EMPIRICAL PSYCHOLOGY, TRANSCENDENTAL PHENOMENOLOGY, AND THE SELF

Stephen L. White

Contemporary experimental psychologists speak frequently of visual perceptual experience in ways that suggest its content is rich. Elizabeth Spelke, for example, says that the infant sees "the moving object as the Agent", 1 and Rochel Gelman, Frank Durgin, and Liss Kaufman speak of the "perception of an impossible event", 2 "the causal impression of launching", 3 "the expected perception (Animate, Inanimate, Neutral)", 4 and "an animat perceit". 5 Other researchers speak not only as though we perceive such properties as mechanical causation, animateness, agency, and agent causation, but also relations of power, goals, and values. 6 And "perceive" evidently means perceive directly. That is, they are perceived and not perceived in virtue of something perceived more directly. In this chapter I shall give a transcendental argument (one which is a priori and based on the conditions of our having a meaningful language) that perception is indeed rich in this sense. I shall then argue that this perception is crucial in answering Hume's skepticism about the self.

The notion of rich perception (in the visual case) is defined in contrast to the empiricist conception. According to the latter, what is given most directly and most immediately in visual experience is to be understood in terms of analogies between a mental visual field on the one hand and camera images (for Locke the camera obscura), 7 painted images in the Renaissance and post-Renaissance traditions of realism, or retinal imageries on the other. On these grounds, Hume denied, for example, that there was a perception of causation or that a causal relation could be given in perception. If, for example, we see one billiard ball collide with another, causing the motion of the latter, all we are given in visual perception (all we have a visual impression of) is one event followed by the other. 8

The research program in empirical and experimental psychology that begins with Michotte challenges these claims. Michotte says explicitly that (pace Hume) there is a visual impression of causation. 9 And he pioneered a research methodology to explore and characterize the temporal and spatial parameters within which the impression is induced. Similarly, J.J. Gibson's work ascribes to subjects perceptions of affordances which we might gloss as the functionally relevant properties of their external environment. A structure of rock, for example, is not given neutrally as a solid object with a certain three-dimensional geometry, but as a seat or a stairway, a bridge, a shelter, or a hiding place. 10 And such forms of rich perception have obvious analogies to the types of perception studied by the major figures in the
phenomenological tradition of philosophy. Sartre, for example, says "When I run after a streetcar, [...]. There is consciousness of the streetcar-having-to-be-overtaken, [...]. In fact, I am then plunged into a world of objects; it is they which constitute the unity of my consciousnesses; it is they which present themselves with values, with attractive and repellant qualities [...]."

But why, given these empirical research traditions that support the idea of rich perception, should we look for philosophical, or a priori, or transcendental support? It might seem analogous to looking for an a priori deduction of the number of planets, after the empirical methodology necessary to determine such results had been well established and well understood. There are three reasons, however, for rejecting this analogy. First, many contemporary philosophers offer accounts of perceptual or qualitative content that are incompatible with rich perception. In fact, many offer accounts that are incompatible with perceptual or qualitative content (as opposed to linguistic/descriptive content) altogether. Second, it follows that there is no consensus about the nature of qualitative states or the qualitative or sensational content of perceptual states. Third, I shall argue that perceptual content is governed by considerations of rationality and (hence) by normative considerations that have no counterpart where the subject matter of physics is concerned.

I. THE PHENOMENOLOGICAL METHOD

The response to the skepticism both about qualia and about rich perception lies, I shall claim, in the existence of a phenomenological method that is responsive to both sets of concerns. (I can address only the latter concerns here.) I shall argue for a phenomenology of visual perception which is both deflationary and inflationary relative to that of the empiricist tradition. This means that in some respects our visual experience is more impoverished than that tradition allows, but in others it is much richer. In this section I shall set out the method, which involves both a priori and a posteriori elements. In the following sections I shall outline the transcendental argument that there must be rich perception.

1. Informal experiments. These experiments are not couched in a scientific psychological language or performed in accordance with any formal methodology or apparatus. Nor are they classical philosophical thought experiments. They are, unlike experiments whose descriptions one simply reads, exercises in which students and readers can participate directly. The experiments are, nonetheless, perfectly and straightforwardly empirical, and could easily be formalized for the sake of precision. Their real interest, however, lies in the power of their appeal to our intuition and imagination. For reasons which I cannot explore here, the empiricist or sense-datum theory has a hold over our imaginations that no amount of empirical or conventional psychological literature seems able to dislodge. And the imaginative and perceptual experiences involved in participation play a crucial role in opening us to the possibilities implicit in paradigm shifting philosophical positions.

Deflationary experiments include:

Car windshield. Imagine being asked to draw the best approximation using four straight lines of the apparent shape of your car windshield as viewed from the driver's seat. Responses vary widely, the most common being the "real shape"—a trapezoid symmetrical around the vertical axis, with the base longer than the top. The apparent shape, however, is different in three respects: the top and the base converge to the right, the top is longer than the base, and the angles of the sides are not symmetrical around the vertical axis. In my experience with a large number of students, none has ever gotten all three differences, and relatively few get even two.

Hand and foot example. If it is thought that the problem is one of memory, rather than perception, try to estimate, standing up, the ratio of the apparent length of your hand (wrist to the end of the middle finger) when it is held four inches from your eye to the apparent length of your foot. Estimates often vary by a factor of ten, even though memory plays no role (the correct ratio is between twenty and thirty to one).

On the inflationary side we have:

Thurber drawings. James Thurber's drawings depict people whose expressive self-presentations we read immediately—for example, the smugly confident and overly intense demeanor of someone who expects to dominate a social exchange. (We take them in easily in 1-2 seconds.) But such an interval is a small fraction of the time it takes to determine what bodily and facial features determine these expressive properties (for example, whether the facial expression is more a matter of the eyes, the mouth, or some aspect of the relation between the two). And in many cases it is even more difficult to say what it is about the drawing that suggests these features. (This is a common feature of caricatures.)

Although these experiments are hardly conclusive, they suggest the implausibility of the central assumption of the sense-datum theory—that what we perceive most directly, and to which we have most unproblematic access, are the shapes, colors, and relative sizes of the "colored patches" alleged to constitute our (mental) visual field. We normally perceive many kinds of properties of external objects directly in visual perception. And it may be only with difficulty, if it is possible at all, that we reconstruct a sense-datum basis for such experience.

2. Thought experiments and informal arguments. Classical philosophical thought experiments and arguments also support the inflationary/deflationary phenomenology. As a deflationary example we have:

Wide-angle lens argument. In using pictorial metaphors to describe the character of our visual experience we feel inclined to say that the visual angle we take in is approximately 150°, that all the shapes look completely natural, and that they seem to remain stable even as we move our heads. But this combination of features, about which there is virtually no disagreement,
actually undermines any literal application of pictorial analogies. A camera lens that produces natural looking shapes even at the periphery of the frame is approximately 50mm for a 35mm camera, and it has a visual angle of approximately 46°. In order to get a visual angle of approximately 150° we need a lens of approximately 10-12mm—midway between an extreme wide-angle and a fish-eye lens. Such lenses produce extremely dramatic distortions everywhere in the frame. And even with an only moderately wide-angle lens, panning across a scene with a movie camera produces the effect of objects that seem to change shape as the camera moves. It is in fact impossible to combine in two-dimensional visual images both the visual angle we take ourselves to see and the naturalness and stability of the shapes that objects appear to have. And, needless to say, this is not a fact about current lens technology, but about the projection of three-dimensional space on a two-dimensional surface—a fact of which Renaissance theorists of perspective were well aware.13

Inflationary examples include:

Stone at the end of the stick. When we are driving and experience a collision where do we feel it? In line with the empiricist theory, the temptation is to say that we feel it in all those parts of our body that are in contact with the interior of our own car. But it seems far more accurate to say that under normal circumstances we would feel it in the fender of our car, just as we say that the blind person feels the stone at the end of his stick.

And the following example is both inflationary and deflationary.

Bradley example. Bill Bradley has described the process by which he trained himself to take in a wider than normal angle of vision, and indeed at one point speaks of seeing the whole basketball court from a location on the court.14 But is it even coherent to suppose that we might have 360° vision (without, of course, eyes in the backs of our heads)? Those in the grip of pictorial analogies for visual experience or who are committed to reading the character of such experience off the physical structure of the eye will say no. As we have noted, however, we seem to see everything within a visual angle of approximately 150 degrees, and everything seems to be in focus. What is in sharp focus at any given moment, though, occupies a visual angle of only 2-3 degrees. Thus the visual experience of the space in front of us is a construction. The brain integrates over time to produce a unified visual field from what is a mosaic or patchwork. If this is the case, however, there is no reason in principle (abstracting from computational limitations) why—given that Bradley is constantly glancing backward—the brain could not integrate over a somewhat longer period of time to produce a unified field of 360°.

Given such experience, we would, of course, be insensitive to some events occurring behind us when we were facing forward. But to say that our ordinary visual field is a construction it to say that an exactly analogous point applies to our experience of the space before us which is outside the area of sharpest focus.

3. Testimony (open to refutation). We have already seen one instance in which our beliefs (and hence our testimony) about the character of our first person, present awareness is subject to correction. We are strongly inclined to regard our visual experience as pictorial, but the wide angle lens argument and the Bradley example show that we cannot be right. And notice the difference between this point and the point that we seem to be given the entire visual field in focus when we know that at any given moment only a very small visual angle is sharply focused. In response to the latter point it could be said that whatever the facts about the eye, the (mental) visual field is completely in focus—there is, after all, nothing to prevent our hallucinating sharp edges where none exist on the retinal image. (This would be analogous to a computer-enhanced digital photograph.) But this reply is not available in the former case. For the point in that case is not that the retinal image lacks the properties that we ascribe to the visual field. It is that no possible picture (or set of pictures) could have those properties, and thus that whatever characterization we give to our visual perceptual experience, pictorial metaphors and analogies are in important respects completely inappropriate.

4. Empirical experiments based on testimony. Many of the contemporary experiments involving the perception of causation in the tradition of Michotte depend on the subjects' testimony as to their impression of the events depicted. Often the range of possible descriptions is open-ended, and there is often significant work to be done in interpreting and coding the responses. Examples in which this is problematic include the following. As C.L. Hardin reports, under unusual laboratory conditions subjects report seeing color fields as “reddish green.”15 This is not obviously an intelligible description of a possible experience, and no amount of explanation at the subpersonal level will make it so. What is required is that we explore the issue much further. Is the apparently contradictory description merely an artifact? Is it, for example, merely a product of an experimental situation in which subjects feel compelled to express themselves succinctly and thus produce descriptions whose apparent contradictions would disappear were they allowed to express themselves at greater length and in more nuanced ways? Or are there false assumptions about what counts as an intelligible description of a visual experience, such that if we abandoned the appearance that the description is contradictory would disappear (as in the Bradley example)? Or (as is more likely), is it some combination of the two?

Consider an analogy: Before we learn any modern physics we may be inclined to view talk of "curved space" as a category mistake. We may say that space itself cannot be curved, though lines and objects in space obviously can. However, in learning the relevant physics, non-Euclidean geometry, and philosophy, we learn the depth of the requirement that our definitions be operationalizable. And we come to appreciate the pointlessness of holding an overly complicated physical theory (with elements which seem to have no physical reality, such as universal forces), merely to preserve an a priori intuition about geometry.16
Imagine, then, asking the subjects whom Hardin cites (and who say that the experience is one they could never have imagined prior to having it) whether the apparent contradictoriness is more like the apparent contradictoriness of curved space or of 360° vision, or whether it is more like the apparent unintelligibility of thinking about a round square or that p and not-p are both true. With enough possible points of comparison of the Bradley or non-Euclidean geometry types, it seems quite likely that subjects could produce extremely interesting and insightful responses—responses that would be unavailable if we immediately change the subject by switching to the subpersonal level.

Similar points might be made about subjects’ reports of pain that they don’t mind, or such standard cases in the philosophical literature as seeing a hen with speckles without seeing it as having a determinate number of speckles. And the constraints of coherence that we have been considering might similarly be observed in order to elicit richer and more detailed descriptions of the experience of participating in split brain experiments or acting on post-hypnotic suggestions.

5. Clinical research based on testimony. Unlike the experimental literature, the clinical literature is rife with rich descriptions that are relevant to resolving the puzzles raised by some of the responses in the former domain. Renee, for example, in The Autobiography of a Schizophrenic Girl, describes her experience by saying, [... ] I saw a boundless plain, unlimited, the horizon infinite. The trees and hedges were card board, placed here and there, like stage accessories [...]. 18 I saw things, smooth as metal, so cut off, so detached from each other, so illuminated and tense that they filled me with terror. When, for example, I looked at a chair or a jug, I thought not of their use or function—a jug not as something to hold water and milk, a chair not as something to sit in—but as having lost their names, their functions and meanings [...]. 19

These descriptions, which make little sense on an empiricist conception of experience, are perfectly intelligible against the background of an account of rich perception, since what Renee is describing is precisely the loss of affordances.

A similar point applies to Oliver Sacks’ description of his experience of hemianopia with hemi-neglect: “The pear tree was gone, but so was the place where the pear tree stood. There was no sense of a place vacated; it was simply that the place was no longer there.” 20

Again, this seems paradoxical or incoherent. For how can a place or a space (as opposed to something in space) disappear? This account is particularly puzzling against the background of the empiricist conception of visual experience, since the disappearance of the sense-data in the left side of the visual field could never explain how the space to the left of the subject might be lost. But this is precisely where the earlier discussions of 360° vision and curved space are relevant. We can take as our clue what Sacks adds to the phenomenological description of his condition.

[...] Knowing this, [his condition] intellectually, did nothing to alter the hiatus in perception, or, rather, the hiatus in sense, the feeling that there was nothing other than what I saw, and that it was therefore senseless to look at, or look for, the “left” half of the room, so-called. With a violent effort of will, like a man forcing himself to move, inch by inch, in a nightmare, I turned my head towards the left. 21

Imagine, first, that one’s attitude toward the space to one’s left is something like extreme weakness of the will or what one might experience in depression—i.e., one can barely make oneself look or turn in that direction, even when one knows one would be better off for doing so. Now imagine an even more extreme case: the space to one’s left is no longer given as affording opportunities for action (in roughly Gibson’s sense of “affordance”) at all. And now consider: in what sense does the space still exist? It is an implication of the transcendental argument for rich perception that one’s lived, personal space (the space within which one can perform basic actions) is prior to, and more basic than, external, geometrical space. Indeed we shall see, it is the personal, lived space of affordances—opportunities for action—that makes action possible and provides the grounding for a meaningful language. And this personal space of affordances is itself defined by our skills and capacities for action—the opportunity for escape that the space affords is only an opportunity for a creature with a certain set of agential capacities and liabilities. Thus if the possibility of action toward the left has disappeared, then the space itself, and not just the objects in it, has ceased to exist.

Such an analysis serves as an extremely plausible response to another example. As Sacks describes his attempt to walk after a fracture that, as we might say, removed the leg from his subjective or lived bodily image,

The floor seemed miles away, and then a few inches; the room suddenly tilted and turned on its axis [...] then I perceived the source of commotion. The source was my leg—or, rather, that thing, that featureless cylinder of chalk which served as my leg [...]. Now the cylinder was a thousand feet long, now a matter of two millimeters; now it was fat, now it was thin; now it tilted this way, now it tilted that. It was constantly changing in size and shape, in position and angle, the charges occurring four or five times a second [...]. 22 But what could produce such an explosion in my mind? Could it be a mere sensory explosion from the leg, as it was forced to bear weight, and stand, and function, for the first time? Surely the perceptions were too complex for this [...]. The chaos was not of perception itself, but of space, or measure, which precedes perception. I felt that I was bearing witness, even as I was undergoing it, to the very foundations of measure, of mensuration, of a world. 23
The puzzling aspects of this description disappear when we focus on what was apparent in the earlier example: that the lived space and the lived body are connected not merely externally (causally), but internally—they are mutually constitutive of one another. And to the extent that Sacks is experiencing a radical revision of his bodily image (of the lived body), external, lived space itself must be experienced as in the process of radical transformation. And if it is objected that one’s commonsense conception of space is Euclidean and that one knows that this hasn’t changed, it may be replied that (as we have seen) Sacks points out one’s intellectual grasp of the situation may be independent of its phenomenology.

6. Empirical experiments, developmental studies, and clinical cases based on indirect methods. Indirect sources of access (i.e., not via testimony) include such things as galvanic skin response and classic timed behavioral (nonverbal response) studies. Strictly behavioral manifestations alone cannot substitute for testimony, since we cannot normally determine whether the manifestation is of something available to the subject at the personal level. But, there are also outputs which fall short of full-blown testimony but which are manifestations of subjective experience by definition.

Particularly interesting in this context are the current studies based on the amounts of attention that infants give to various kinds of perceptual phenomena—particularly those involving so-called impossible events. It is unclear to what extent these responses should be considered behavioral, since they are likely to involve the experimenter’s interpretation of what counts as a manifestation of attention, and there may be no criteria codified in completely behavioral terms.

2. THE TRANSCENDENTAL ARGUMENT FOR RICH PERCEPTION

The argument in outline is as follows:

A. Language \(\rightarrow\) demonstrative access

B. Demonstrative access \(\rightarrow\) agency

C. Agency \(\rightarrow\) phenomenology of agency

D. Phenomenology of Agency \(\rightarrow\) rich perception

("\(\rightarrow\)" is to be read as “presupposes”.) About premise (A) I shall be brief: Language, if it is to be meaningful, if it is to be more than a formal calculus, must be grounded. That is, in addition to the word-to-word connections of the kind supplied by lexical definitions, there must be some connections between language and the world. There must be connections between some words and the world unmediated by any further linguistic content—connections of the kind we ordinarily call ostensive or demonstrative. But, our ascription of meaning to a subject’s words is constrained by the requirement that we make the subject rational (by and large).

This means we must be prepared to deal with the demonstrative versions of Frege’s problem. For example, one points out the window to one’s right and says “that ship is owned by a multinational corporation” and points out the window to one’s left and says, “that ship is not”, while (though one is unaware of it) one has pointed to the bow and stern of the very same ship, and said logically incompatible things about it. Since one could obviously be nonetheless rational, there must be different ways in which the ship presents itself that explain and rationalize the apparently contradictory beliefs. We cannot appeal to the different descriptions one might give of the ship, since we need a demonstrative case in order to show how language can be grounded. The temptation, of course, is to say that the ship is given via two different sets of sense-data, which could have been caused by different ships. But we have already seen some of the objections to this kind of phenomenology of perception.

The solution, as I have argued elsewhere, is to say that the ship is given to one via two different modes of presentation (which for all one knows could have been modes of presentation of different ships) in virtue of its presenting two different packages of basic action possibilities. One can point to the bow and indicate its spatial extent, and one knows how to move toward it, or guide something or someone else toward it. If one’s view is obscured, one knows how to move so as to see it from a different angle, etc. Moreover, the stern presents a different bundle of action possibilities. And note that these are action possibilities, available to the subject. Mere causal dispositions, which are not themselves directly available to the subject, could not play the same rationalizing role.

But what is the connection between agency, the phenomenology of agency, and rich perception? Imagine a passive subject who agrees with us about all the objective facts and who understands the inferential role of the agential language, but who doesn’t understand action. The passive subject says things like: “If everything is determined there is no such thing as action, and if there is randomness, this doesn’t help”, and “Quantum indeterminacies aside, the future is as fixed as the past”. If we assume, as we can, that the passive subject understands the inferential role of agential language, what must be missing is something experiential. The passive subject’s experience, we can imagine, is just the most extreme version of Rene’s that we can make coherent to ourselves. What, then, do we have to add to the experience of the passive subject to get the experience of agency?

Imagine that you are one personality in a multiple personality subject and are conscious while the movements of the shared body are being controlled by another. If you have no access to the intentions of the other subject, then interpreting the bodily movements will be like interpreting those of another subject altogether—you will feel that you are being moved like a puppet for reasons to which you have no special access. Even if you have access to the other subject’s conscious intentions formulated explicitly in linguistic-descriptive terms (something we have for only a small portion of our own actions) this will not be sufficient to make the bodily movements intelligible. This is because you could still lack such perceptual
components of the controlling experiences as: foreground and background relations, aspects, pragmatic spatial and temporal relations, opportunities and liabilities (Gibsonian affordances), expressive properties and significance. If, however, a meaningful language presupposes agency, and agency presupposes rich perception, then we have the argument we wanted: a transcendental argument that our phenomenology must be one that is inflationary relative to classical sense-datum theories—i.e., one that includes rich perception.

3. APPLICATION TO THE SELF

Hume's skepticism about the self (in any sense connected with the notion as it is ordinarily understood) is based on a simple argument: We aren't given anything in introspection that could be a subject of experience. Hume concludes that we are just bundles of experiences. Since a bundle couldn't be a subject and neither a bundle nor an experience could act, this amounts to skepticism about the self. Indeed, Hume concludes on this basis that we cannot even give sense to the term.

Hume apparently never considered the possibility that our access to our selves might be via our perceptual access to our own bodies construed as objective physical entities in the world, and for good reason. No such ordinary object could answer to our notion of a subject of experience—at least under that description or conception. But Hume looked for our access to a genuine self in the wrong place; there is an alternative to the assumption that if we are given a genuine self it must be through introspection. The alternative is that we are given to ourselves (as agents) implicitly in the structure of affordances. In being given opportunities, we are given ourselves implicitly as having certain powers. And in being given liabilities, we are given ourselves as in certain ways vulnerable. This is simply the point we saw above: that our lived bodies and our lived spaces are mutually constitutive. We are given to ourselves as agents (and thus as subjects) in being given an agential world—a meaningful world of opportunities for actions we are capable of performing and of things which are worth doing, and a world in which it matters which we choose.

If, however, we follow Hume in refusing, at least in the first instance, to identify the self with the objective entity which is the physical body in the physical world, then what is the relation between the two? The question is answered by considering the relation between the two conceptual schemes we have been discussing: that of objective physical science and that associated with the agential perspective. The relation, I shall say, is a dialectical one. What this means can be explained in part by reference to the notion of incommensurability as it grows out of the philosophies of science and of theory-laden perception associated with such philosophers as Kuhn and Hanson. The notion of a dialectical relation, however, goes well beyond anything discussed in the context of contemporary analytic philosophy of science.

To say that perception is theory laden in Hansen's sense is to say that it is rich in the sense defined. Where the person unschooled in physics sees wires, metal, and glass, the expert sees an x-ray tube. And the connection to incommensurability is immediate. If the proponents of radically different theories literally see different worlds, then each theory generates its own evidential base, and there is no guarantee of a neutral body of data to which such theorists can be referred in adjudicating disputes. This is not to say, and it does not follow, that such disputes can never be settled, or that such theorists can never do other than talk past one another.

In the case of the agential and the objective perspectives, we go beyond the notion of incommensurability in this sense. In this special case, where our agential perception is, we might say, theory and practice laden, each perspective has the potential, if totalized, to undermine the other. As we saw in the discussion of the passive subject, if we regard the universe as deterministic, it seems that there is no room for genuine agency or action. And it seems, moreover, that admitting randomness is no help whatsoever in explaining how we could be the authors of our behavior. It seems, therefore, that no account of the underlying nature of the objective, physical universe could underwrite a view of ourselves as agents, as the genuine authors of our actions, and as responsible for the consequences. On the other side, to treat science as simply one of the many things we do is to give science a pragmatic cast, seemingly at odds with its most ambitious claims to objectivity.

But to say the relation is dialectical goes beyond even this. For although each perspective has the potential to undermine the other, each arises as well, and by necessity, from the other. Self-criticism, which is constitutive of intentionality, generates objectivity about ourselves. Criticism of ourselves as reasoners, for example, is quite capable of justifying the objective study of ourselves as reasoners, and such study can, and often does, lead to an improvement in our agential capacities and capabilities. By the same token, however, critical reflection on the rationality and meaning of our scientific theories presupposes the agential perspective. For, as we have seen, agency is presupposed by the meaningfulness of our language, and, a fortiori, by the meaningfulness of our scientific language.

The upshot, then, is not only dialectical—each perspective gives rise to its opposite in virtue of its deepest and most intrinsic nature—it is unstable in the sense that there is no permanent and stable balance to be struck between them. But the lack of a permanent division of labor, fixed and established once and for all is no bar to the heterogeneous phenomenological methodology outlined above. We work within the assumption of the subject's rationality and on the basis of a coherential methodology that renders the subject's self-conception open to revision. But rationality is only rationality by and large, and the transcendental argument for rich perception is, as the characterization of the phenomenological method suggests, fully compatible with a full spectrum of empirical psychological investigations of the subjective perspective and the self.

NOTES

1 Spelke (1995, p. 142).
The question of free will has been defined as a problem proposed by anyone in the existing tradition of philosophy. The most controversial science (metaphysics, the most contentious science) in this context, both in the problem itself and in the conceptual analysis (that is, scientific analysis), as well as in the field of philosophy, is the one that concerns the question of free will.

In principle, three options are open: to treat the problem both by philosophy and empiricism (a), to treat it by philosophy only (b), or to treat it by empiricism only (c). In the former case, the problem of free will is not to be expected.
REFERENCES


Baars, B. (1993). “How does a serial, integrated and very limited stream of consciousness emerge from a nervous system that is mostly unconscious, distributed, and of


REFERENCES


REFERENCES


Libet, B. (2002). “Do we have free will?” In Kane (2002).


REFERENCES


