings. On the other hand, many of the relevant facts will not be of the kind that the neurobiologist primarily has in mind. They may, for instance, concern the role of testimony in human life[38] or the question how we know that someone has seen us.

'perception'. This is a choice of terminology that should not prejudice the further argument in any way.

[35] Goodale & Milner, 'One Brain . . .'.

[36] The question is answered in the negative in Ralph Schumacher (1998), 'Blindsight and the Role of the Phenomenal Qualities of Visual Perceptions,' Paper presented at the Twentieth World Congress of Philosophy, Boston, Massachusetts, August 10–15, 1998 (Downloaded from *The Paideia Archive*, http://www.bu.edu/wcp/Papers/Mind/MindSchu.htm, February 2007). On the other hand, Carruthers, in *Phenomenal Consciousness*, p. 148, claims the results show that perception does not necessarily involve conscious experience.

[37] Hanson, *Patterns of Discovery*, p. 7. Laurence Goldstein reminded me of this quote (discussion 18th July 2007).

[38] See Coady, *Testimony*.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press

3.i. Conclusion

Neurobiologists are not philosophers. They are not expected to engage in sustained discussion of the *concept* of perception. Nor do they really investigate 'the nature of' perception as such, but various mechanisms, processes and complexities in connection with what *is agreed to be* perception. Thus a basic shared understanding is built into the empirical research. It is, to apply Wittgenstein's description, 'the matter-of-course foundation for [the scientist's] research [which] as such goes unmentioned'[39] – 'not so much the point of departure, as the element in which arguments have their life.'[40]

The lesson is that those who think neurobiology would support a reductionist take on perception have misunderstood the task of neurobiology. The task of neurobiology is to study physiological processes essential for mental phenomena. But mental phenomena are not themselves something the existence of which neurobiology proves or disproves.

Explicitly or implicitly, neurobiologists work with our ordinary perception concepts, even if sometimes their official story is different. Connecting to Peter Winch again, the philosopher's task in this situation is not to put the clock back or forward, but only 'to make sure that the clock is telling the right time, whatever it may prove to be'.[41,42]

Åbo Akademi University, Finland

[39] Ludwig Wittgenstein, *On Certainty* (New York: Harper & Row, 1972), § 167.

[40] *Ibid.*, § 105.

[41] Winch, *The Idea of a Social Science*, p. 2.

[42] This paper was originally presented at the *Finnish-Welsh Philosophy Colloquium* at the University of Wales at Lampeter, 19–20 October 2006. It was presented again in 18 July 2007 at *Wittgenstein, Literature and Other Minds* Conference in memory of Dick Beardsmore, the University of East Anglia, 16–18 July 2007. Participants are gratefully acknowledged for their comments, including the written comments by Charles Pickles, Eric Franklin, and David Cockburn.

https://doi.org/10.1017/S0031819108000466 Published online by Cambridge University Press