

An Introduction to Reflective Seeing: Part I

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The human visual system allows a number of molar activities, among them straightforward seeing and reflective seeing. Both of these activities include, as product and part of them, a stream of first-order, visual perceptual consciousness (experience, awareness) of the ecological environment and of the perceiver himself or herself as inhabiting the environment and acting or moving within it. The two respective component streams of first-order consciousness both proceed at certain brain centers and, in Gibson's sense, they are resonatings to the stimulus energy flux at the photoreceptors. But the two streams differ in that only the one that proceeds during reflective seeing involves inner (second-order) consciousness of the component first-order, visual perceptual consciousness (experience, awareness). In this sense, perceptual consciousness proceeds entirely nonconsciously during straightforward seeing. This is because inner (second-order) consciousness is not a kind of response to first-order consciousness, but is an intrinsic dimension of the latter when it is proceeding consciously as opposed to nonconsciously. The content of first-order, visual perceptual consciousness during reflective seeing is importantly different from the content during straightforward seeing, notwithstanding their both being kinds of seeing in the literal, nonmetaphorical sense as characterized by Gibson's ecological approach to visual perception.

In past articles, I have addressed aspects of perceptual consciousness (experience, awareness) with special reference to Gibson's (1966, 1979; Reed and Jones, 1982) well-known ecological approach to perception, or theory of information pickup (e.g., Natsoulas, 1978, 1990a, 1992d). To indicate the immediate context of the present effort, let me mention three examples of my previous relevant work.

1. I have been concerned with the distinction between visual perceptual consciousness (experience, awareness) and the process of visual perceiving, as Gibson (1966, 1979) has described this process. I have argued that (a) the stream of visual perceptual consciousness (experience, awareness)—which includes, as an intrinsic dimension of it, the qualitative appearing of the eco-

logical environment—proceeds at certain brain centers, and is both a product and part of (b) the molar activity of the visual system, which includes both peripheral and central processes of the nervous system, as well as behavior (Natsoulas, 1989c, 1990b, in press-a).

One kind of molar activity of the visual system is reflective seeing, which includes, as part and product of it, a distinctive stream of visual perceptual consciousness (experience, awareness), as I shall explain. How, by what means, is the perceiver (P) often immediately cognizant of visually perceiving that which P is visually perceiving? I propose that, in order to answer this question, psychologists will need to understand reflective seeing and its component stream of visual perceptual consciousness (experience, awareness) of the ecological environment.

A second kind of molar activity of the visual system is straightforward seeing. When I speak of straightforward seeing, the following passage from Husserl (1925/1977) often comes to my mind:

If one who is focused purely on objective nature busies himself in perceiving straightforwardly, he grasps the natural directly as it itself, in its natural properties and relations. At first there are no motives here for distinguishing between merely specific sense-qualities and those which are truly objective. We need not take account of this distinction here since, as is easy to see, it appears only at a higher level. In any case, if we are experiencing in a straightforwardly noticing manner and are looking purely at what is and is such and such in space, everything which comes to be laid hold of in this manner offers itself just as pertaining to spatial things, the shape as a shape of the thing, a quality pertaining to it in movement and rest, in change and permanence; likewise also, color as spreading over the spatial figure and thereby over the thing itself, qualifying what is objective in space. Nothing at all subjective falls within our mental sphere of vision. (p. 116)

I shall eventually come back to this passage, particularly with reference to what it is, more specifically, that P has visual perceptual consciousness of during straightforward seeing. I shall be more specific than saying, as I also do, that it is the ecological environment and P himself or herself as inhabiting and acting and moving in that environment that comprise what P has straightforward visual consciousness of.

2. Notwithstanding Gibson's (1979) statement that "there is no content of awareness independent of that [in the ecological environment] of which one is aware" (p. 239), I have given much attention to whether there is, anyway, a place in Gibson's ecological approach for the intentional (cognitive) and presentational (qualitative) contents that, I hold, do indeed characterize P's instances of first-order, perceptual consciousness (experience, awareness) of the ecological environment and so on (Natsoulas, 1984b, 1989b, 1989d).

I shall claim in the present article, as I have previously claimed (Natsoulas, 1990a, 1990b), that reflective seeing differs from straightforward seeing in,

among other ways, the contents of their respective component streams of first-order, visual perceptual consciousness (experience, awareness).

3. Also, I have been concerned, in previous work, with an implication of Gibson's (1979) account of P's controlling his or her active locomotor behavior on a visual basis. I have argued that Gibson's account rightly though implicitly involves P's apprehending how the ecological environment is changing in its qualitatively appearing to P as P moves. This apprehension, which Gibson (1979, p. 195) might have called "introspective," is, in the language of the present article, P's having "inner (second-order) consciousness" of a dimension of his or her first-order, visual perceptual consciousness.

P has such higher-order consciousness during reflective seeing but does not have any during straightforward seeing (cf. above quotation from Husserl). At least none that pertains to seeing; that is, P may have "inner (second-order) consciousness" of other mental-occurrence instances that may take place simultaneously with straightforward seeing. Which means, given my interpretation of Gibson's account of P's controlling his or her active locomotor behavior on a visual basis, that reflective seeing is an essential part of the latter performance (Natsoulas, 1991b, in press-b).

Theoretical Consistency

In the present article as well, I shall address a certain dimension of perceptual consciousness. In so doing, I shall again put to use important components of Gibson's visual perception theory. And I shall not pretend that Gibson would have countenanced all that I shall propose here.

Gibson once wrote to me a favorable letter about an article of mine that had just appeared in print (Natsoulas, 1978). However, he stated as well that he wanted us to discuss "phenomenology" sometime, thus implying that he had reservations or, at least, uncertainty about a part of my argument. Nevertheless, I believe the "phenomenological" proposals proffered in the present article are fundamentally compatible with Gibson's visual perception theory, though it is not my purpose, in the present article, to demonstrate that they are.

What is consistent with a theory is not always something with which the respective theorist would agree. But to some psychologists this would leave the door open to a dubious kind of theoretical consistency; they identify what is consistent with a theory exclusively with what the theorist, or his or her close followers, would find acceptable. Regarding what it is that a theory allows, psychologists often assume that there are authorities in a position to rule. These authorities do not simply know the theory very well; they are believed to grasp the theorist's intentions and, especially, the commitments of the theory without which it would not be the same theory.

But, surely, it is always true that (a) alternative ways to develop a theory exist fully compatible with what the theorist has so far advocated, and (b) among possible ways of developing a theory, there are some no less consistent with the theory though the theorist would not proceed in that way for various reasons.

Theoretical Exclusion

I shall be concerned in the present article, as I have been before, with a part of a certain general topic that present-day Gibsonians have very largely left for their successors to explore: namely, the nature and character of the consciousness involved in seeing.

The latter statement will be a controversial one for some Gibsonians. A reviewer of a previous paper of mine stated, "Perhaps [Gibsonians] have not raised these issues quite intentionally, as a consequence of their theoretical commitments." The reviewer was suggesting that the kind of issue that I shall be addressing in the present article is not now and never will be a Gibsonian issue. That is, the theory systematically excludes the possibility, leaves no room for treating of the kind of issue that I shall address here.

A parallel case quickly comes to mind: namely, the radical behaviorist exclusion of all mental-occurrence instances that cannot be construed either as private stimuli or as covert responses. In both parallel cases, actual phenomena that are hard to doubt would be excluded from consideration for a priori theoretical or conceptual reasons.

Thus, early in their search for knowledge, some psychologists have the faith that they are blessed with insight regarding the one true way to proceed. And, interestingly enough, this one true way happens to conform, once again, to what has become nearly a tradition in psychology: namely, the exclusion of reference to consciousness—even reference to P's perceptual consciousness (experience, awareness) of the ecological environment and self as part of that environment.

This scientific posture of psychologists calls for historical, sociological, and psychological explanation, rather than for emulation. Moreover, contrary to the reviewer's authoritative opinion, I have devoted a recent paper to making a case for the thesis that Gibson's perception theory does very nearly explicitly include a distinction between the process or activity of perceiving and its component stream of perceptual consciousness (experience, awareness; Natsoulas, in press-a). It would be very useful to me in my work if the reviewer could publish his or her reasons for thinking otherwise.

Inner (Second-Order) Consciousness

My purpose in the present article is to begin, with Gibson's help, to spell out in some detail my understanding of a particular kind of higher-order consciousness that takes place in visual perceptual contexts (among others). Under certain conditions, according to my view, this higher-order consciousness accompanies—better: is part of the very occurrence of—P's first-order, visual perceptual consciousness of a part of the ecological environment.

Elsewhere, I have stressed, in effect, the biological importance of the higher-order consciousness to be addressed here (Natsoulas, 1991, 1992c, in press-b), and I have started calling it "inner (second-order) consciousness" (Natsoulas, 1992b, in press-b). Also, let me mention at once that my understanding of "inner (second-order) consciousness" is probably not the most obvious one to a psychologist. I hold that "inner (second-order) consciousness" takes place intrinsically to some first-order, visual consciousness (and to other mental-occurrence instances), and is never a mere appendage to, or otherwise an occurrence distinct from, the latter when the latter is its object (Natsoulas, 1993a).

See Natsoulas (1993b) wherein three kinds of theories of "inner (second-order) consciousness" are distinguished—appendage theory, intrinsic theory, and mental-eye theory—and a major weakness of appendage theory is discussed at some length (cf. Natsoulas, 1992a).

What are those "certain conditions" under which there occurs "inner (second-order) consciousness" of first-order, visual perceptual consciousness? Most proximately, according to my view, those conditions are P's undergoing or engaging in a certain kind of seeing in Gibson's (1966, 1979) sense of an activity of the visual system as a whole (see next main section for this sense). Therefore, the present article amounts to an introduction to what I call "reflective seeing." This kind of seeing includes, as an essential part and product of it, first-order, visual perceptual consciousness that possesses a special structure. Thus, any perceiver who is "reflectively seeing" undergoes something that is of a different order than simple, straightforward visual perceptual consciousness of a part of the ecological environment, and of himself or herself as inhabiting and acting or moving within that environment.

That is, in the present article, I shall address what takes place when P's first-order, visual perceptual consciousness is proceeding consciously; rather than proceeding nonconsciously, as it does during what I call "straightforward seeing." I seek to contribute to our understanding of what is involved when P has "inner (second-order) consciousness" of his or her first-order, visual consciousness. I shall be developing the following answer: that conscious as opposed to nonconscious first-order, visual consciousness occurs when P undergoes or engages in "reflective seeing"; the latter's component

instances of first-order, visual consciousness themselves possess a special “reflective” structure, or special phenomenological content.

Compare Smith’s (1989) discussion of the “reflexive, or self-referential, character” of all conscious mental-occurrence instances; each such instance intrinsically includes a reflexive content as part of its total content, and this inclusion of reflexive content means that the person has an immediate, inner consciousness of the mental-occurrence instance itself (Natsoulas, 1992a). Resemblances between Smith’s conception and my conception of inner (second-order) consciousness shall be mentioned again.

Components of your mental life are proceeding consciously whenever, as they occur, you are conscious of them “directly”: in the sense that your being conscious of them does not involve your taking notice of something else as an inferential basis. Such direct consciousness of the mental is what I mean to refer to whenever I write here, and elsewhere, of “inner (second-order) consciousness.”

Various authors have called this kind of consciousness by different names, including the following: inner perception (Brentano, 1911/1973), perception of something immanent (Husserl, 1913/1983), inner awareness (Smith, 1989), direct (immediate) acquaintance (Bergmann, 1964), direct awareness (Brodbeck, 1966), direct (reflective) awareness (Natsoulas, 1985a), reflected awareness (Dulany, 1991), reflection (Grossmann, 1990), second-order awareness (Rundle, 1972); C2 awareness (Nelkin, 1989), mental awareness (Shanon, 1990), noticing the mental (O’Shaughnessy, 1972), introspection (Levin, 1985), introspective awareness (Armstrong, 1968), and introspective consciousness (Churchland, 1984).

Nonconscious First-Order, Visual Perceptual Consciousness

Indeed, I am also proposing that a kind of nonconscious visual perceptual consciousness takes place as well, though it does not take place in reflective seeing; that is, first-order, visual perceptual consciousness sometimes proceeds nonconsciously. The latter statement should be relatively uncontroversial in the present intellectual environment. Many present-day psychologists will agree with me that a consciousness of something is not therefore, by the very fact of its being a consciousness, itself an object of consciousness.

And, I believe, psychologists have moved beyond thinking of instances of consciousness as though these were knowable through and through from the first-person perspective, or even of all instances of consciousness as necessarily known to their possessor at all. I believe psychologists are approaching a point in their thinking where they will be in a position to consider whether Freud’s unconscious thoughts, for example, are to be understood, in part, as being themselves instances of the person’s first-order consciousness sans any

inner (second-order) consciousness of their occurrence. In this sense, unconscious thoughts would be cases of “nonconscious consciousness,” and so a kind of consciousness would take place, as well, outside Freud’s perception–consciousness system.

Such cases become less paradoxical the more that one considers them. When an unconscious thought occurs in you, (a) you are conscious of something, that which the thought is about, or at least (b) it is as though you are conscious of something, if the case is one in which the would-be object of your consciousness has, had, and will have no existence. One or the other of these two first-order consciousnesses (a or b) is the only consciousness involved in the occurrence in you of one of Freud’s unconscious thoughts.

Freud Contra Nonconscious Consciousness

According to my understanding of what makes first-order, visual perceptual consciousness conscious-as-opposed-to-nonconscious, first-order, visual consciousness does not always possess a “reflective” structure and, therefore, it is not always conscious in the sense of its being an object of inner (second-order) consciousness. Thus, I am contradicting, among others, Freud (1915/1957), who wrote,

A consciousness of which its possessor knows nothing is something very different from a consciousness belonging to another person, and it is questionable whether such a consciousness, lacking, as it does, its most important characteristic, deserves any discussion at all. (p.170)

Freud made this and similar statements (1912/1958, p. 263; 1923/1961, p. 16; 1925/1959, p. 32) when he was arguing against those interpretations of the unconscious part of his “psychical apparatus” that would conceive of it as a second consciousness system, that is, as being analogous to Freud’s one and only perception–consciousness system. But it is also true that Freud considered all occurrences of first-order, perceptual consciousness (which are all supposed to take place in the perception–consciousness system) to be objects of inner (second-order) consciousness (Natsoulas, 1984a; and even to include “tertiary” consciousness [Natsoulas, 1989a], which I need not explain again here given my present purposes).

For Freud, there is no such thing as nonconscious perceptual consciousness because of the qualitative nature of all perceptual consciousness, which necessarily implicates inner (second-order) consciousness of it. In other words, for a mental-occurrence instance to be qualitative is for it also to possess a reflective structure. According to my view, in contrast, there is nothing paradoxical in proposing that first-order, perceptual consciousness sometimes occurs consciously and sometimes occurs nonconsciously. That P’s perceptual

consciousness is qualitative need mean no more, in a particular instance, than that the part of the environment (X) of which P is perceptually conscious is qualitatively present to P at the time, whether or not P is conscious that X is. In my view, qualitativeness is a dimension of being perceptually conscious of X. The qualitativeness of P's perceptual consciousness of X does not mean that P necessarily has inner (second-order) consciousness of X's qualitative effects on P's perceptual system.

Interestingly, Freud's teacher in these matters, Brentano, too, saw nothing paradoxical about nonconscious consciousness, though he held (as Freud did not) that, in fact, all mental-occurrence instances are objects of inner (second-order) consciousness. Nevertheless, Brentano (1911/1973) raised the question of whether there might also be mental-occurrence instances that are not conscious, and he answered his question in part as follows:

Some people would just shake their heads at this question. To postulate an unconscious consciousness seems to them absurd. Even eminent psychologists such as Locke and John Stuart Mill consider it a direct contradiction. But anyone who has paid attention to the foregoing definitions will hardly think so. He will recognize that a person who raises the question of whether there is an unconscious consciousness is not being ridiculous in the same way he would be had he asked whether there is a non-red redness. An unconscious consciousness is no more a contradiction in terms than an unseen case of seeing. (p. 102)

What Is Seeing?

The First Task

In several articles concerning perceptual consciousness and Gibson's perception theory, I have distinguished, as I do in the present article, between two kinds of seeing (Natsoulas, 1989c, 1989d, 1990a, 1990b, 1992d). And I have called these, respectively, "reflective seeing" and "straightforward seeing," though I have varied the latter. I consider reflective seeing and straightforward seeing to be kinds of seeing in the same sense. That is, reflective seeing is not a metaphorical kind of seeing. To speak of reflective seeing as I do is not to extend the meaning of *seeing* so that the word can be used to refer to something else that does not strictly qualify as actual seeing.

Such as occurred when, for example, Skinner (1964) discussed "seeing that we see" without wanting to imply that we see our own seeing in the same sense as we see a tree in the garden. "Seeing that we see" was supposed to be a verbal matter, the emitting on an appropriate occasion of verbal operant behavior that describes or identifies as such an instance of seeing. Regarding seeing itself, Skinner stated that while a pigeon may learn to peck discriminatively at discs depending on the color of a light flashed, the pigeon's seeing colors in no way involves its pecking at discs (Blanshard and Skinner,

1966–1967; cf. Day [1980]: “‘Perception’ cannot simply be equated with ‘discriminative responding’” [p. 211]).

Since I consider straightforward seeing and reflective seeing both equally to be kinds of seeing, let me proceed with a characterization of seeing that derives from Gibson’s ecological approach to visual perception and that applies, according to my understanding, no less to reflective seeing than it applies to straightforward seeing. To what, specifically, am I referring in the present article whenever I use the word *seeing*, whether I modify the word with one or the other adjective? After answering this question, I can then proceed to what is distinctive about the reflective kind of seeing, which is my second task of the present article.

Two Crucial Part Processes of All Seeing

Gibson (1979) stated that his theory “differs radically from the traditional theories of perception. First, it involves a new notion of perception, not just a new theory of the process” (p. 239). I call the total process involved in vision, or visual perception, “seeing.” About seeing, Gibson (1979) soon went on to say:

Finally, fifth, optical information pickup entails an activity of the system not heretofore imagined by any visual scientist, the concurrent registering of both persistence and change in the flow of structured stimulation. This is the crux of the theory but the hardest part to explicate, because it can be phrased in different ways and a terminology has to be invented. (p. 239)

The act of picking up information, moreover, is a continuous act, an activity that is ceaseless and unbroken. The sea of energy in which we live flows and changes without sharp breaks. Even the tiny fraction of this energy that affects the receptors in the eyes, ears, nose, mouth, and skin is a flux, not a sequence. The exploring, orienting and adjusting of these organs sink to a minimum during sleep but do not stop dead. (p. 240)

The activity or process of seeing goes on and includes crucially (a) the continuous pickup of stimulus information that is present in the ambient light; that is, P “obtains stimulation” (Gibson, 1979, p. 243) and P’s visual system extracts some of the information that is obtained, structured stimulation contains and that is specific to properties of the ecological environment and properties of P as inhabiting and acting or moving in that environment. Therefore, seeing also includes crucially (b) the registration by the visual system of both persistence and change that exists in the stimulus energy flux at the photoreceptors, thus the extraction of stimulus information.

The Gibsonian Reed (1989) referred explicitly, in the following words, to these two crucial parts of the visual system’s functioning in the process or activity of seeing:

Perceptual systems are [partially] made up of neural ensembles [Edelman, 1987] underlying exploratory skills integrated with ensembles underlying skills of information extraction. An equilibrium of activation across these ensembles—a resonant state [Gibson, 1966] is only achieved where there is covariance across the entire ensemble of activated groups. Such covariance means that a uniquely specific environmental object or event has been detected, although the particular combination of inputs and outputs constituting that detection may never have been previously experienced. (p. 111)

Perception Per Se

According to Gibson (1979), it is only with the extraction of stimulus information that there occurs perceptual consciousness (experience, awareness) of a specific environmental entity or event. The “detection” to which Reed was referring above corresponds phenomenologically, within Gibson’s ecological approach, to that “new notion of perception” that I mentioned above (quotation from Gibson [1979, p. 239]).

Gibson (1979) proceeded, regrettably briefly, to spell out his new notion of perception per se. He understood perception, he said, to be an experiencing of things rather than merely the having of experiences, and to be awareness-of rather than merely awareness. It was clear that he had perceptual consciousness in mind, and he dispelled at once any remaining doubt about this when he stated that his view is close (in this regard: experience, awareness) to the act psychology of the previous century. No doubt, Gibson was thinking of Brentano (1911/1973) and of Brentano’s well-known choice of intentionality as the distinguishing mark of the mental.

Intentionality. Allow me to stress that the present reference to intentionality is not meant to be a reference to something done intentionally. The property of intentionality is that poorly understood property of individual mental-occurrence instances which makes it possible for them to be about something, including being about parts of the ecological environment—though some mental-occurrence instances only apparently have an object in this sense.

Thus, the hallucinatory visual consciousness of a fire-breathing dragon that, let us suppose, just occurred to me possessed the property of intentionality, no less than does my present visual consciousness, which is a part and product of my now seeing a large red tomato on the kitchen table. Possessing intentionality, my hallucinatory consciousness was, quite vividly, as though about something in the environment; but, of course, its apparent object did not exist, has not existed, and will not exist. In this sense, my hallucinatory consciousness lacked an object though it was nonetheless an intentional mental-occurrence instance; that is, it was a mental-occurrence instance that possessed the property of intentionality. Brentano held that all mental-occurrences are intentional in the above sense, but other authors have distinguished a category of nonintentional though no less mental occurrences (e.g., Searle, 1983, p. 1).

Producing a Visual Stimulus Energy Flux

As a dissent from Brentano's act psychology, Gibson (1979, p. 243) added that perception is the continuous act of a living observer rather than of a mind (or merely of a body). Therefore, I believe it is consistent with Gibson's position (on perception per se and the process of perceiving) to say that visual perceptual consciousness is a part and product of a "psychosomatic" (his word) activity of seeing that involves much more than a stream of visual perceptual consciousness. Seeing involves a perceptual system, the visual system, which Gibson contrasted with the traditional idea of a sense: "A system can orient, investigate, adjust, optimize, resonate, extract, and come to an equilibrium, whereas a sense cannot" (Gibson, 1979, p. 245).

Consider one of these part functions of the visual system. The activity of seeing includes, in part, adjusting (to a certain end: i.e., information pickup) the organs that comprise the visual system. The following is a rough statement from Gibson (1979) of what the organs of the visual system are and of their pertinent adjustments and movements:

First, the lens, pupil, chamber, and retina comprise an organ. Second, the eye with its muscles in the orbit comprise an organ that is both stabilized and mobile. Third, the two eyes in the head comprise a binocular organ. Fourth, the eyes in a mobile head that can turn comprise an organ for the pickup of ambient information. Fifth, the eyes in a head on a body constitute a superordinate organ for information pickup over paths of locomotion. The adjustments of accommodation, intensity modulation, and dark adaptation go with the first level. The movements of compensation, fixation and scanning go with the second level. The movements of vergence and the pickup of disparity go with the third level. The movements of the head, and of the body as a whole, go with the fourth and fifth levels. All of them serve the pickup of information. (p. 245)

How "subtle, elaborate, and precise" the informationally structured stimulation obtained at the photoreceptors is depends on maturation and practice, among other factors. Information pickup is not simply determined by the energy that happens to enter the eye at a particular stationary point of observation. The adjustments and movements that partially comprise the activity of seeing have the effect ("an achievement") of producing a visual stimulus energy flux with its own more or less subtle, elaborate, and precise spatiotemporal structure.

This structure is, in effect, a selection from innumerable stimulus fluxes at the photoreceptors that alternatively might have been produced as a result of different adjustments and movements of the visual system, even if the environment and the ambient light had remained completely constant throughout the episode of seeing. In other words, P can engage in seeing in a more or less sophisticated way—as defined in terms of an episode of seeing's informational-pickup achievements, that is, the informational features of the spatiotemporal structure of the obtained stimulation during the episode.

Extracting Stimulus Information

The process or activity of seeing does not end with information pickup, with producing a particular stimulus energy flux at the photoreceptors, even if one adds that the entire visual system is affected by this flux; even if one adds the following statement: the resonating visual system produces, at its various levels, corresponding activation fluxes that contain the same stimulus information (the same spatiotemporal structure) as the stimulus flux contains. That is, seeing requires not only (a) information pickup and (b) resonance, or the perceptual systems' becoming in its activations at various levels transiently like the stimulus energy flux; but, also, seeing requires (c) isolation and extraction of particular informational features that characterize the resonant flux. Without the latter part process, P's stream of first-order, visual perceptual consciousness would consist of P's having a complex visual experience corresponding to the part of the environment (X) that is reflecting light to P's moving point (path) of observation and into P's eyes, but P's stream of visual consciousness would not be an awareness of X in Brentano's sense of having X as an object. Nor would P's merely resonant stream of visual consciousness be awareness of anything else, whether actual or merely apparent. In Reed's term (1989; quoted earlier in this main section), no environmental object or event would be "detected" absent the further processes of information extraction, which are processes beyond the pickup of a stimulus flux at the photoreceptors and the resonance to this flux that occurs throughout the visual system.

Inconsistency with Gibson?

I must acknowledge that Gibson (1979) included the following paragraph, which seems to contradict what I am claiming about the process or activity of seeing, particularly my claim of the insufficiency of information pickup for awareness of X:

The invariants specify the persistence of the environment and of oneself. The disturbances specify the changes in the environment and of oneself. A perceiver is aware of her existence in a persisting environment and is also aware of her movements relative to the environment, along with the motions of objects and nonrigid surfaces relative to the environment. The term *awareness* is used to imply a direct pickup of the information, not necessarily to imply consciousness. (pp. 249–250)

But, surely, Gibson could not have meant that P's awareness is just P's picking up stimulus information. Informational features—belonging to the structure of ambient light, or to the stimulus energy flux at the photoreceptors, or to other comparable fluxes that are proceeding more deeply in the

nervous system—may be nomically related to environmental properties (or properties of P as inhabiting the environment and as moving with respect to it) so that it is correct to say, as Gibson did, that the informational features “specify” the corresponding properties. However, the relation between (a) an informational feature belonging to the stimulus flux or to a resonant flux at central levels and (b) the property that the feature is said to “specify,” this relation of “specification,” must be consistently and carefully distinguished from the informational feature itself that “specifies.”

Obviously, the informational feature is not equivalent to the relation that the feature bears to the world or to anything else. Obviously, the feature itself does not literally specify anything; specifying is something that people do. The danger here for Gibsonians, and other psychologists of perception, is analogous to committing James’s (1890) psychologist’s fallacy. It is the danger of attributing to the informational feature something known about it, or held to be true about it, that the feature itself, as it were, does not know.

Therefore, to pick up stimulus information is not *ipso facto* for P to be aware of anything at all. Perceptual awareness comes only upon some kind of operation or process carried out by the perceptual system with regard to picked-up informational features. This further process Gibson called “extraction” or “detection.” Probably, these are not equivalent concepts, but both seem to entail P’s taking notice of (having “awareness-of”) that which an informational feature “specifies,” though not, of course, by taking notice (by becoming aware) of the informational feature itself and inferring the property that it “specifies.”

Recall that Gibson consistently held that the environment is directly perceived. This means that, in having visual perceptual awareness of the environment and of himself or herself in that environment, there is nothing else that P must take notice of—nothing internal to the visual system, nor the light by which P sees. It does not mean that the process of seeing consists merely of information pickup, unless the latter term is used loosely, so as to cover the entire process or activity of perceiving, as in Gibson’s (1979) following statement: “The process of pickup is postulated to be very susceptible to development and learning. The opportunities for educating attention, for exploring and adjusting, for extracting and abstracting are unlimited” (p. 250). Thus, seeing is information pickup, though the visual system could not be said to be extracting or abstracting informational features unless these features, among others, had already been picked up.

In fact, Gibson (1979) distinguished two categories of activities of a perceptual system that constitute the process of information pickup. In addition to the movements and adjustments of a perceptual system which can be measured, there are also, he stated, “more general activities,” such as resonating and extracting, that “cannot so easily be measured” (p. 263). They cannot so

easily be measured because, I suggest, they are internal to the perceptual system, they are nonbehavioral processes, and they proceed at certain brain centers. During perceiving, these “general activities” are dependent on information pickup from the environment—though they can also proceed in the absence of any present information pickup.

Accordingly, hypothesizing about certain kinds of “nonperceptual awareness,” Gibson (1979) stated,

A perceptual system that has become sensitized to certain invariants and can extract them from the stimulus flux can also operate without the constraints of the stimulus flux. Information becomes further detached from stimulation. The adjustment loops for looking around, looking at, scanning, and focusing are then inoperative. The visual system visualizes. (p. 256)

Reflective Seeing

Fundamental Sameness

In all the characteristics of seeing that I have mentioned in the above main section, as well as in many additional respects, reflective seeing is just the same as straightforward seeing. I hope it is clear that the latter sentence expresses an essential ingredient of my account of reflective seeing. Of course, I hold as well that reflective seeing and straightforward seeing are different from each other. They are different kinds of seeing though nothing I have mentioned in the above main section amounts to a difference between them.

This is not true about the introductory main section of the present article. See especially, near the start, the quotation from Husserl (1925/1977) about straightforward first-order, visual perceptual consciousness. Indeed, during reflective seeing, in contrast, something “subjective” does fall “within our mental sphere of vision,” to use Husserl’s figurative phrase. In this way, among others, reflective seeing is not like straightforward seeing.

It was my intention above in the section “What Is Seeing?” to emphasize that reflective seeing is no less a kind of seeing than straightforward seeing is; and, for later reference, to convey some of what, from the Gibsonian perspective, their being kinds of seeing implies about both of them. As I see it, an adequate understanding of reflective seeing must rest on an adequate understanding of seeing in general. I believe that, in the first place, psychologists would do well to conceive of reflective seeing no differently than they conceive of straightforward seeing; and, only then, should they add to their unitary conception of seeing how the two kinds of seeing differ from each other.

I pattern my latter recommendation after one that can be found in an early work of Freud’s. Regarding psychical processes in general, Freud (1895/1964) analogously proposed that psychologists should first think of psychical pro-

cesses as each being nonconscious through and through; and, only then, psychologists should theoretically add to some of these processes the property of their being conscious. In this way, psychologists would avoid a false idea, namely, that a psychological process's being conscious means it is an object of consciousness through and through, that the owner of a conscious psychological process must know everything intrinsic to this process that there is to know about it.

It will be recalled that, according to Freud, though this is now controversial among psychoanalytic thinkers, all emotions, all feelings, and all affects are conscious psychological processes in every instance of their occurrence, notwithstanding the familiar phenomenon of their misconstrual by the one who is experiencing them (Natsoulas, 1991a). This misconstrual is not a sign that those affective states are nonconscious; any more than any mental-occurrence instance's having nonveridical content means that, therefore, it is nonconscious.

Given a firm grasp of the view that reflective seeing is no less a kind of seeing than straightforward seeing is, a clear contrast can be drawn between (a) the present reflective-seeing account of inner (second-order) consciousness of first-order, visual perceptual consciousness and (b) other, theoretically more familiar processes by which psychologists, and others, explain inner (second-order) consciousness of first-order, visual perceptual consciousness (experience, awareness) among other mental-occurrence instances, including thoughts and wishes (e.g., Dulany's [1991] reliance on a kind of immediate "remembering" of the mental-occurrence instance).

Note that the present reflective-seeing account only pertains to how first-order, visual perceptual consciousness is an object of inner (second-order) consciousness. I am not suggesting that it is by means of reflective seeing (by means of the visual system!) that we have inner (second-order) consciousness of other, nonvisual parts of our mental life. The present account is not a general theory of inner (second-order) consciousness.

I do believe that psychologists will eventually come to understand all inner (second-order) consciousness as an intrinsic dimension of the very mental-occurrence instances that are its objects. At present, however, psychologists often consider such intrinsicity as "mysterious" (e.g., Dulany, 1991). For this reason among others (see below), they introduce a distinct inner (second-order) consciousness, distinct from whatever its object may be.

"Responding to it." Consider for the purpose of contrast the influential idea, which we owe to the long domination of psychology by behaviorists, that any creature's awareness of anything is the creature's "responding to it," where "responding to it" means that whatever the creature is said to be aware of is simply a reliable cause of one of the creature's behaviors.

I cannot resist mentioning that one problem with this bare idea of awareness is that, on any occasion of their occurrence, behaviors are caused by

more than a single reliable factor; in any specific instance, there is never only one reliable cause of the particular behavior among its other actual causes here and now. Therefore, one can always raise the question of why the creature is said on this occasion to be aware of one reliable cause of its behavior as opposed to another reliable cause of this particular instance of its behavior.

Developing further the "response to it" idea of being aware of something, you would arrive at a very different conception of inner (second-order) consciousness than the one that I am introducing in the present article. You would most likely propose, in contrast to the reflective-seeing view, that P's having inner (second-order) consciousness is a matter of P's having learned to respond to occurrences internal to P in a way that is specific (distinct) to each of the occurrences or to categories of them. Thus, you would not construe P's relevant inner (second-order) consciousness as an intrinsic dimension of some instances of first-order, visual perceptual consciousness, but as something added externally to some of these instances, that is, as a response to them.

There would be, in your view, no reflective seeing. Just straightforward seeing would exist, which would be (a) sometimes not responded to at all, (b) sometimes responded to in the appropriate discriminative fashion, and (c) sometimes responded to but not in the appropriate discriminative fashion. Thus, correspondingly, straightforward seeing would be sometimes nonconscious, sometimes conscious, and sometimes . . . what? Suppose that, on a particular occasion, P responded to his or her first-order, visual perceptual consciousness in the exact manner that P has been reliably and discriminatively responding to a certain category of his or her instances of auditory perceptual consciousness. Would P's visual perceptual consciousness be conscious? Would P be aware of a visual occurrence within P as though it were an auditory occurrence within P?

There would be, in your view, no reflective seeing, since you would account for inner (second-order) consciousness entirely in terms of a distinct response; you would not need to introduce any change in the kind of seeing that is going on when P begins an episode of conscious seeing after an episode of nonconscious seeing.

In my contrasting view, reflective seeing is always (intrinsically) conscious, and straightforward seeing always proceeds nonconsciously. In my view, to respond to something, in whatever way, is not, *ipso facto*, to render it conscious. This is consistent with Freud's account of what takes place when a nonconscious psychical process causes to occur a counterpart conscious psychical process with very much the same content as its own (see Natsoulas, 1985b).

The latter is what it means, in Freud's theory, for a nonconscious psychical process to "become-conscious" on a particular occasion. Nevertheless, the nonconscious psychical process is not therein or thereby rendered conscious,

according to Freud; the occurrence of the counterpart conscious psychical process does not somehow convert the nonconscious psychical process, which is its cause, into something else that it was not before the conscious counterpart took place, namely, a conscious psychical process. Whatever process is nonconscious remains nonconscious, even when its owner comes to know, through psychoanalytic therapy or otherwise, a great deal about it. In Freud's theory, the "becoming-conscious" of nonconscious psychical processes is a derived sort of consciousness in which a different mental-occurrence instance—a "conscious representative" (my term)—is conscious in place of, so to speak, the one that is therein "made conscious" (Natsoulas, 1985b).

Consider a different case of "responding to it": a disconnected left cerebral hemisphere "responds to" a mental-occurrence instance that occurs in the disconnected right cerebral hemisphere in the same skull. Suppose that the response is evoked via (the fully intact) subcortical structures, and is a very appropriate thought, given the content of the mental-occurrence instance that was the "stimulus." Nevertheless, this "stimulus" could be either conscious or nonconscious, notwithstanding the appropriate response to it on the other side. I would say that the same would apply were this response to occur on the same side of the brain.

Three Relevant Negative Points

From the claim that reflective seeing is like straightforward seeing, much follows about reflective seeing, including the following relevant negative points:

1. *Nonverbal.* As I stated earlier, reflective seeing is not a metaphorical kind of seeing, as Skinner's (1964) verbal "seeing that we see" indeed is. Most psychologists will agree with me that there is nothing essentially verbal about straightforward seeing. I suggest that reflective seeing is the same as straightforward seeing in this negative regard as well. Just as nonlinguistic or prelinguistic creatures can engage in or undergo straightforward seeing, reflective seeing is not ruled out in such creatures' case simply due to their being without language. Of course, it remains to be determined empirically which creatures undergo reflective seeing and which creatures do not.

I acknowledge that not all psychologists hold that first-order, visual perceptual consciousness is nonverbal. As Mead (e.g., 1934) did, they distinguish a kind of visual experience that is nonconceptual and therefore nonverbal from the first-order, visual perceptual consciousness with which all sighted human beings are familiar after a certain early age. According to this alternative view, first-order, perceptual consciousness essentially involves verbally indicating to oneself what one would indicate to another member of one's group or to a generalized other. As I have expressed this view else-

where: "Consciousness qua awareness of experienced objects is a form of self-address by means of significant symbols that one acquired initially from others who addressed one" (Natsoulas, 1985c, p. 72).

As I mentioned above, I take the view of reflective seeing that it is one way in which the visual system functions in some species, and that this mode of functioning does not require any linguistic elements. This is how I shall describe reflective seeing and its component stream of first-order, visual perceptual consciousness, that is, as though the processes involved were part of P's biological nature independently of P's cultural nature. At the same time, I shall keep in mind the alternative, Meadian understanding of human perception, and return to it when I am well along in this introduction to reflective seeing.

2. *Nonimaginal*. And reflective seeing is not a process of "looking into" an "analog space" that contains an "analog I" (Jaynes, 1976). That is, reflective seeing is not to be confused with the kind of process of the visual system which includes, as product and part of it, a stream of visual imaginal consciousness (cf. Gibson, 1979, pp. 256-257). As already mentioned, the latter, imaginal kind of process of the visual system may proceed though the "outside loops" of the visual system (Gibson, 1970) are largely inoperative and the visual system is not picking up stimulus information from which it is extracting information that constrains the stream of visual imaginal consciousness. Of course, this is not to suggest that visual imaginal consciousness cannot be affected by the stimulus energy flux currently proceeding at the photoreceptors. In the case of both straightforward seeing and reflective seeing, it is the environment and oneself as part of the environment or moving through it that is determining the component stimulus energy flux at the photoreceptors and the component stream of visual consciousness at higher levels of the nervous system. And, perforce, one is having first-order, visual perceptual consciousness of something in the environment whether one is engaged in reflective seeing or in straightforward seeing.

3. *Nonintrospective*. Nor is reflective seeing a kind of inner seeing, as though P had within him or her a "mental eye" (cf. Humphrey, 1987) by means of which (a) to "look upon" or "inspect" an episode of straightforward seeing which P is undergoing or, (b) at least, P can "look upon" or "inspect" that product and part of P's straightforward seeing which is P's first-order, visual perceptual consciousness—analogously to P's looking with his or her outer eyes upon the ecological environment.

I submit that P has no power literally to introspect; there is no system in P's brain that is analogous to a perceptual system and is directed on P's mental life. My proposal that the visual system can function reflectively (i.e., the proposed fact of reflective seeing) does not imply that, using our visual system, we can do something like look inwardly upon our first-order, visual

perceptual consciousness. P accomplishes all his or her seeing by means of his or her visual system and no part of P's mental life is visible to P or to anyone else.

Intrinsicity

P can have inner (second-order) consciousness of first-order, visual perceptual consciousness; the latter can be the object of the former. At the same time, as I have stressed, I do not mean to imply that they are two distinct occurrences rather than one—as though the occurrences of P's conscious instances of first-order, visual perceptual consciousness were apprehended by P only at a distance, from outside them, as P would apprehend the occurrence (say) of a bolt of lightning which P happened to witness.

Of course, a conscious instance of first-order, visual perceptual consciousness is a separate occurrence from a nonconscious such instance, whether or not they occur in the same mind-brain, have the same part of the environment as their object, and occur in succession. But their mutual relation is a different relation than the relation between (a) P's having visual perceptual consciousness of something in the environment and (b) P's having firsthand consciousness—inner (second-order) consciousness—of that consciousness. Both of these (a and b) are a single occurrence, I propose. Paradoxical as it may sound, it is by being visually perceptually conscious of X right now, that P has firsthand consciousness of being visually perceptually conscious of X right now. It is not a matter of one of these coming before the other, since they are not distinct occurrences. They are not “distinct existences” as some theorists have proposed that they are, using that phrase.

Doubts. In a stream of first-order, visual perceptual consciousness, inner (second-order) consciousness does not succeed the first-order, visual perceptual consciousness that constitutes the stream. (a) In the case of straightforward seeing, this succession does not take place because no inner (second-order) consciousness of the first-order, visual perceptual consciousness is involved at all. (b) In the case of reflective seeing, the above succession does not take place because they are not two instances but only one instance of consciousness.

I expect that readers will wonder how the latter identity is possible. No doubt, something along the following lines will come to mind as an objection to the present view:

An instance of consciousness may either be of or about an instance of consciousness or be of or about something else; its object must be one or the other, or it may have no actual object, but it never can have both as its object, that is, something external to the stream of mental life as object and, at the same time, something internal to the stream as object. An instance of consciousness cannot, as it were, point both ways.

I expect that it will also be said by some,

An instance of consciousness cannot be of or about itself. Its object, if it has an actual object, must be something else (cf. James, 1890); or, the instance of consciousness must be as though it is of or about something else—which does not mean that in fact it is of or about itself, only that its would-be object does not, did not, and will not exist. That is, possessing the property of intentionality makes it possible that a mental-occurrence instance is about something—always excluding itself; the aboutness relation cannot be a reflexive relation. Consider especially all cases of seeing, together with their respective component stream of visual perceptual consciousness. In seeing, the visual system functions in such a way (see preceding main section for what is part of the story) that gives P experience (awareness) of parts of the ecological environment and self within that environment.

In Part II, I hope to lay to rest these doubts and some others. There I shall focus on describing the intentional (cognitive) contents and the presentational (qualitative) contents (Natsoulas, 1989d) of the stream of first-order, visual perceptual consciousness that is a product and part of reflective seeing. How does P visually apprehend and experience the ecological environment when P undergoes or engages in reflective seeing? How does this visual perceptual consciousness of P's differ from that which proceeds during P's straightforward seeing? My suggestion will be, as it has been, that reflective seeing intrinsically involves inner (second-order) consciousness whereas straightforward seeing proceeds nonconsciously. Thus, it will become more understandable why it was that Gibson (e.g., 1979), who was very largely concerned with straightforward seeing, repeatedly sought to distinguish his own thinking from other theoretical work on perception that emphasized consciousness (experience, awareness) and the qualitiveness of first-order, perceptual consciousness.

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