The Journal of Mind and Behavior
Spring 1999, Volume 20, Number 2
Pages 155–182
ISSN 0271–0137

A Commentary System for Consciousness?!

Thomas Natsoulas

University of California, Davis

Critically considered here is a proposal that Weiskrantz has advanced in a recently published book on brain-damaged individuals. It is a proposal regarding the locus, nature, and character of consciousness in general. Every instance of being conscious, or aware, or having experience of anything (O), is supposed to be identical to either one of three kinds of activity of a commentary system in the brain that correspond to the Skinnerian distinction between overt, covert, and incipient responses. Any human or animal who is experiencing O at the present moment is therein either (a) commenting on O to someone else, (b) commenting on O to himself or herself, overtly or covertly, or (c) occurrently tending to comment on O, overtly or covertly, either to someone else or to himself or herself. This third form of experience of O is made up of a certain portion of a process in the commentary system that constitutes overt or covert commenting on O.

Lawrence Weiskrantz first proposed to write a new book for Oxford University Press under the title *The What, Whether, How, and Why of Consciousness*. Although the final title turned out to be less ambitious, the introductory chapter promises that the book will address — "in one way or another" — all four of the above questions. And, suitably, the names of four of the chapters are respectively: The "What" of Consciousness; Animal Consciousness — the Problem of "Whether?"; The Evolutionary "Why?"; and The Question of "How?"

Chosen finally for the book's title was *Consciousness Lost and Found: A Neurophysiological Exploration* because it (a) calls attention to brain-damaged patients who have — "in one sense or another" — lost their "awareness," and (b) signals that a solution is being sought to the problem of awareness and its neurological basis. At one point, Weiskrantz warns psychology to

Requests for reprints should be sent to Thomas Natsoulas, Ph.D., Department of Psychology, University of California, One Shields Avenue, Davis, California 95616–8686. Electronic mail may be sent to: tnatsoulas@ucdavis.edu

beware of losing its consciousness. Early and often, he rejects in no uncertain terms the common strategies of explaining the problem of awareness away, reducing awareness to something else, or displacing the referents of the pertinent concepts (cf. Natsoulas, 1983, pp.15–16; Pylyshyn, 1990, p. 201; Wittgenstein, 1947/1980, p. 180e).

Weiskrantz's (1997) psychological approach involves adopting the "classic stance of drawing inferences about normal function from pathology" (p. 168). The investigation of varieties of consciousness that have been rendered deficient by brain lesions may help to reveal the mechanism of conscious awareness and its function in human life. More generally, as Weiskrantz states in the last sentence of his last chapter: "Understanding has always been in the debt of the study of damage" (p. 243).

Now, any advertence to "conscious awareness" by a psychologist strongly attracts my attention. This is especially true when the psychologist proposes to give some sort of explanatory account of the phenomena or, at least, some useful directions for achieving such an account. Without reference to brain-damaged people, I have elsewhere argued (Natsoulas, 1997b) that (a) we often base what we do next with respect to an environmental object (O) on its phenomenological presence to us and that (b) so to base our behavior involves being occurrently aware of this presence. In such cases, we have awareness of both O and of the awareness we are having of O; thus, our awareness of O is a conscious awareness rather than a nonconscious awareness.

Discussing the "what?" of consciousness, Weiskrantz brings out that, in using the term *awareness*, he means to refer to a kind of brain activity; awareness is something that happens in the brain. Although awareness has content and referents — that is, although instances of awareness may be "of the self, of a bodily twinge, an emotional reaction, an event in the world, or of knowledge" (p. 52) — awareness is not to be defined in terms of its referents. Rather, to be aware is to be having experience, whatever its contents or referents may be.

It will emerge as the present article proceeds what, more exactly, Weiskrantz means to refer to with the term *awareness* — and whether his concept of awareness is the same as mine. As it is characterized in the preceding paragraph, I find his concept of awareness to be unexceptionable. With regard to the relation of the mental and the physical, my critique (Natsoulas, 1994) of Searle (1992) will show, if it is consulted, that even a form of property dualism, without any implication of substance dualism, is too dualistic for me — as it is, no doubt, for Weiskrantz.

However, a general commentary hypothesis for consciousness, such as Weiskrantz's, is difficult for me to accept. I reject the claim that awareness in all its varieties is an occurrent part or output of a commentary system.

Rather, it has always seemed to me that we comment on what we experience; our comments often are based on what we are aware that we are experiencing. I cannot agree with what I take to be Weiskrantz's considered view: that we have experience insofar as we are commenting at the time or in the form of an occurrent brain process that proceeds just short of producing a commentary-type response.

Several times, Weiskrantz refers to this view of his as being the "strong" one in relation to a view that sharply distinguishes experience from comment or occurrent dispositions to comment. However, in my opinion, his is the "weaker" of the two views in that Weiskrantz theoretically replaces experience with something else — just as psychologists are notorious for doing (e.g., consciousness as a form of behavioral response). Anyone who is familiar with the history of psychology in this century will know that it is hardly a "bold assumption," as Weiskrantz describes it, to claim as he does that the "issuing of a commentary" whereby we know whether someone is aware "*is* what we mean by" someone's being aware (p. 233). Rather, Weiskrantz's "bold" assumption is a way of turning the clock back to simpler, more comfortable times. Unless, of course, a compelling answer comes to be systematically developed to the fundamental question "Why commentary?" This is a question Weiskrantz inadequately addresses in his recent book.

Three Categories of Patients Described as Deficient in Consciousness

From how certain brain-damaged patients perform on certain laboratory tasks, psychologists can make progress, according to Weiskrantz, in learning how a nondefective brain functions to give rise to consciousness. Especially useful are patients with just one impaired capacity (or very few) and whose impairment consists not in the absence of a capacity but in their lack of awareness of having the capacity. Three of Weiskrantz's examples of "consciousness lost" are identified in the following three subsections, along with some comment on each of them. In the fourth subsection, I return to the second of the three examples.

The Amnesic Syndrome

Some brain-damaged patients can learn various perceptual and motor skills, acquire conditioned responses, and retain information about verbal and pictorial materials. Yet, shortly after having so learned, some of these patients, depending on their lesions, are unaware of all of their past experiences that were involved in their acquiring those responses or knowledge or learning those skills. Although the patients exhibit behavior reflecting their

level of past training in the laboratory, they claim never to have experienced the stimulus materials with which they were conditioned or the tasks upon which, in fact, they have previously practiced. With respect to verbal and pictorial materials to which they have been previously exposed, the patients show chance-level recognition of them as previously experienced while, at the same time, giving evidence that their past exposure to these materials helps them correctly to identify fragmented or partial versions thereof.

Weiskrantz (1997, pp. 45, 54, 164) suggests these patients are lacking a kind of "awareness that" — as distinct from lacking "awareness of."[1] That is, in the amnesic syndrome, the patient is aware *of* everything currently presented to him or her but unaware *that* his or her performance on the present task, test, or trial reflects past practice. Let me suggest that these patients, too, have a deficiency in awareness-of. A patient is unaware-that as Weiskrantz describes, because of his or her being unaware now of any past experiences with the same task or with the experimental materials. The patient did have awareness of some of those earlier experiences at the time when they occurred, just as he or she is aware of experiences of the present moment.

Further pertinent comment in this connection can be found in my discussion of Tulving's (1985) patient N.N. (Natsoulas, 1986a), where I take issue with the radical characterization of N.N. that he is lacking "autonoetic consciousness." I mention here only James's (1890/1950, p. 296) point: that the stream of consciousness may be considered from the first-person perspective either (a) concretely: that is, in terms of its basic durational components, the successive states of consciousness, or (b) abstractly: that is, in terms of faculties with respect to which the concrete, experiential components of the stream can be evidence. If certain kinds of awarenesses are not apprehended as present in the stream, then one will fail to ascribe certain capacities to oneself. In the amnesic patients, the missing states of consciousness would seem to be awarenesses now of certain past experiences, namely, past experiences of the same environmental items that they are experiencing now.

Thus, it is error to say that, in the amnesic syndrome, what the patient is lacking "is not awareness *per se*" (Weiskrantz, p. 222). What the patient lacks is, in fact, one of the most important kinds of awareness-of that I can think of. It is better to be totally blind — even for a person who has been a visual artist — than not to remember one's past experiences to the extent of the amnesic syndrome.

Weiskrantz himself states that no matter how much past practice an amnesic patient has had on the experimental tasks, the patient remains "unaware experientially" of the level at which he or she can perform (p. 59).

---

[1]Which is deficient in the second category of brain-damaged patient; see next subsection in the present text.

Such awareness of a capacity necessitates being able to remember past experiences. Also, after reviewing much evidence, Weiskrantz states quite rightly, "Remembering of new material (and much of old) as an *experience* is what [the patient does] not have" (p. 121). However, Weiskrantz also leaves us with the following puzzling statement to interpret: an answer to whether one has seen a certain particular item before is "not related to awareness *per se*, but to . . . testing for a capacity," whereas an answer to whether one recognized that one had seen an item a few minutes ago is so related (p. 74).

Blindsight Patients

Other patients, who have suffered damage to the striate cortex, say that they cannot see environmental items that photically project to the retina and then on to parts of their striate cortex. Yet these patients can show reliable and accurate performance (i.e., "blindsight") in (a) moving their eyes voluntarily, as a kind of guess, to the position of a briefly presented spot of light that they say they cannot see, (b) reaching toward the guessed position of a presented item, (c) guessing which of two items was presented, and (d) guessing whether a presented item is homogeneous or contains lines, whether an item is moving or stationary, and whether an item is oriented horizontally or nonhorizontally.[2]

Weiskrantz's blindsight patient D.B. showed good discriminations of all of the above kinds: both on (a) trials with respect to which he insisted that he saw nothing at all — these constituted the bulk of the trials — and on (b) trials with respect to which he reported having some kind of qualitatively nonvisual awareness (feeling, cognition) of the items presented. When D.B. was asked, for example, whether his latter awareness was like the awareness of items projecting to an intact portion of his striate cortex such as the far periphery, D.B. answered, "No, even way out there in that part of my field, I *see*" (Weiskrantz, 1997, p. 60; see p. 66 for a consistent report from patient G.Y.). Only the first kind of trial will be called here a "blindsight trial." On a blindsight trial, no awareness of any kind of the item presented is reported.

It has also been demonstrated (a) that only chance performance is achieved when the items are presented instead to the natural blind spot and (b) that varying the proportion of blank trials, on which no item is presented, does not alter the basic results. Blindsight is not explainable, therefore, by light reaching parts of the retina connected to intact portions of the striate cortex, nor in terms of patients' merely being cautious about admitting to seeing something.

---

[2]Drawing on research by Weiskrantz and his colleagues, among others, I have elsewhere discussed the blindsight findings in greater detail than I do in the present article (Natsoulas, 1982, 1997a).

When a subject (S) is asked to "press key A if you see the light," S is being asked to report, if S can, a certain occurrence of visual awareness within him or her: so, too, when S is asked to indicate whether a flash of light occurred in the first or second of two temporal intervals. I would say about both the latter cases: S must have awareness of his or her visual experience that takes place on the respective trial in order to report as required (Natsoulas, 1997a). That is, S's visual experience must be not merely a case of awareness, but a case of conscious awareness. If visual experience of the light occurs without S's having any awareness of the experience's occurrence, then S will not report. In such instances, S may be able, at most, to guess correctly regarding whether or when the light is presented: as blindsight patients have done in many studies.

Because these patients do not report the light's presence or that they see the light, Weiskrantz states that their guesses take place in the absence of any awareness of the light. An alternative hypothesis is that the blindsight patients do have visual experience of the light but are deficient in their awareness of the visual experience. This latter possibility is implied when Weiskrantz (p. 129) admits that it is unclear whether absence of striate cortex eliminates visual awareness — not because the reports of blindsight patients concerning seeing are ambiguous, but because other, intact parts of the visual cortex might be responsible for visual experiences of which there is no awareness. As already mentioned, under certain conditions, Weiskrantz's (e.g., p. 66) patients report having a kind of awareness that they describe as nonvisual of a stimulus item that projects to the damaged area of their striate cortex. In this case too, it needs to be considered whether the patients' further statement that they do not "see" the stimulus item — for example: "you do not actually really sense anything" — is not owed to an absence of visual experience but to a deficient awareness of visual experience that does occur.

Concerning the further finding that the patients' guesses can indicate their discriminating colors while, throughout, they deny seeing any colors at all, Weiskrantz suggests that the patients are able to respond discriminatively to stimulation that normally produces color qualia in the absence of color qualia, adding, "But this is, in principle, no more striking or mysterious than being able to discriminate any kind of visual event in the absence of awareness" (p. 23). Later in the book, he generalizes his statement regarding qualia: "All of the examples of discrimination in blindsight are examples of 'missing qualia'" (p. 135). Weiskrantz's conviction in this regard appears to be that the patients are lacking visual experience of that which their guesses are discriminating unless they are in a position to report having such experience. Whereas Weiskrantz ascribes their behavioral deficiency to an absence of visual experience and not to their inability to be aware of certain experi-

ences that they have, Nelkin (1993, p. 419) interpreted the same results on wavelength in terms of "a dissociation of phenomenality from introspection" (cf. Natsoulas, 1997a; Rosenthal, 1993, p. 357). The latter amounts to the same alternative hypothesis that I mentioned above.

Weiskrantz similarly describes another group of neurological patients: who have suffered lesions in the right parietal lobe. These patients cannot report the presence of environmental items that project light into the left half of their field of view, yet they can be shown to be indirectly affected in their behavior by such stimulus presentations. Weiskrantz describes them as lacking awareness of those items, and remarks that they do not "know" (his quotes) what a certain part of their nervous system is actually doing.

He repeats this remark with reference to still other brain-damaged patients whose skin-conductance responses to familiar faces are greater than to unfamiliar faces although the patients cannot, because of their lesions, deliberately pick out the familiar faces from unfamiliar ones. Despite the latter incapacity, these patients show other positive effects as well: such as faster matchings of familiar faces, and better recognition of the names of familiar people when presentation of a name is coupled with presentation of the corresponding face. Notwithstanding the covert cognitive processing well demonstrated to go on in some cases of prosopagnosia, Weiskrantz maintains that no (nonconscious) awareness is involved in such processing because the patients do not report that corresponding awareness of the faces is going on.

It will be seen that Weiskrantz's exclusive reliance on patients' reports about whether or not they are having awareness of an event or property is not simply based on the conviction — not at all unusual — that to be aware of an event or property one must be consciously aware of it. Also, Weiskrantz holds that having occurrent awareness of a stimulus item, aspect, or feature is a matter of reporting it, overtly, covertly, or incipiently.

Patients with Full Cerebral Commissurotomy

Weiskrantz expresses the view that the study of commissurotomized patients has provided "dramatic evidence of function without awareness" (p. 31).[3] Functioning without awareness is proposed to take place, for example, when the right cerebral hemisphere of a commissurotomized patient is tested by presenting stimulus materials that photically project to that hemisphere alone. Consequently, when asked, the patient denies seeing anything at all on such trials.

[3]One might think, instead, that such patients provide dramatic evidence of double awareness; see Natsoulas (1987, 1988a, 1991, 1992b, 1993a, 1995).

However, this verbal behavior is under the control of the left hemisphere and, therefore, expresses only the fact that the stimulus materials were not seen by that hemisphere. The right cerebral hemisphere did see the materials and, therefore, the left hand, which is under its control, could be used to perform in a way that takes the stimulus materials into account. If, under the described conditions, only the right hand, which is under the control of the left cerebral hemisphere, is used instead, chance performance is found. For example, if an object's name is flashed only to the right hemisphere, this hemisphere (using the left hand) will be able to pick out from a group of objects, by active touch, an object with that name, while the left hemisphere (using the right hand) cannot.

Weiskrantz's suggestion that such performance by a commisurotomized individual provides evidence of functioning without awareness would, on its face, imply that the right hemisphere manages to produce the behavior described above in the absence of, among other instances of awareness, visual perceptual awarenesses of each of the names presented and tactual perceptual awarenesses of each of the objects chosen to match a name. Elsewhere (Natsoulas, 1991), I have argued, against Gillett's (1986, 1987a, 1987b, 1988) linguistic conception of consciousness, that no good reason has been provided for doubting that the right hemisphere of fully commissurotomized patients does consciously retrieve objects with the left hand.

And indeed, in part, Weiskrantz (1997) does describe the commissurotomized patients compatibly with my view of them. With reference to the above laboratory example, he describes them "as [being] shown, by indirect means, to have identified the 'unseen' visual events" (p. 33) and to have retrieved the correct object with the left hand. With reference to their everyday life, he describes them as being observed sometimes to behave at cross-purposes with the two hands: "For example the left hand may try to button up a coat, while the right hand tries to undo it" (p. 32).

However, also, Weiskrantz speaks of the photic stimulus information that is picked up by the right hemisphere as being "processed" on those same trials with respect to which the patient gives negative answers concerning having seen something. Thereby implied is a thesis alternative to some form of functioning involving awareness of the items presented. To say that the right hemisphere "processes" information is not to say as much as that the right hemisphere has visual perceptual awareness of an object's name, is conscious of being so aware and, therefore, following the experimenter's instructions, which it has heard and understood, reaches for the objects from among which a corresponding choice is supposed to be made, nor to say that the right hemisphere has tactual perceptual awareness of one of these objects after another, and then indicates its choice by lifting one of the objects up, the one that fits the name consciously perceived by sight.

Blindsight Patients Again

Weiskrantz's reluctance to speak of awareness in describing the right hemisphere's processing may derive from the same theoretical source as his interpreting blindsight as a kind of functioning without awareness of the stimulus items that project to "blind" regions of striate cortex. That is, both kinds of neurological patients are held to have "lost" a kind of consciousness. The consciousness blindsight patients have lost, in Weiskrantz's view, consists of visual perceptual awareness corresponding to a certain part or certain parts of their field of view.

Weiskrantz states, for example, "Some blindsight patients, especially with rapidly moving or suddenly appearing stimuli, have a kind of 'awareness.' Under other conditions, excellent discrimination is still possible even though the subject has *no awareness whatever* of moving stimuli" (p. 41; italics added). That is, the blindsight effect does not depend on the patients' having any visual perceptual awareness whatsoever of the stimuli presented. So too, the deconnected right hemisphere in the commissurotomy patients may "process" picked-up stimulus information although it has no awareness at all of the name or object. It needs to be argued, of course, that the observed accurate behavior is explainable without reference at all to visual perceptual awareness.

Weiskrantz leaves little if any doubt concerning his view about blindsight when he states that in blindsight patients "the experience has been removed from the discrimination" (p. 142). Thus, it is not that nonconscious experiences are occurring, nor that experiences are occurring of which the patient is having only nonconscious awareness. Rather, on blindsight trials, discriminations occur without any experience of the items discriminated.

The only hesitation that one has in understanding Weiskrantz in the latter way derives from his repeated use of the phrase *acknowledged awareness* to refer to what he proposes is missing. He thus seems to imply that an unacknowledged kind of awareness might nevertheless be occurring. Why Weiskrantz uses this phrase so often is a little puzzling. His use resembles that of a psychologist who repeatedly speaks of "conscious awareness" — intending, perhaps, to deliver some kind of emphasis — after having explicitly argued or asserted that there is no other kind of awareness than the conscious kind.

However, what Weiskrantz considers problematic for his hypothesis, albeit to only a minor degree, is that some patients with striate lesions report that they have some experience of some of the presented events. He stresses (a) that these experiences are described by the patients as nonvisual, not as cases of seeing, and (b) that accurate discriminations evidencing blindsight occur in the absence of any reports at all of experiences of any kind. Such appar-

ently nonvisual experiences that are veridical occur reliably in G.Y. when rapidly moving and transient items project to damaged striate cortex.[4] Other researchers who have studied G.Y. describe him as being consciously aware of seeing the items presented. Weiskrantz takes issue with these descriptions, quoting from a taped interview in which G.Y. stated that he does not sense or see anything on the respective trials. From a reproduced part of the transcript, it appears that Weiskrantz draws from G.Y. that the experiences at issue are like presentiments; thus, he is able to secure an affirmative answer from him to the question: "The nearest you can get is the sense of something happening, but you don't know what it is?" (p. 145). G.Y., too, performs well in the usual discrimination tasks involving guessing, that is, under conditions that result in no reports of any kind of experience.

Two Conceptions of Consciousness

Consciousness as Having a Higher-Order Thought

At several points, Weiskrantz (1997) refers to David M. Rosenthal's higher-order thought theory of state consciousness.[5] According to Rosenthal, the difference between a conscious mental-occurrence instance and a nonconscious mental-occurrence instance is simply a matter of whether the mental-occurrence instance was accompanied, at the time of its occurrence, by a thought to the effect that the mental-occurrence instance had occurred or was occurring to one. This thought is a separate happening from the mental-occurrence instance that is its object; therefore, Rosenthal refers to the thought as "higher-order."

For example, I may have the first-order thought that it is raining in London at the moment and, along with it, the higher-order thought that this first-order thought just occurred in me. The object of this kind of higher-order thought need not be another thought, but may be any kind of mental-occurrence instance. The identical mental-occurrence instance that was conscious would have been nonconscious had a higher-order thought about its occurrence not accompanied it.

A particular instance of a higher-order thought may itself, in turn, be conscious or not, depending on whether the instance is accompanied by a still

[4]Weiskrantz mentions that, to date, only with respect to such photic stimulus items have any blindsight patients reported having nonvisual awareness.

[5]I have written critically elsewhere about Rosenthal's theory (Natsoulas, 1992a, 1993b; see also 1993d, 1995–1996, 1996–1997), and was interested to find out what another psychologist would make of the theory, and how he might make use of it.

higher-order thought about it. Thus, all instances of consciousness — that is, all instances of one kind of consciousness, namely, state consciousness (see below) — essentially involve the occurrence of either a conscious higher-order thought or a nonconscious higher-order thought.

Weiskrantz understands Rosenthal as follows: "The main point is that unless you can have a thought *about* an input, it [i.e., the input] remains unconscious" (p. 71). If this statement of Weiskrantz's is read quite literally, it can be misleading as a statement of Rosenthal's view. In accordance with Rosenthal's theory, to say that someone has a perceptual awareness of a flash of light is to say that the individual is conscious of the flash, but it is not to imply that the perceptual awareness is conscious.

See especially Rosenthal's (1993) distinction, which he emphasizes and spells out, between state consciousness and transitive consciousness, as well as statements of his such as this one:

> Sensory states such as pains and perceptual sensations also typically represent qualities and properties of one's physical environment or one's own body. All mental states, moreover, are either intentional or sensory. So being in a mental state is very often sufficient for one to be transitively conscious of something. (p. 356)

I understand Rosenthal to be saying that one is now transitively conscious of a certain particular something if it exists, has existed, or will exist and one is now in a mental state that has reference to it. And the main point of Rosenthal's theory is that unless you had a (higher-order) thought regarding a particular instance of a perceptual awareness when it occurred, this particular instance of perceptual awareness occurred nonconsciously. Being a perceptual awareness, it was an instance of transitive consciousness but, occurring nonconsciously, it was not itself an object of state consciousness.

Weiskrantz is reluctant to say that an individual is "conscious" or "aware" of an environmental event (O) that has affected the individual's nervous system and behavior if the individual is unable to have thoughts about O as a result of his or her having been so affected. This is why Weiskrantz declares that inputs are nonconscious unless you have thoughts about them, and thereupon continues: "This is precisely what the [blindsight] patients cannot do: think about their inputs in relation to other inputs and contexts (I would extend thoughts, of course, to include images), to represent the content of their inputs to themselves" (1997, p. 71). Later in the book, he generalizes his point as follows:

> Within all of the domains we have considered, by definition none of these patients have negotiable knowledge of the material they cannot discriminate or detect explicitly, [*think* or *imagine* in terms of the capacity or contents of which they are unaware,] nor can they tell you about the contents of the material that they may be able to process covertly, nor can they talk to themselves about it either. (p. 171)

Perhaps the same point could be made regarding not awareness but conscious awareness. One might expect Weiskrantz to come to say that having perceptual awareness of O does not make it possible for blindsight patients to think about O because their awareness of O is nonconscious, that is, because they do not have, owing to their cortical lesions, higher-order thoughts (in Rosenthal's sense) about their perceptual awarenesses of O. Weiskrantz might consider this a preferable thesis because it can be useful in explaining the blindsight effects that he has experimentally demonstrated. He even states at one point that to be conscious is to have awareness of the actual content of one's experience.

Thus, he seems to imply that experience with content may occur without one's having awareness of the experience or its content (p. 171). He goes on to say that one's perceptions and ruminations must be cast in a form that would allow manipulation of their referents in thought and imagery. Again, one's experiences might occur, it would seem, without being cast in such a form, that is, without one's having any awareness of their occurrence. However, although Weiskrantz allows himself to speak of first-order thoughts and higher-order thoughts (see, e.g., p. 172), he clearly does not mean what Rosenthal means when Rosenthal calls a mental-occurrence instance "first-order."

For the occurrences to which Rosenthal is referring are not, according to Weiskrantz, experiences or awarenesses; in themselves, such occurrences are responses (or processes) that do not involve awareness of anything. Moreover, regarding every thought that Weiskrantz has ever had, he in effect (p. 171) claims to have been aware of it, or else it was not actually a thought. However, the latter claim would lead to an infinite regress if Weiskrantz also adopted a view, like Rosenthal's, that the awareness of a thought is a higher-order thought. Consciousness of a thought being a separate thought, it too would have to be an object of awareness, and so on. And so, Weiskrantz may have to reconsider the question of nonconscious thoughts.[6]

I believe Weiskrantz may well be engaged in reconsidering this question for, fairly late in the book, he allows himself to say, that, according to the perspective he has been advancing all along, "conscious processing requires a thought about a thought — a thought in isolation from the appropriate second-order thought will not do" (p. 184). However, he needs to reconcile this statement with his emphatic, repeated claim that the inability to report an experience, at least to oneself, is not compatible with the existence of the experience.

[6]As we have seen, this is not a problem for Rosenthal.

Consciousness as Product or Occurrent Part of the Functioning of a Commentary System

If he were following Rosenthal, Weiskrantz would say that the processing of picked-up photic stimulus information may proceed no farther than the stage where O is experienced, that is, there is only first-order awareness of O, or it may proceed to a more advanced stage: where awareness of O is capable of being acknowledged, that is, where there is potential or actual input into the system that Weiskrantz calls the "commentary system" and describes as the system that "makes further elaborations and contextualization possible" (p. 72). Weiskrantz does claim to be succumbing to the temptation "to analyse the neurological disorders in terms of specific disconnexions or blockades between a first-order process and a second-order or higher-order stage" (p. 73). The more advanced stage is supposed to be the stage described just above, although the functioning of the commentary system need not be verbal; experimental evidence is said to indicate that some nonhumans, too, are able to acknowledge awareness.[7]

I have just described Weiskrantz's advanced stage of processing as a stage that enables commentary to be formulated and issued. That is, prior to the operations of the commentary system and fully capable of occurrence without them are both (a) awareness of an environmental event and (b) apprehending this awareness's occurrence — corresponding, respectively, to Rosenthal's first-order mental-occurrence instance and the higher-order thought about that instance.

However, Weiskrantz's evident strong preference is for a different position: when a blindsight patient, or anyone else, is unable to formulate any kind of commentary on an environmental item presented to him or her, the environmental item is "unseen and unfelt," whatever the evidence may be that the item has affected the individual's nervous system or behavior. This is a major divergence from Rosenthal's kind of analysis.[8] Weiskrantz (p. 171) describes blindsight patients and others as responding at times without awareness, meaning that the processes involved in the brain's utilization of picked-up stimulus information does not involve any awareness of the stimulus items presented — or of anything else.[9]

---

[7]See a later section of the present article.

[8]As well as from hypotheses (e.g., Humphrey, 1987) that conceive of state consciousness as a matter of "a higher-order observing system looking down on other activity" (Weiskrantz, 1997, p. 190).

[9]It cannot be emphasized enough — in the interest of, among other things, keeping the statement out of the textbooks — that blindsight is not literally "performance in the absence of acknowledged awareness" (Weiskrantz, 1997, p. 220). The guessing behaviors of blindsight patients on blindsight trials are not responses without awareness, for they are executed consciously and deliberately, no less so than their behaviors on trials in which the patients report that they see the item presented. See Natsoulas (1997a) for discussion of this point.

I take it that what Weiskrantz means by someone's being conscious or aware of anything (O) is the immediate product of, or may be identical with, commentary-system activity of three sorts that, in fact, correspond to B.F. Skinner's distinction between overt responses, covert responses, and incipient responses (see Natsoulas, 1986b, 1988b). Thus, according to Weiskrantz, an individual who is now aware of O must be (a) commenting on O to someone else, (b) commenting on O to himself or herself, overtly or covertly, or (c) occurrently tending — short of actually doing so — to comment on O either to someone else or to himself or herself overtly or covertly. This latter form of commentary may consist merely of processes in the brain that are preliminary to commenting overtly or covertly whenever such commenting occurs. That is, incipient commentary would be the early portion of the total process of overtly or covertly commenting.

Thus, it does not suffice to say, from Weiskrantz's perspective, that the individual who is now aware of O is *capable* of commenting on O; rather, he or she is aware of O owing to the actual activity of the commentary system: "Phenomenal awareness itself, in our view, results from the delivery or potential delivery of a report" (Weiskrantz, 1997, p. 76). Phenomenal awareness is an effect of or a part of what actually takes place in the commentary system.[10]

But Weiskrantz frankly admits (a) that the latter conception, which is the one that he chooses, will seem "too easy a solution to the qualia problem and the awareness problem" and (b) that he can provide no grounds for his choice over conceiving of awareness as enabling the operations of the commentary system, as opposed to awareness's being an occurrent part or product of this system. Weiskrantz even states that it is "an open matter" whether awareness is identical to commentary or, instead, occurs as an output or occurrent part of the functioning of an as yet unknown neural mechanism that precedes commentary and makes it possible (p. 203).

Why Commentary?

One must wonder, therefore, why Weiskrantz makes the choice that he does: "I take [the commentary keys, which are pressed to indicate awareness or no awareness of a sensory event] to be the *sine qua non* of consciousness of a sensory event" (1997, p. 203). The pattern of scientific behavior that, in this instance, Weiskrantz exhibits leads to trying to make sense of the psy-

[10]A further explicatory point — which I come to below in a section about animal consciousness — is the difference between, on the one hand, commenting and, on the other hand, behaving in a communicative way that is not also a case of commenting.

chological processes underlying it. Why does Weiskrantz choose as he does? Perhaps, notwithstanding a frequently realist posture with regard to experience, a version of philosophical operationism remains active and effective in the background of Weiskrantz's thought, with the consequence that operations are relied on to determine concepts somewhat as they often have in psychology's past. Note, with the latter suggestion in mind, (a) Weiskrantz's statement that he is "restricting" the concept of consciousness at work in his book to "those dissociations that have emerged from the neuropsychological syndromes under review" (p. 164) and (b) his easy slide from an operational criterion to an operational definition and identification (p. 242).

So, too, recall how philosophical and metaphysical, in retrospect, some of our tough-minded psychological forebears turn out to have been. Although they claimed at the time to be free of such disorders of thought. Some of them proposed an observer-centered principle concerning the nature of reality: what something is amounts to how I know about it.

Wondering "Why commentary?" ought to grow if one (a) consults my critical discussion of the similar conceptual/verbal consciousness system that Michael S. Gazzaniga and Joseph E. LeDoux have posited in the brain (Natsoulas, 1988a, pp. 519–521, 526–534) or (b) takes seriously, as representing his true view, Weiskrantz's (1997) following statements:

> One should try to elevate one's explanations to the level where they actually give full credence to the importance of awareness. Any patient who has lost his sense of "seeing" or "touch" will understand that: what he has lost is his awareness, not his concept, nor a draft. (p. 4)

> Conscious awareness . . . is a question of experience, and not of its referents, which can be various. (p. 52)

> No lashings of identity theory can remove the characterististics of what it is that allows a blindsight patient to press the "not aware" key for his blind field and the "aware" key for his intact field, and why that is important both for science and for the patient himself. (p. 198)

In criticism of his own approach, Weiskrantz may eventually want to say the entire next indented paragraph, if he does not as yet feel the desire to do so:

> Advanced technologies will serve to illuminate "the topic of the scientific basis of consciousness . . . only if the questions are posed appropriately" (Weiskrantz, 1997, p. 242). No amount of commentary — however incipient, complex, and nonverbal it may be — can be identified with the characteristics of what we are reporting about when we say that we are having visual experience of something — be it the sun, an expanse uniform throughout in hue, saturation, and brightness, or a fire-breathing dragon. None of the latter three items — whether they are considered to be physical, mental, or nonexistent — is a commentary, nor is one's seeing them a matter of describing them. Or else, the blind would learn to see by acquiring the right things to say at the right times.

For it cannot be denied that Weiskrantz's (1997) answer to "What is it that allows this, or any [proposed] conscious awareness system, to generate its particular phenomenal quality?" (p. 200) has been entirely in terms of the main function of his posited commentary system, namely, the production of commentaries. Notwithstanding his own critical statements against hypotheses of multiple drafts and the like (p. 201), perhaps it will help to remind Weiskrantz to avoid conflating the operations by which he decides whether an experimental subject is aware of something with what awareness is in itself (cf. p. 204).

After all, by identifying consciousness with the activity of a commentary system, he has not managed to escape from the kind of tough questions that he himself poses not to the commentary theorist of consciousness but to those who would locate consciousness elsewhere in the brain (p. 203). About the commentary hypothesis, Weiskrantz states, "I do not necessarily take this to be an easy solution to the question of how qualia — the particular experiences of colour, say — arise" (p. 204). But he does not go on to say what kind of solution to the problem, if not an easy one, is provided by invoking a hypothetical commentary system that performs miracles of turning concepts and statements into experiences of every kind.

The best Weiskrantz appears able to do toward a solution is to say parenthetically, "allowing speculation to run riot," that "[Roger] Penrose's quantum phenomena somehow generate qualia" (p. 204) in the commentary system. Shortly before this statement, Weiskrantz (a) asks, against Penrose's quantum hypothesis of consciousness, why, then, retina and spinal cord are not also conscious, and (b) characterizes Penrose's hypothesis as verging on a species of dualist interactionism, which is a general "solution" to the mind–body problem that Weiskrantz consistently rejects.

If Weiskrantz has, literally, not a single idea regarding how the commentary system that he himself has posited to explain consciousness produces consciousness, then perhaps, as a good empiricist, he should give it up. Otherwise, he should say in full detail why he prefers to identify awareness with overt, covert, or incipient commentary. To state a preference, however "boldly," cannot suffice. For, as we all know by now, scientific preferences can derive from extra-scientific considerations. Good science needs reasons to be stated so that they can be examined for their cogency as reasons. For longer than I have been a psychologist, behavioristic preferences have had a free ride in psychology. But, as the century of rampant behavior is coming to a close, good argumentational currency should now be demanded.

The Island of Reil

Instead, Weiskrantz wishes to determine where in the brain the posited commentary system lies by taking his leads from which brain structures appear to be required for behavioral responsiveness to photic stimulation and reports of seeing. In this way, he arrives at two possibilities regarding how photic stimulus information processing reaches the commentary stage. Either the commentary stage is reached via "the visual oil refinery" (VOR) or through a different route that bypasses the latter huge set of brain connections. This other route he calls "the visual oil refinery bypass" (VORB).

Weiskrantz's glossary defines VOR as having reference to "the extensive inter-connexions within cortical areas closely associated with V1 [striate cortex]" (p. 262). That is, retinal projections may reach nonvisual parts of the cortex, and other brain structures, either through VOR, or by bypassing VOR, or by both of these routes at the same time. Evidence of monkeys' loss of behavioral responsiveness to photic stimulation upon extensive cortical lesions that spare VOR indicates to Weiskrantz that the commentary system lies outside VOR. An alternative is that the process of visual awareness, together with consciousness of same, lies within VOR but this process requires contributions from nonvisual cortex and other parts of the brain, not to speak of adequate functioning of VOR itself.

At this point, Weiskrantz proceeds with possibilities concerning what the new techniques of brain imaging may come to reveal concerning the structure that is responsible for consciousness. The second full paragraph on Weiskrantz's page 215 gives us, as he himself describes it, his best bet in the lottery. To wit, the commentary system is one or another region that receives input both by VORB and from striate cortex through VOR. More specifically, Weiskrantz favors the cortical island of Reil (the insula): because it is "well placed" in relation to Wernicke's area and Broca's area in humans, and "near" the anterior inferotemporal cortex in primates. The latter region gives evidence of being specialized for visual memory, and human commentary is often verbal. Also, Weiskrantz refers to a recent PET study in which the island of Reil "lit up" when the sense of touch was temporarily restored by squirting cold water into the ear opposite the side of the body that had lost tactile sensitivity as a result of a stroke.

If there is a route from the retina that bypasses VOR and yet projects to regions to which VOR normally projects, why does damage to striate cortex produce cases of consciousness lost (i.e., blindsight)? Weiskrantz (1997) answers this question as follows:

> Most of these regions [to which VOR normally projects] do not have adequate direct access to the commentary stage, which is normally reached via back projections to [striate cortex] and thence over further projections forward that allow integrated visual information, especially of object representations, to access the commentary stage possibly in tandem with VORBs. (p. 219)

This is not to say, of course, that no awareness of photically presented items occurs when striate cortex is damaged; rapid-movement and sharp-transient retinal stimulations do have this result. Weiskrantz proposes to apply the above rule depending on, based on reports, which awareness is found and which is not found in blindsight patients.

Thus, the reports on blindsight trials of no awareness are a consequence of the inability of stimulus information received via VORB by regions to which VOR normally projects to project back, as is normal, to the striate cortex. Only the striate cortex — not, therefore, the commentary system, or any other region — can process that stimulus information so that a "full-blown, organized perception" is produced. However, Weiskrantz (p. 217) rejects on the following two grounds the notion that visual awareness is located in the striate area, which might seem to be implied by the latter statement. (a) Research with VOR-intact monkeys who have had much of their nonvisual cortex removed shows a lack of behavioral responsiveness to photic stimulation.[11] (b) Stimulus information from the retina arrives at the striate cortex cast in retinotopic coordinates. Even assuming both these grounds are valid, they by no means rule out the hypothesis — alternative to the commentary hypothesis — that conscious visual awareness takes the form of a process or network that includes activity in striate cortex. But, according to Weiskrantz, identifications and analyses that such a network would accomplish could not constitute visual awareness unless the network affected or included an unknown nonvisual region, such as the island of Reil or "the entire fronto-limbic complex" (p. 226), that Weisenkrantz would equate with his commentary system.

Functioning of a Commentary System Not Necessarily Linguistic

The functioning of the commentary system is proposed to be responsible for consciousness but, in Weiskrantz's view, this functioning need not be linguistic (e.g., p. 167). Being aware of something is not ruled *out* for nonverbal and preverbal creatures and not ruled *in* by the fact that a pattern of stimulation occasions a piece of behavior. A commentary system (a) comes into play

[11]To critics who would object that he is giving extreme ablations (animal preparations) too much weight, Weiskrantz (1979) answers that these complex experiments "serve as a weather vane pointing to a hypothesis" (p. 233).

later in the total process of stimulus-information processing than does the part that leads to certain behaviors, and (b) need not exist or be functioning in order for these behaviors to take place or even for some of them to be learned.

Weiskrantz would attribute awareness of an environmental item (O) to a creature that could not say whether it perceived O, if that creature could be gotten not only to respond to O but also to respond observably to the occurrence within it of an awareness of O.[12] A relevant experimental procedure is one that has been used by Cowey and Stoerig (1995) with three monkeys whose left striate cortex had been completely ablated by surgery and one intact, control monkey.

In the first stage of this experiment, it was shown that, having been so trained, all four monkeys could accurately and reliably emit a response that indicated the detection and position of light flashes projecting to either visual cortex. In the second stage, the same monkeys were trained to discriminate between "nonblank" and "blank" trials, that is, between a light flash projected to their right hemisphere and no light flash presented at all. They learned to give a different response on the occasion of each kind of circumstance. These same kinds of trials then continued with a "probe" trial inserted in the series from time to time. On any probe trial, a light flash occurred that projected to the left hemisphere instead.

The three monkeys whose left striate cortex had been removed behaved on the probe trials just as they were responding on the blank trials, whereas the control monkey responded accurately. Here are two comments on the relevance of this procedure to Weiskrantz's theoretical analysis.

1. How the lesioned monkeys responded on the probe trials is puzzling. Cowey and Stoerig inform us that they responded accurately on only two to eight per cent of the probe trials and that, on each of those trials, they moved their eyes so that the light flash projected to their intact visual cortex. For three years previously, these monkeys had been studied using the procedure that I described above as the first stage of the experiment. Thus, a light flash to either their right or left hemisphere had repeatedly occasioned responses from them that were accurately attuned to the location of the light flash. In that stage of the experiment, their results were very much like the results of the control monkey. For some reason, the similarity of the probe trials to the blank trials determined their behavior on the probe trials. A personal communication from Cowey and Stoerig to Weiskrantz states that increasing the relative frequency of probe trials and making the light flashes

[12]From Weiskrantz's perspective, a better way to describe the latter kind of responding would seem to be in terms of the commentary system's producing an overt response that itself qualifies as an awareness of O (cf. Natsoulas, 1986a, pp. 492–493, on Wittgenstein).

on those trials "much more salient by flickering, etc." does not significantly affect how the monkeys respond on the probe trials. It seems, therefore, that the background stimulus pattern projecting to the left hemisphere — a pattern that is identical for blank and probe trials — controls the behavior on both blank and probe trials. As it does not in the case of the control monkey.

2. Weiskrantz wants to interpret these results in terms of the animals' reporting or signalling awareness of the light flash on trials in which the light flash is projected to intact visual cortex. So to interpret the results requires Weiskrantz (a) to eliminate alternative hypotheses such as the one intimated in the just preceding paragraph and (b) to assume that the monkeys have, in Rosenthal's sense, awareness of their visual awareness. However, we have seen that Weiskrantz prefers, over the latter thesis, the view that awareness of a light flash or of anything else (O) is constituted by a certain form of (commentary) response occasioned by O. Therefore, he would have to argue, on some grounds, that the accurate responses on the nonblank trials (and on the probe trials in the case of the control monkey) are products of the commentary system whereas the accurate reaching responses of the lesioned monkeys in the first stage of the experiment to the respective positions of the light flashes presented to their right hemisphere do not qualify as awareness responses. In the one case, the responses are comments about O; and, in the other case, they are not comments about O.

Later in the same chapter, which is about whether animal consciousness exists, Weiskrantz goes on to suggest that animals, like humans, must learn the "meaning" of a response in order for the response to serve as a commentary. He returns to this thesis in his chapter on why the function of consciousness evolved. He explains there that communicative behavior does not amount to a commentary unless the person or animal that is so behaving "*knows* that he or she is actually communicating" (p. 168). Thus, awareness is not to be defined operationally in term of the emission of a certain kind of response; the same response may be a commentary or a mere communication or something less, and a commentary may occur covertly.

Therefore, I infer: in the Cowey and Stoerig experiment, prior to the second-stage training with blank trials, an animal's accurate responses to light flashes had not yet acquired the meaning that he or she had awareness of the light flashes, although these responses were like the animal's later responses on the nonblank trials. Since they did not know what the responses meant, they were not aware of the flashes of light to either hemisphere because awareness is commentary: the issuing of meaningful responses to indicate that something is the case.

Presumably, this line of analysis could be used by Weiskrantz to explain the fact that the lesioned monkeys, after the training trials constituting the second stage of the experiment, no longer reached (in the probe trials)

toward the light flashes presented to their right hemisphere. Weiskrantz might even want to predict — supposing that a third stage exactly like the first stage were added to the experiment — that these monkeys would not reach, as they had in the first stage, toward such flashes because the newly acquired meaning of their reaching toward a light flash is that they are aware of the light flash, which they are not according to Weiskrantz.

Testing the Commentary Hypothesis

If consciousness is commentary in Weiskrantz's sense, one might expect that there would be some improvements in the functioning of the commentary system that would increase the frequency and quality of awareness of the presented items on blindsight trials. After all, commentaries are incipient, covert, or overt responses, and might well be expected to become, under certain conditions, more reliable and valid in content. Perhaps one such set of conditions is repeatedly to inform the patient about properties of the stimulus items upon their presentation on blindsight trials. A patient's guesses about the items presented might achieve such a level of accuracy that the patient would no longer say that he or she did not see the items. At that point, the patient would no longer consider himself or herself to be guessing and would respond, on what used to be blindsight trials, without being signalled that it is time to guess. Explanation for increased accuracy to a sufficiently high level would be located in the commentary system. That is, the accuracy of the patient's responses would be held to reflect an alteration in the functioning of this system so that it now produces responses qualifying as conscious visual experiences of the presented items.

Reacting to a published suggestion somewhat similar to the above, Weiskrantz does not appear to think his commentary hypothesis of consciousness leads to the above kind of expectation. Because of the specifics of the suggestion, Weiskrantz focusses on runs of trials in which D.B. felt confident about his guesses, seeming to know what stimulus item was presented without having any visual experience. Weiskrantz (1997) states,

> And yet I do not know of this ever graduating into acknowledged seeing. It might eventually happen, of course, but it is worth remembering just how many hundreds of thousands of opportunities for "good guessing" these well-tested subjects have had in formal situations over several years, let alone the millions they have had in their daily lives. (p. 179)

Based on the commentary hypothesis, it should be expected, rightly or wrongly, that visual awareness will return as a result of modifications in the functioning of the commentary system so as to reflect variables of stimulus information received and processed by the damaged areas of the striate

cortex. The commentary hypothesis should so expect because visual awareness is held to be a product and part of the functioning of the commentary system. Recall that, according to Weiskrantz's interpretation, when the lesioned monkeys learned, in the second stage of the Cowey and Stoerig experiment, what their reaching response meant, they became aware of the light flash, which they were not aware of before this learning although they performed well. Particular changes in processing that took place within the commentary system were supposed to have made the difference. According to the commentary hypothesis, the blindsight deficit lies in the lack of occurrence of suitable commentary in response to the photic stimulus information being picked up and processed.

Indeed, six pages later, Weiskrantz proposes the following as an outcome consistent with his consciousness hypothesis:

> A procedure that would come closer to meeting the case in blindsight might be the presentation of a warning signal and a visual stimulus, followed by information that had genuine content, for example, "square," "a grating," "red," etc., which is semantically and perceptually part of an intact system for blindsight subjects because they typically have a half-field of normal vision, as well as intact visual memory of seen events. (p. 185).

The case that might be met is blindsight patients' coming to report seeing the items that they have been successfully discriminating in the absence of any visual experience, according to Weiskrantz. The above procedure would serve to establish adequate connections between the nonconscious visual processing of stimulus information and the, so hypothesized, remarkable conscious-making activity of the commentary system. Thus, visual experience would come into being with respect to parts of the field of view where it did not exist before, that is, not since the striate lesions took place.

How is it possible for commentary to produce such a result? A reader will surely have doubts concerning whether mere commentary can accomplish so much. And doubt cannot help but extend to all of experience, that is, to whether commenting is capable of producing, except indirectly, any kind of experience at all in brain-damaged patients or in intact people. A problem is we have not been told how the commentary system might work to create experience. By describing it as a system whose basic functioning consists, it would seem, in the exercise of verbal and nonverbal concepts, Weiskrantz invites disbelief that it is capable of squeezing out the kind of experience that Gibson (1979/1986) — having urged his readers to give up the dogma that percepts without concepts are blind (p. 3) — describes as follows:

> Consider an adult, a philosopher, for example, who sees the cat on the mat. He knows *that* the cat is on the mat and believes the proposition and can say it, but all the time he plainly sees all sorts of wordless facts — the mat extending without interruption behind the cat, the far side of the cat, the cat hiding part of the mat, the edges of the cat, the cat being supported by the mat, or resting on it, the horizontal rigidity of the

> floor under the mat, and so on. The so-called concepts of extension, of far and near, gravity, rigidity, horizontal, and so on, are nothing but partial abstractions from a rich but unitary perception of *cat-on-mat*. The parts of it he can name are called concepts, but they are not all of what he can see. (p. 261)

Aside from the presumable, though uncommunicated, merits of the commentary hypothesis itself, what gives Weiskrantz some hope seems to be the finding that some prosopagnosic patients are able to recognize some faces if they are presented in groups of eight and fall into the same occupational category. Weiskrantz's interpretation is that the group presentation results in the processing of stimulus information by the commentary system, as does not occur when individual pictures are presented alone prior to the group presentation. The necessary processing does not go that far with mere individual presentations. In some patients and for a short time, a positive effect of group presentation persists with pictures presented one at a time.

Weiskrantz's assessment of the evidence for consciousness regained — after having been lost in his sense — does not give him cause for optimism. However, from the paucity of reported cures through training or learning, he draws no skeptical conclusion regarding the commentary hypothesis. Nor does he seem eager to put his hypothesis to test by devising procedures that theoretically would be expected to work.

Remembrances and the Commentary Hypothesis

Regarding those unfortunate people whose brain lesions have yielded the amnesic syndrome, Weiskrantz (1997) writes,

> It is as if their current experiences are written with rapidly fading ink, and as a result they are locked into the immediate present. They do not know whom they have seen, what or when they have eaten on that day, or even what day it is, or where they are or have been, or whether the attendant is someone they already know. (p. 100)

These patients — who require continuous custodial care — are greatly deficient in their present awareness of their past experiences, notwithstanding their retaining the ability to learn various perceptual and motor skills, to acquire conditioned responses, and to retain information about verbal and pictorial materials while failing to recognize them as previously experienced. The retention of information about verbal and pictorial materials is indicated by improvements in identifying fragmentary copies of such materials after the patient has seen the materials whole. One study found that such patients could correctly guess the name of a pictured public figure recently come into prominence, if they were prompted with partial letters of the name or with circumstantial information concerning the pictured individual, whom the patients stated that they had never seen before.

Weiskrantz's interpretation of these and many similar findings pertaining to the amnesic syndrome is that the patients lack the capacity "to compare current items and stored items" and, therefore, to produce behavior based on such comparisons (p. 124). Current items cannot affect the patients as they do intact people so that they can recall and think about stored items in relation to current items and to each other. Weiskrantz states that it "might be" a complex set of such comparisons that "entails just what it is" that we are speaking of "when we speak of having a 'conscious experience' of remembering, and [therefore] that no special device of 'awareness' is necessary" (p. 125).

Weiskrantz's posited commentary system is not a special awareness device; he conceives of the commentary system, probably, as a general, multipurpose, awareness device. For he immediately proceeds to suggest that those comparisons between current and stored items are achieved by the commentary system. Thus, although stored information affects many behaviors, it cannot supply objects for remembrance — that is, objects of experiences of remembering — unless the commentary system functions to produce, from inputs of stored information to that system, commentaries about some of the referents of that information.

The commentary system is the brain device that produces remembrances. So too, blindsight patients have no experiences of the stimulus items that are presented to damaged portions of their striate cortex because the respective picked-up stimulus information does not get processed by the commentary system, which is what produces visual experiences, as well as remembrances and all other experiences.

Patients suffering from the amnesic syndrome are, of course, not lacking in all knowledge. Among the things they know is that they cannot have remembrances. And they can also know that they once did have remembrances. They know the latter because, at the time in the past that they had such remembrances, they were aware of having them (which awarenesses, too, were produced by their commentary system). But, now, they no longer can have remembrances; so, stored items, including ones that were "commented on" in the past, can no longer be "commented on" in the sense of producing remembrances of them. As Weiskrantz states: "An amnesic patient might acknowledge that he 'remembered going to such and such a school,' but he will not be able to offer a commentary in the here-and-now that he recovered such a memory, nor will he remember it the next time he is asked the same question about his early schooling" (p. 126).

Two Concluding Comments

1. Although the identification of awareness with commentary (overt, covert, or incipient) is his stated preference, Weiskrantz (p. 97) allows him-

self to ask whether, in the absence of commentary, awareness may take place. However, he seems to conclude otherwise, although his conclusion is not phrased in absolute terms. Note the possible implication that commentary behavior is not required equally by different kinds of awareness:

> Ongoing behaviour, no matter how rich in detail, does not necessarily involve awareness of the events controlling the behaviour. A person or an animal can show excellent capacities without awareness. A commentary-type response is required, and this is especially the case for sensory awareness. (p. 99)

Given an accurate and full understanding of the position that is being expressed in the latter quotation, would the following statement constitute a fair challenge to Weiskrantz? To say the least, it would be most impressive and enlightening if Weiskrantz were to choose just one piece of ongoing human behavior that possesses, as he suggests, the greatest possible richness of detail and to explain this behavior without making any explicit or implicit reference to awareness. Skepticism concerning Weiskrantz's above stance — regarding whether consciousness is necessary for complex behavior — is enhanced when he draws the following conclusion from all of his observations of the relevant kinds of brain-damaged people: the consciousness-deficient patients discussed in his book "deal with the contents of the relevant events in their own lives and experience as though they were powerless, as indeed they are in practical terms" (p. 169).

2. The thesis that the commentary system produces all experience or awareness reminds me of James's (1890/1950) unitary stream of consciousness, except

> (a) that it was the total brain process, not a single brain system, that was somehow supposed, to bring James's stream of consciousness into existence integral pulse by successive integral pulse (see Natsoulas, 1992–1993),
>
> (b) that these pulses of mentality were considered by James to be nonphysical (see Natsoulas, 1992–1993, 1998), and
>
> (c) that they were, according to James, fundamentally forms of "feeling" (see Natsoulas, 1998).

That is, each pulse of mentality, or state of consciousness, cognizes in the form of feeling its objects: "All mental facts are modifications of subjective sensibility" (James, 1890/1950, p. 148). This is supposed to be the immanent, intrinsic side of every pulse of consciousness, its "sensitive body," what each pulse is in itself.

Whereas Weiskrantz holds — correctly, I believe — that the pulses of consciousness are not mental in the sense of nonphysical and that they are experiential in the full sense not to be reduced to something else, it remains to be seen what else can be said about them. For example, would Weiskrantz agree

with James that the pulses are basically forms of feeling? Or does Weiskrantz's describing them as forms of comment imply that the pulses of consciousness have a prebehavioral form? Specifically, do they have a form analogous in its structure to the behavioral exercise of concepts or sentences?

References

Cowey, A., and Stoerig, P. (1995). Blindsight in monkeys. *Nature, 373*, 247–249.

Gibson, J.J. (1986). *The ecological approach to visual perception*. Hillsdale, New Jersey: Erlbaum. (Original work published 1979)

Gillett, G. (1986). Brain bisection and personal identity. *Mind, 95*, 224–229.

Gillett, G. (1987a). Discussion. In A. R. Peacocke and G. Gillett (Eds.), *Persons and personality* (pp. 48–55). Oxford, England: Blackwell.

Gillett, G. (1987b). Reasoning about persons. In A. R. Peacocke and G. Gillett (Eds.), *Persons and personality* (pp. 75–88). Oxford, England: Blackwell.

Gillett, G. (1988). Consciousness and brain function. *Philosophical Psychology, 1*, 327–342.

Humphrey, N.K. (1987). *The uses of consciousness* (57th James Arthur Lecture on the Evolution of the Brain). New York: American Museum of Natural History.

James, W. (1950). *The principles of psychology* (Volume 1). New York: Dover. (Original work published 1890)

Natsoulas, T. (1982). Conscious perception and the paradox of "blind-sight." In G. Underwood (Ed.), *Aspects of consciousness* (Volume 3, pp. 78–109). London: Academic Press.

Natsoulas, T. (1983). Concepts of consciousness. *The Journal of Mind and Behavior, 4*, 13–60.

Natsoulas, T. (1986a). Consciousness and memory. *The Journal of Mind and Behavior, 7*, 463–502.

Natsoulas, T. (1986b). On the radical behaviorist conception of consciousness. *The Journal of Mind and Behavior, 7*, 87–116.

Natsoulas, T. (1987). Consciousness and commissurotomy: I. Spheres and streams of consciousness. *The Journal of Mind and Behavior, 8*, 435–468.

Natsoulas, T. (1988a). Consciousness and commissurotomy: II. Some pertinencies for intact functioning. *The Journal of Mind and Behavior, 9*, 515–548.

Natsoulas, T. (1988b). On the radical behaviorist conception of pain experience. *The Journal of Mind and Behavior, 9*, 29–56.

Natsoulas, T. (1991). Consciousness and commissurotomy: III. Toward the improvement of alternative conceptions. *The Journal of Mind and Behavior, 12*, 1–32.

Natsoulas, T. (1992a). Appendage theory — pro and con. *The Journal of Mind and Behavior , 13*, 371–396.

Natsoulas, T. (1992b). Consciousness and commissurotomy: IV. Three hypothesized dimensions of of deconnected left-hemispheric consciousness. *The Journal of Mind and Behavior, 13*, 35–64.

Natsoulas, T. (1992–1993). The stream of consciousness: I. William James's pulses. *Imagination, Cognition and Personality, 12*, 3–21.

Natsoulas, T. (1993a). Consciousness and commissurotomy: V. Concerning an hypothesis of normal dual consciousness. *The Journal of Mind and Behavior, 14*, 179–202.

Natsoulas, T. (1993b). Freud and consciousness: VIII. Conscious psychical processes perforce involve higher-order consciousness — intrinsically or concomitantly? A current issue. *Psychoanalysis and Contemporary Thought, 16*, 597–631.

Natsoulas, T. (1993c). The importance of being conscious. *The Journal of Mind and Behavior, 14*, 317–340.

Natsoulas, T. (1993d). What is wrong with appendage theory of consciousness. *Philosophical Psychology, 6*, 137–154.

Natsoulas, T. (1994). A rediscovery of consciousness. *Consciousness and Cognition, 3*, 223–245.

Natsoulas, T. (1995). Consciousness and commissurotomy: VI. Evidence for normal dual consciousness? *The Journal of Mind and Behavior, 16*, 181–206.

Natsoulas, T. (1995–1996). The stream of consciousness: X. A Critique of James's appendage theory of consciousness (first part). *Imagination, Cognition and Personality, 15*, 365–384.

Natsoulas, T. (1996–1997). The stream of consciousness: XI. A critique of James's appendage theory of consciousness (second part). *Imagination, Cognition and Personality, 16*, 63–82.

Natsoulas, T. (1997a). Blindsight and consciousness. *The American Journal of Psychology, 110*, 1–34.

Natsoulas, T. (1997b). The presence of environmental objects to perceptual consciousness: A difference it makes for psychological functioning. *The American Journal of Psychology, 110*, 507–526.

Natsoulas, T. (1998). On the intrinsic nature of states of consciousness: James's ubiquitous feeling aspect. *Review of General Psychology, 2*, 123–152.

Nelkin, N. (1993). What is consciousness? *Philosophy of Science, 60*, 419–434.

Pylyshyn, Z. (1990). Roundtable discussion. In P. P. Hanson (Ed.), *Information, language and cognition* (pp. 198–216). Vancouver, Canada: University of British Columbia Press.

Rosenthal, D.M. (1993). State consciousness and transitive consciousness. *Consciousness and Cognition, 2*, 355–363.

Searle, J.R. (1992). *The rediscovery of mind*. Cambridge, Massachusetts: Bradford/MIT Press.

Tulving, E. (1985). Memory and consciousness. *Canadian Psychology, 26*, 1–12.

Weiskrantz, L. (1997). *Consciousness lost and found: A neuropsychological exploration*. Oxford, England: Oxford University Press.

Wittgenstein, L. (1980). *Remarks on the philosophy of psychology* (Volume 1). Oxford, England: Blackwell. (Original German typescript dated 1947)