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"To See Things Is To Perceive What They Afford": James J. Gibson's Concept of Affordance

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Gibson distinguishes among the properties of environmental things their affordances, which he identifies in terms of that which a thing offers an animal for good or ill. In large part, this article considers his conception of environmental affordances and visually perceiving them, with special attention to the concept of affordance that he exercises in the presentation of his conception. Particular emphasis is placed here on (a) the distinction between the affordance properties of things themselves, and what it is that these things afford an animal, what they enable owing to those properties, and (b) the proposal that the affordances of environmental things are not experiential; they are not properties of the perceptual experiences produced in the process of perceiving them. This does not deny that experiences themselves too possess affordance properties — for example, they are such as to enable specific behaviors — but these affordances are not that which is perceived, according to Gibson, when engaged in the activity of straightforward perceiving. The stream of perceptual experience that is part and product of the latter activity is at all points outwardly directed, not directed upon itself.

James J. Gibson's (1979/1986) major presentation of his ecological approach to a theory of visual perceiving proposes that "affordances" are among the properties of environmental things that an animal perceives.[1] His concept of such affordances is defined in terms of what it is which the environment "offers the animal, what it provides or furnishes for good or ill" (p. 127). These affordances are properties conceived of in relation to an animal, but this does not mean that their existence depends upon the animal's perceiving them — any more than does the existence of the things whose properties affordances are. Indeed, some of the environmental affordances precede the coming into being of the animal in relation to which they are defined.

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[1]See also Gibson (1977).

The main purpose of this article is to contribute to achieving an improved comprehension of Gibson's concept of affordance. It is part of a larger effort to develop a better appreciation of his total contribution. My plan for this ongoing effort includes several studies of Gibson's theory of perception, each of which gives attention to a different one of his concepts. Already published in *The Journal of Mind and Behavior* is the first installment in this new series of articles (Natsoulas, 2003a).

That article, which is titled "'Viewing the World in Perspective, Noticing the Perspectives of Things': James J. Gibson's Concept," discusses the kind of perceptual process or activity Gibson calls "viewing," and contrasts with the activity of straightforward visual perceiving. I find useful, both there and here, the adjective *straightforward* (cf. Husserl, 1925/1977) for making reference to the latter perceptual process, whereas Gibson himself speaks simply of visual perceiving. The special concern of the first article in this series is what the observer is aware of when engaged in the "viewing" kind of visual-perceptual activity: what the intentional objects are of the streaming visual experience which is a product and part of the visual-perceptual process of viewing.

Among other things I argue there, is the following. On Gibson's understanding of the visual control of locomotion, not straightforward perceiving but viewing should be considered to be the perceptual activity involved in this control. This is consistent with Gibson's theory, for the latter holds, contrary to how visual perceiving is at times conceived of, that one does not see light per se and determine one's behavior on the basis of what one is aware of about the light. Therefore, my inference is that one determines one's behavior based on "what one sees now from here," the latter term having reference to the intentional objects of the visual experience which flows at the heart of the activity of viewing.

Viewing and straightforward visual perceiving are visual-system activities, but they are not entirely the same with respect to what they give awareness of. In viewing, one perceives those surfaces that are now projecting (i.e., radiating or reflecting) light to one's point of observation ("the here-and-now surfaces") and one's location in relation to them. One does not view, when viewing, some of the surfaces that one perceives when engaged instead in straightforward visual perceiving from the same point of observation.

Among the matters upon which I focus in the present, second article of the series, is a certain distinction I believe is essential to an accurate representation of what affordances are. But, this is not a distinction Gibson himself emphasizes in his exposition; he does not call it repeatedly to his reader's attention, as I do in the present article. In fact, his employment of the terms *what a thing affords* and *the affordances of a thing* is such as tends, I suggest, to obscure the difference in that to which these terms must refer in light of his

own theory. Moreover, Gibson explicitly defines the environmental affordances as what the environment affords the animal.

However, my stress on this distinction is not part of an effort to replace Gibson's account of the affordances. Rather, I seek improvement in how his conception is expressed so that readers will not be led, as a result of the mode of expression, to draw implications inconsistent with that conception.

Affordances in Gibson's Book

My discussion here often relies on how Gibson (1979/1986) identifies the environmental affordances in his eighth chapter, titled "The Theory of Affordances."[2] Material that is directly pertinent to the affordances, however, appears in more than that one chapter. The book has sixteen chapters, and these make up four parts.

Part I is devoted, in the main, to describing the environment which is out there to be visually perceived. Throughout the book, environment and animal are sharply distinguished from each other; but, of course, the animal inhabits and is part of the environment. To consider environment to be in some way internal to the experience of the animal is considered a theoretical mistake of large proportions.

Although Gibson's description of the environment is no less objective, it does not proceed at the level of physics but at that of ecology, which is the level of existence of the environment. The environment is no less objective than is the world of physics, for there exists only one world, and the environment is that world at the ecological level. Physicists qua physicists descriptively take the one world at a different level, yet when not engaged in describing the world in the way their science requires, they take it as we do, at the level of ecology.

The ecological level is the world as it is structured at an intermediate band of sizes — as the animals are themselves structured, although they too possess the fine grain belonging to physical objects, which is describable at the level of physics. Gibson explains his choice of a descriptive level for his scientific work in the field of psychology as follows: "We are concerned here with things at the ecological level, with the habitat of animals and men, because we all behave with respect to the things we can look at and feel, or smell and taste, and events we can listen to" (p. 9).

If one's purpose is to give an account of perception, this level is the suitable one at which to describe the world, that which is perceived. But, even if no animals existed, the one world would still be constituted of levels of nested

[2]All references to Gibson in the present article are to Gibson (1979/1986) unless otherwise explicitly indicated. Every bare page reference is to the same book.

units, that is, subordinate and superordinate units. These nested units are not dependent for their existence on being described, or behaved with respect to in some other way. The world itself possesses structure, that kind of structure.

The third chapter, "The Meaningful Environment," contains a long section about "what the environment affords the animal" in which the concept of an affordance is introduced. The section is very pertinent to grasping the distinction between (a) the affordance properties with reference to an animal, of environmental objects, places, events, processes, substances and other animals, and (b) what these features of the animal's environment afford owing to their instantiating those affordance properties.

This is, of course, the same distinction I mentioned in the last paragraph of my introduction. Although Gibson does not directly refer to the distinction in the section I just mentioned, one can notice its being exercised in such sentences as the following:

> A path must afford *footing*; it must be relatively free of rigid foot-sized obstacles. (p. 36)
>
> A *slope* is a terrain feature that may or may not afford pedestrian locomotion depending on the angle from the surface of the level ground and its texture. (p. 37)
>
> If the substance [of a detached object of the appropriate size] has an appropriate mass-to-volume ratio (density), it affords throwing, that is, it is a missile. (p. 39)
>
> When not being worn, a body covering is simply a detached object of the environment made of fabric or the skin of a dead animal — a flexible, curved sheet in our terminology. (p. 41)
>
> What the other animal affords is specified by its permanent features and its temporary state, and it can afford eating or being eaten, copulation or fighting, nurturing or nurturance. (p. 42)

Notice in each of these cases the distinction between what an environmental feature affords and what about that feature enables it so to afford. There will be more regarding this distinction in the next main section of this article.

Part II of Gibson's book, where the chapter "The Theory of Affordances" appears, is titled "The Information for Visual Perception" and discusses how light receives structure and contains information which specifies objects, events, and features thereof, belonging to the environment. In order for light to activate the visual-perceptual system, the light must be "different in different directions" (p. 53); it must have structure in this sense for visual-perceptual activity to proceed.

Gibson's chapter on his theory of the affordances concludes the second part of his book, for a reason that is indicated as follows in the last paragraph of the chapter's summary, which states in full,

> The hypothesis of information in ambient light to specify affordances is the culmination of ecological optics. The notion of [photic] invariants that are related at one extreme to the motives and needs of an observer and at the other extreme to the substances and surfaces of a world provides a new approach to psychology. (p. 143)

The mentioned invariants are, in any case, properties that belong to the pattern of light projected by the world to the individual's point (or path) of observation.

Among the properties of the light are ones determined by properties that are affordances and instantiated by the substances and surfaces of the world. Certain affordance properties, together with the photic invariants specific to them, enable visual perceiving of those affordances. Thus, Gibson would say, seeing is something both of them together afford. The phrase "this affordance property affords . . . " is, I should think, a useful formula whereby to make the distinction between an affordance and what it affords.

The fourth part of Gibson's book is about depiction and the perception of pictures, but Part III addresses the process of visual perceiving, which he holds to be the more basic, and must be rightly understood before usefully proceeding to study of the perception and creation of pictures. The process of visual perceiving is said to produce visual-perceptual awareness of, *inter alia*, the affordances of environmental objects. Gibson declares that to see events, substances, places, and objects "is to perceive what they afford" (p. 240).

At another point in the same chapter, in comments regarding misperception, he seems to be in favor of an interpretation of such cases: as owed to the observer's failure to pick up all of the information that is available in the light. And he applies this interpretation to the misperceiving of affordances. In his view, the light may well contain features that do specify an affordance: and yet the observer may not perceive that affordance. In either case, the affordance has contributed to the light the structure that is needed for an observer to have direct visual-perceptual awareness of the affordance.

What a Thing Affords and the Affordances of a Thing

Gibson's theory of affordances is a theory of the affordances belonging to the environment, and of the animal's usually direct perceiving of them. Notwithstanding his mode of expressing this theory, what an environmental thing affords to an animal is not equivalent to the affordances of the thing. A thing affords something other than its own properties, and does not afford any of its own properties, among which are its affordances. The relation of a thing to its affordances is not a relation between a cause and its effects, whereas the thing enables the coming into being of that state of affairs, occurrence, or process that it affords. Although this effect depends upon an

animal, the thing's instantiating the corresponding affordance property can precede the animal's existence.

There may be an obstacle to grasping the distinction I am insisting on: between what a thing affords and its affordance properties. Gibson frequently uses expressions such as: "an animal's perceiving what a thing affords." What he must intend is reference to the animal's perception of a thing's affordance properties. However, the phrase that I just quoted may be read to imply the following, which I believe would be a mistake:

> In perceiving affordances belonging to a thing, an animal has to perceive events, processes, or states of affairs that the thing makes possible, by virtue of instantiating those affordance properties. For example, in the case of food substances, perceiving their special affordances requires a perceiving, here and now, of the activity of their being ingested and the process of their providing nutrition to the animal.

Of course, this is not what Gibson means when he speaks of an animal's perceiving that which a thing affords. He has in mind, as the objects of perceiving, the thing's own properties, rather than a perceiving or an imagining of what its having these properties enables to take place.

Accordingly, it can be a misleading abbreviation to state as he does, "The composition and layout of surfaces constitute what they afford" (p. 127). These are indeed properties that surfaces instantiate, but these properties are not something that the surfaces afford to the animal. It would be much better for Gibson (a) to express his point, as he also does, with a statement such as: that the composition and layout themselves of surfaces constitute their affordance properties and (b) to stress, along with the latter, that the surface's properties are distinct from that which it affords, although they make that affording possible. The processes, events, or states of affairs constituting what a thing affords require the respective animal's involvement, but the properties constituting the affordances of the thing may precede the existence of the animal.

An important sentence of Gibson's, which appears in his section "The Optical Information for Perceiving Affordances" (pp. 140–141), allows me to bring home the distinction I have been making explicit between what a thing affords and its affordances. Gibson states, "The perceiving of an affordance is not a process of perceiving a value-free object to which meaning is somehow added . . . ; it is a process of perceiving a value-rich ecological object" (p. 140). For if perceiving an ecological object's affordances did involve an apprehension of what the object afforded — for example, a certain kind of benefit or injury — the perceptual process would indeed require being supplemented with some kind of non-perceptual process of thought or imagery that represented the benefit or injury, or whatever the object afforded owing to its respective affordance property.

This would contradict Gibson's thesis about the "meanings" of perceived objects. He holds that meanings do not need to be added to the perceptual experience that an observer undergoes of an ecological object, for the observer to apprehend the affordances of the object. If Gibson is not right about this, the observer must undergo not just perceptual experience of the object but, along with that, a non-perceptual experience of, for example, putting the object to use in a certain way and certain consequences of so doing. The observer would think of or imagine bringing about a situation different from the one that exists when simply, for example, looking at the object. Thus, otherwise, the values and meanings (read: affordances) of an environmental object could not be apprehended. There would not be any direct perceiving of the affordances, as Gibson proposes that there is.

Gibson's sentence quoted next supports the understanding that, according to his position, in perceiving affordances, no supplementation is needed wherein one experiences something more than what one perceptually experiences from one's current observation point or path: "The basic properties of the environment that make an affordance are specified in the structure of ambient light, and hence the affordance itself is specified" (p. 143). That is to say, any visually perceived affordance gives structure to part of the light surrounding the observer, and this photic structure suffices for having visual-perceptual experience of those affordances.

The latter statement requires some qualification, for it implies, as it stands, that learning is not necessary for having such visual-perceptual experience. But, Gibson does acknowledge that perceptual learning occurs with respect to affordances and that it is necessary usually in order for the affordances to be perceived: "The basic affordances of the environment are perceivable and are usually perceivable directly, without an excessive amount of learning" (p. 143).

This statement appears in a section titled "Misinformation for Affordances." It is clear from that discussion that the animal is held to learn to perceive certain affordances it did not perceive before. Although, all along, the light was suitably structured for perception of a certain object's affordance, the visual-perceptual system did not pick up the corresponding photic invariants, not until later, as a consequence of further perceivings of the object. It would be said that the animal came to notice what, given the photic conditions, was noticeable but unnoticed earlier. I shall be coming back to the learning process Gibson seems to be proposing with regard to the perceiving of the affordances.

Neither Are Perceived Affordances Experiential Properties

According to the theory, affordances are themselves perceptually experienced. The observer has perceptual experience of the respective object or

occurrence in the environment and, also, of some of its properties, and these are often affordances. As I emphasize, perceiving is a process or activity that yields and partially consists of perceptual experience. The objects of this experience include affordances, among other properties belonging to some part of the environment or of the observer.

I am speaking here of straightforward visual perceiving: and not about other activities of the visual-perceptual system. In respect to the latter activities, some of my present statements may require qualification or modification. Consult in this connection the initial article of this series (Natsoulas, 2003a). See too my comments to come in the present article: on inner awareness and a reflexive kind of visual perceiving — in which there is awareness of an environmental object and, in the same process and at the same time, awareness of one's experiencing it. Of course, the latter would not be a case of straightforward visual perceiving — about which I now continue.

The perceived affordances are not held to be properties of the experiences that are involved in perceiving them. An observer engaged in straightforward perceiving does not apprehend the perceptual experiences themselves. Everything that is therein apprehended lies externally to the perceptual-experiential stream (cf. Husserl, 1925/1977). Even if the observer is self-perceiving as a part of engaging in the activity of straightforward perceiving, the latter remains a completely outwardly directed process. The observer undergoes therein "awareness of being in the world" (p. 239) — not awareness of having experiences of the world. I propose that the latter awareness does take place but not as part of straightforward perceiving.

Thus, though Gibson (p. 240) holds straightforward perceiving to be a "psychosomatic act" and "William James's description of the stream of consciousness (1890/1950, Ch. 9) applies to it," this is not to suggest, along with James, that the stream of experience flowing at the heart of straightforward seeing has, among its components, experiences directed on other components of the stream. From time to time in his writings, Gibson states that, when he speaks of perception, he does not mean "consciousness," but rather the pickup of stimulus information. This does not amount to as broad a rejection as it may appear to be. I believe what motivates these statements of Gibson's is not residual behavioristic tendencies. It is a theory which proposes, as involved in the process of straightforward visual perceiving: awareness of environment and self (p. 239) but not, also, an awareness of what is transpiring within the experiential stream itself.

Throughout its length and breadth, that essential stream is directed intentionally outwards: to parts of the environment, including the observer as well as whatever is out there to be perceived. Gibson's visual-perceptual experiential stream which is a product and part of the straightforward sort of visual perceiving amounts to what James (1890/1950) called a stream of "scious-

ness" — when (p. 304) he was expressing, surprisingly, strong doubts we ever have the kind of immediate grasp of our experiences on which he grounded much of the content of his masterpiece, having stated early in the work: introspection is what psychologists "have to rely on first and foremost and always" (p. 185).

James's curious ambivalence deserves more attention than it has received in the literature so far. This ambivalence may be among that which led Hebb (1974) to declare, ignoring the many phenomenological descriptions that are contained in *The Principles of Psychology*: that little introspection is to be found therein. Which happens to be yet another remarkable statement regarding consciousness uttered by a prominent psychologist. A compendium of such statements might well make a diverting volume. And this volume would be informative on the resemblances of the science of psychology to the practices of politics, which some of psychology's critics have already called to our attention.

In this connection, it is interesting to note the reason James (1890/1950) gave for proceeding to write his book as though we do have the ability to be immediately aware of what transpires in our stream of consciousness, in spite of his considerable doubts that we actually have this ability. He described his choice as "the path of common-sense," and argued: to do otherwise would be to "contradict the fundamental assumption of every philosophic school" (p. 304). That is, he did not want his book to be rejected by its potential audience; and, for that reason, he would put forward there accounts and analyses that he himself would contend against under other circumstances.

In part, the preceding main section has argued to the effect that it would be a mistake for us to understand the affordances of a thing as being experiential, that is, to be among the properties of the experiences that transpire in the process of perceiving the affordances of things. It pertains to note again my point: that an environmental thing's instantiation of an affordance property can come before the existence of the respective animal in relation to which it is defined. If a thing's affordances were experiential properties, they would come into being and go out of existence as the animal perceived the thing and then did not perceive it, and so on

It will be seen that, besides the conflation together of what a thing affords and its affordance properties, there is a temptation, though not on Gibson's part, to conceive of affordances as being phenomenal properties. This temptation arises because of the kind of property an affordance is. In Gibson's key phrase: it is a property that is "taken with reference to an animal." The concept of an affordance is said "to refer to both the environment and the animal in a way that no existing term does," and it is stated to imply "a complementarity of the animal and the environment" (p. 127).

The section of his book I identified in my last section says: "An affordance points two ways, to the environment and to the observer" (p. 141). As I

brought out, Gibson speaks not just of the affordances of things in the latter way: but also of "invariants [of ambient light] that are related . . . to the motives and needs of an observer" (p. 143). These photic invariants are proposed to be informationally specific to the respective affordance, and to enable, if they are "picked up" by the visual system, direct perception of the affordance, in the same sense in which less meaningful properties are perceived.

Compared to affordances, readers will be less likely to interpret an invariant property of the structure of the ambient light to be a property that belongs to the visual experiences the invariant determines. Light should be easy to keep distinct from visual perceptual experience. Yet, even such an interpretation may be tempting: since Gibson conceives of photic invariants in relation to perceptual activity wherein they are "picked up" and "extracted." Thus, if invariants specifying an affordance can in a sense themselves be processed there, it may be tempting to have the photic invariants, as well as respective affordances, appear within the stream of perceptual experience. And, thereupon, a construal of them may develop that they are actual occupants of the stream (cf. O'Shaughnessy, 2000, p. 300).

So too, an affordance's being a property "taken with reference to an animal" may lead some students of Gibson's thought to construe affordances as being something other than merely some of the objective properties of an environmental thing. They may reason that, for the affordances to "point," these must be, as it were, internalized. That is, they must be intentional occurrences, items that apprehend something else, and therefore they must have their true location within the stream of consciousness.

It is clear this sort of "pointing" is not what Gibson has in mind. So, it would be better not to say that the affordances point since he could be misunderstood as having committed a version of James's "psychologist's fallacy" (1890/1950, p. 196). One should not project the psychologist's standpoint onto the animal. I shall be returning to this matter soon.

In support of Gibson's account of environmental affordances as being properties that are not of an experiential type, let me proffer the following as well:

> How could the affordances of perceived things literally be, instead, properties belonging to the experiences involved in perceiving them? Is it not a fact that all perceptual experiences are a product and occurrent part of one or another process of perceiving? What other than that could perceptual experiences be? (Admittedly, some radical behaviorists, e.g., Rachlin, 1985, would conceive of perceptual experiences to be incipient, covert, or overt behaviors. However, see Natsoulas, 1988, for arguments contra this view, including its being a step on the slope to interpreting all that takes place to be behavior, to the adoption of a behaviorist counterpart of philosophical idealism. Behaviorist conceptual austerity can result in a world drastically pared down to much less than what it is.) And is it not true that all items that are perceived and all properties thereof are external to the respective perceptual process? The importation of affor-

> dances right into the experiential stream, soon leads one to the absurdity of relocating, within every animal that perceives it, the sun itself. The sun does, of course, have affordances, but it also has existed since well before life got started on earth. Gibson is quite right to insist as he does on the reality of just a single world, the world that the sun and we inhabit.

This conception of perceptual experience, as being a stream that proceeds within an ongoing perceptual process is my own. But, it is also a conception that, in certain articles of mine, I have ascribed to Gibson on grounds I believe to be cogent (Natsoulas, 1993, 1998, 2003a). Note, for example, this: whereas Gibson's conception of straightforward perceiving is of a continuous and complex activity of which much if not all transpires outside awareness, he describes this ongoing process of perceiving as itself being "an experiencing of things" and as involving being aware of self or environment or both of these all along the line (Ch. 14; cf. James 1890/1950, p. 241). But there is no contradiction here; compare the first paragraphs of my present section; the awareness that is involved in straightforward perceiving is, in Gibson's theory, always directed externally to the stream of perceptual experience itself.

Arguably, of course, the total process of perceiving may be usefully conceived of to include the things thereby perceived. After all, in the visual case, for example, it is environmental things that radiate or reflect light to the perceiver's point (or path) of observation, making it possible for the perceiver to see those things. Perceptual processes could be conceived of as beginning with the environmental things that are there to be perceived.

This is not the same as saying the sun or any of its properties are experiential. Whether or not the activity of perceiving is understood to include the perceived environmental things, it is a complex process with many components that are not experiential, in addition to what I spoke of as the stream of perceptual experience at its core. Similarly, the total visual-perceptual process may be conceived of to include the light that enables visual perceiving to take place. Drawing the line at the sense-receptors between what is and what is not part of the visual-perceptual process, is artificial, especially when Gibson conceives of perceiving as an activity of obtaining stimulus information.

But, the things visually perceived and the light by which they are visually perceived are both of them exterior parts of the total perceptual process, whereas the stream of experience proceeds at the core of this process, within the brain, between the stimulation which is obtained by means of the visual system and the behavior that emerges. It would surely be a mistake to identify the sun or its properties, albeit essential as they are to the animal, with experiences, notwithstanding the fact that, among much else that the sun affords, are visual-perceptual experiences. The sun does possess properties that enable animals to have visual-perceptual experience of it and much else. However, the sun enables perceptual experience *because*, as one might put it,

the sun and its responsible properties are *not* experiential. The same is true of the photic invariants.

An experiential sun could not be perceived, in the ordinary sense, but only introspected. It would appear to radiate light but it would not do so actually since, given its constitution, it could not yield the energy needed to be visually perceived. This just amounts to the phenomenologists' famous argument: a house can burn but an experience that has a burning house for its intentional object does not burn.

As Gibson describes (see very soon), Gestalt psychologists were led by considerations that included the affordance properties of environmental things, to propose that (a) the perceiver has experiences of a phenomenal sun owing to stimulation arising from the physical sun, and also to claim that (b) these two very different suns have their being in very different environments, one of them in what Kurt Koffka (1935) called "the geographical environment," the other one in "the behavioral environment."

I have previously published criticism of this kind of theory, including the form that it takes in Gestalt psychology. I do not repeat those arguments here. Let me simply mention the second half of a previous article of mine (Natsoulas, 1994). Which consists of three pertinent sections, respectively entitled "Phenomenological Fallacy," "The Phenomenal and the Physical: Gestalt Psychology," and "A Private World with No Way Out: Yates's Objects."

The affordances, Gibson states, "are not subjective values; they are not feelings of pleasure or pain added to neutral perceptions" (p. 137). The affordances that straightforward perceptual experiences are experiences of, are not included among their own intrinsic features. They only can apprehend (be awarenesses of) the affordances of perceived objective things. They do not themselves instantiate the properties of those things, not even their affordances. Of course, this thesis is fully consistent with Gibson's proposed direct realism of perception: which holds that whatever is perceived lies or takes place externally to the perceptual process itself and, so, is not any feature belonging to the experiential stream, not any one of the constituents of the perceptual process (Natsoulas, 1993, 2003a).

This direct realism should not be misconstrued to be a naïve realism. It is rather, one might say, a sophisticated direct realism. Gibson does not disallow the occurrence of false perceptions, nor does he reject the existence of unperceivable dimensions of the world. The world of physics and the animal environment are not alternative worlds. They are one and the same world that is described in terms of its different structural levels, depending upon different purposes. There are levels of the world of which animals cannot have perceptual awareness. It is naïve to assume that only what is perceivable has existence.

Similarly, different people or animals may see the one world differently depending on their capacities, purposes, and the conditions under which they

are visually perceiving. Inter-species and inter-individual differences in visual-perceptual experience does not mean different worlds are being looked at. You take a particular tree for a tree, I for a man. Is it literally the case that we are seeing different things? Does a man come into being when I seem to see him? Do we create our world in that sense? One of Gibson's major attractions for me is that he answers these questions in the negative.

Gibson contradicts the alternative kind of theoretical account according to which perceiving is a sort of silent inferential process, an unconscious process of thought, wherein the environment gets represented somehow, and then, in that same process, judgments get drawn somehow from these representations, regarding what is actually there. These judgments would be our perceptual experiences — hard as that is to accept in light of how perceptual experiences seem firsthand to us.

That they seem to be different from judgments is sometimes explained away. It is explained to be illusory. This is what the alternative account requires given the empirical evidence. Which is the evidence provided by inner awareness, the direct aquaintance that we have with some of our own experiences. Such evidence is sometimes disparaged as being private and unverifiable. However, the latter judgment against inner awareness fails to recognize the fact that we all have perceptual experiences and are directly acquainted with some of them. Each of us can therefore check what others say about these experiences by comparing their statements about them with our own experiences. Analogously, different laboratories are able to check each other's claims though they rarely carry out their experiments upon the identical individuals or objects.

The Relation of Affordances of Things to Perceptual Experiences of Them

The subject index of Gibson's book contains a number of entries for the terms *affordance* and *affordances*. Among these entries is one for "affordances as opposed to experiences" that refers the reader to four pages of text (pp. 137–140).[3] The two brief sections comprising the four pages have the titles of "Summary: Positive and Negative Affordances" and "The Origin of the Concept of Affordances: A Recent History."

In these two sections, Gibson puts forward some points directly pertinent to the relation of present interest: between the affordances of things and the perceptual experiences of them. Let me present and comment on these points in their order of appearance in Gibson's two sections.

[3]No denial of experience intended.

1. Upon being ingested, some substances that constitute the environment afford, in addition to nutrition, *pleasurable or unpleasurable experiences*, although such experiences do not correlate in all cases with the biological effects of those substances. Clearly, Gibson here (p. 137) means that certain substances are themselves of such a composition that they enable certain experiences — just as these substances afford, assuming they are ingested, other effects, including nutritional effects that are not experiential. The substances are described as affording ingestion and some of its consequences, which include having certain experiences, perceptual and often pleasurable.

Even when the experiences are highly pleasurable and memorable, they are not identifiable with any of the Gibsonian environmental affordances, any more than the nutritional effects of a substance can be so identified. It does not make a difference that some of these effects (e.g., the pleasurable experiences) are in themselves very noticeable — via that "inner consciousness" or "inner awareness" which Franz Brentano (1911/1974) discussed (cf. Kriegel, 2003; Natsoulas, 2004a, 2004b) — while other effects that are owed to the same substance may be noticed not at all.

As I bring out very soon, noticing one's experiencing pleasure is not something that occurs in straightforward perceiving. There is no contradiction here of the discussion that I proffered in the preceding main section of this article. Rather, here is where I introduce what I called there a reflexive kind of perceiving and perceptual experience. I see this reflexive kind as a perceptual activity to which one can shift, deliberately or spontaneously, from straightforward perceiving. Consequently, one can notice, among other characteristics of one's perceptual experience of the moment, that the experience is pleasurable.

Of relevance again is the important distinction that I have been drawing in this article, that between what a thing affords and its affordances, which are the properties by which it so affords. For example, some intrinsic properties of sugar enable it to give pleasurable experiences as it is being eaten. This substance affords pleasure because it possesses those properties, constituents of the respective affordance. The example of sugar makes it easy to distinguish the affordances of a substance from the experiences that the substance produces owing to its affordances.

The experiences are themselves, too, very much objects of a kind of awareness. Somewhat like a painful experience, a pleasurable experience attracts attention. However, the properties of a substance such as sugar that are responsible for a certain sort of pleasurable experience may be difficult to perceive visually. Gibson speaks of such cases in general as follows:

> If the affordances of a thing are perceived correctly, we say that it looks like what it *is*. But we must, of course, *learn* to see what things really are — for example, that the

> innocent-looking leaf is really a nettle or that the helpful-sounding politician is really a demagogue. And this can be very difficult. (p. 142)

The question arises as to whether that which is in the substance and affords the experience of sweetness is perceivable, short of ingesting the substance. We say that sugar is sweet, because sugar affords a certain kind of gustatory experience. But does sugar look sweet? Or, at least, are those properties of sugar that make for its affording those kinds of gustatory experience visually discriminable without using instruments or conducting tests? That which those properties afford in the way of taste experiences is readily apprehensible by inner awareness of those experiences, but the affordance properties are not obviously visually perceptible. This is not a matter which I shall pursue.

It could be argued that the present example and others like it are cases in which something that a substance affords, a pleasurable gustatory experience in the example, and the substance's affordance property by which it so affords, are, both of them, apprehended at the same time in a kind of perceptual experience that is reflexive with regard to itself. In the example, the reflexive experience would be, according to one kind of theoretical account, none other than the gustatory experience itself, not an additional experience that is directed upon the experience. Accordingly, each time certain perceptual experiences transpire, the respective observer undergoes awareness therein *both* of a certain property of a thing *and* of the experience that the property affords. What I have elsewhere identified as an "intrinsic theory of inner awareness" would maintain as much: that is, that inner awareness is intrinsic to each of the conscious mental-occurrence instances that take place.

Regarding reflexive perceptual awareness, one might consult Brentano (1911/1973), Kriegel (2003), Natsoulas (2004a, 2004b), and Woodruff Smith (1989), among others referred to in those publications. However, one must dig in Gibson to come up with suggestions of such awareness. Obviously, from the Gibsonian perspective, no reflexive perceptual experience is a product and part of straightforward perceiving. As I have been emphasizing here, all perceptual experience that takes place in straightforward perceiving is directed elsewhere, that is, beyond the stream of experience.

Perhaps Gibson would countenance a reflexive kind of visual perceiving that alternates with straightforward visual perceiving and is unambiguously distinct from it — as he seems to allow that an observer is capable of alternating between straightforward visual perceiving and viewing (Natsoulas, 2003a; indeed, I believe viewing is a reflexive kind of visual perceiving). In the case of the reflexive perceiving that I am mentioning here, the stream of perceptual experience would then consist completely of reflexive experiential components each of them having for intentional objects the items in the environment that are being visually perceived and the visual experienc-

ing itself that is part and a product of this perceiving (Natsoulas, 2004a, 2004b).

Thus one could have, as actually one does have, inner awareness of pleasurable perceptual experience even as perceiving is going on of the external object that is giving one pleasure, that is making that pleasurable experience possible. Reflexive perceiving would not require that the straightforward kind of perceiving stop for very long, only that the latter alternate with reflexive perceiving necessary for whatever awareness of perceptual experience does take place. Note, too, that I do not mean to suggest that straightforward perceiving would be necessary in order for the perceiving of an environmental item to occur. The reflexive kind of perceiving would produce an awareness of both the perceptual experience and the environmental item that the experience has as its intentional object.

Psychologists often adopt a different position regarding the inner awareness of a perceptual experience. More generally in their view, the direct access that we have to some of our mental-occurrence instances needs, in each case, a second mental-occurrence instance to be directed on the first (e.g., James, 1890/1950; Rosenthal, 1986, 1993; Weiskrantz, 1997). Woodruff Smith (1989), among others, has provided objections to that kind of account, and he has presented his own variety of an intrinsic theory of inner awareness.

I wonder how much of an influence the radical behaviorist B.F. Skinner has been on those psychologists who are drawn to an "appendage" account of inner awareness. It will be recalled that he maintained all awareness is a matter of overt, covert, or incipient responding in the form of words. Thus, whatever it may be that one has awareness of, to be so, it must be the occasion for a suitable operant response. There is, in his view, no other access to our experiences besides the behavioral. Experiences are conceived of themselves as private stimuli or covert responses or as some combination of same. And responding to them is not a matter, not to any extent, of their being apprehended in any more intimate way than their being occasions for a response of a suitable kind. For any occurrence to be such an occasion is not to be understood as its being an intentional object of something which takes place in the brain or musculature in advance of the overt, covert, or incipient response that is proposed to be the awareness of them.

Of course, James (1890/1950) already had argued that every instance of firsthand knowing requires that what is known have a separate effect on and in the knower: "Some sort of signal must be given by the mind's brain, or the knowing will not occur . . . . The brain being struck, the knowledge is constituted by a new construction that occurs altogether in the mind" (pp. 218–219). The inner awareness of perceptual experiences was no exception, according to James, although the experiences transpired in the mind. Any state of consciousness occurs in the dark, in James's view, unless there occurs another

state of consciousness that has the first as an intentional object. I would describe James's view further by saying this:

> However, even in the latter case, the first state of consciousness occurs in the dark. Except that it is accompanied by a state of consciousness that represents it. Following it at once or very soon after, there is a state of consciousness that includes an occurrent believing in the first state's occurrence. This awareness does qualify as inner awareness in accordance with the general definition of the latter, but it is nonetheless "outer" with respect to its intentional object: it is not intrinsic to its object. James's model for conceiving inner awareness is not even perceptual or stimulus–response. The total brain process is what he holds produces one state of consciousness after another that makes up a stream of consciousness. Consequently, as I argue elsewhere (Natsoulas, 2003b, p. 298), it would be consistent with James's account of inner awareness if a state of consciousness actually was preceded in the stream by a state of consciousness that qualified as an inner awareness of it.

Returning to the present intrinsic hypothesis pertaining to inner awareness, let me add that a separate introspective process is not necessary that focuses upon experiences from outside them and may judge them to be pleasurable. The reflexive sort of perceiving is not conceived of here as an introspective process that is appended to straightforward perceiving and yields awareness of the latter's constituent stream of perceptual experience. Instead, a bout of reflexive perceiving would replace, for a longer or shorter time, a bout of straightforward perceiving. That the latter kind of perceiving includes a perceptual-experiential stream as a product and part of it would be a matter of inference and hypothesis based on having acquaintance with the stream of reflexive perceptual experience. This is so because no straightforward perceptual experience possesses as intentional object either itself or another experience.

On an earlier page to which Gibson himself refers, he comments upon the "food values" of substances, their being among the latter's affordances. He means by food values the substances' nutritional potential upon ingestion. The respective affordance consists of those properties of a substance that make for, if an animal ingests it, more or less or no nutrition. To this Gibson adds, "But the food values of substances are often misperceived" (p. 131). I take him to mean that the affordances of substances responsible for the nutritional value of a substance are perceivable and misperceivable; a substance can be rightly or wrongly perceived to be "good to eat."

Of course, the latter phrase does less than scratch the surface of what perceptual experience is like that has for its objects those affordances that pertain to nutrition. But, it does suggest one direction for phenomenological investigation. When a subject declares on a perceptual basis that a certain unknown substance is good to eat, a question that might be looked into is: Which of the substance's features is the subject noticing? For example, does the perceived food value consist, from the first-person perspective, of a cer-

tain gestalt of properties, or does it seem to amount to just a single, unanalyzable property? And so on.

2. The following distinction is emphasized: "properties of things *taken with reference to an observer*" versus "properties of the *experiences of an observer*" (p. 137; original italics). Gibson here states that an affordance is the former sort of property, a thing property, and not of the latter sort, not an experiential property. He exemplifies positive and negative affordances by speaking of benefits and injuries, and safeties and dangers.

These examples of his are not affordances, as I see the theory; rather, they are examples of what certain things afford. This is a distinction that I have been insisting on in this article.

In comprehending Gibson's distinction between two categories of properties as I quoted just above, the notion of how a property is "taken" requires special attention. What does Gibson have in mind when he speaks of such taking, when he speaks of a property taken with reference to an observer?

An immediate implication of Gibson's emphasized distinction is that a thing property that is taken with reference to an observer is not equivalent to an experiential property, which is taken to belong to an experience of the observer's. It is not true that the thing and the experience both instantiate the particular affordance property. It is true, of course, that for a psychologist to take a particular property to be experiential, is for the psychologist to take the property with reference to an observer.

However, more explicitly Gibson's definition is as follows. An affordance that is a property of a thing is one taken with reference to an observer without this having any implication that the affordance is a property of the observer's experience. Thus, in a subsequent section, he explicitly forestalls a likely and erroneous inference: that the notion of a property taken with reference to an observer introduces "separate realms of consciousness and matter, a psychophysical dualism" (p. 141). It is not true, in his view, that whereas properties taken without reference to an observer belong to the physical world, properties that are taken with reference to an observer belong to a mental world.

It may appear that this is a denial of experiences. However, the world according to Gibson includes experiences. He is only rejecting here the claim that to take environmental properties in relation to an observer is to treat of them as occupying a separate realm from the otherwise taken environmental properties. In the construal that Gibson is rejecting, environmental objects would possess both mental properties and distinct physical properties, the affordances being among the former.

Some of the ecological objects are animals that have perceptual and other experiences. They also have affordances in relation to other animals. As do other ecological objects, animals afford to other animals benefits and injuries,

safeties and dangers, among other consequences, to other animals, of their activities, processes, or properties.

Even an animal's experiences can be accurately said to have affordances in relation to other animals. For example, animal A's experiences enable certain of its behaviors that have an effect on the welfare of other animals. However, the affordance properties of the experiences of animal A are not among the affordance properties of the environment that these other animals are able to perceive. Animal A may, in contrast, be able to undergo reflexive perceptual experiences having for their intentional objects not only affordance properties of a part of the environment that other animals can perceive, but also affordance properties of experiences produced in animal A by that part of the environment.

Nevertheless, the original statement still stands. The affordance properties of environmental entities other than the animal that is perceiving them are not experiential properties of the animal. These affordance properties are not equivalent to those affordance properties which the animal's experiences instantiate, no more than are properties of environmental entities equivalents of the affordance properties of, for example, the light that enables having visual-perceptual experience of them.

The idea of a property taken with reference to an observer would seem to have reference to how the scientist qua scientist isolates this property. Thus, any particular, simple or complex, property of the kind that is said to be taken with reference to the observer is taken, or identified, through the scientist's taking note of the causal role the property plays with respect to behavior of an observer or processes occurring in the observer.

We have seen that perceptually experiencing a thing's properties, including experiencing its affordances, are among what an environmental thing may afford. However, the experiencing of those affordances is not to be understood in terms of the involved experiences' instantiating them. For thought or experience to be of an affordance is not *ipso facto* for a thought or an experience to afford what the thing affords whose property the affordance is.

This point can be made with respect to the reflexive variety of perceptual experiences that I introduced in the previous enumerated comment. Although a perceptual experience may point intentionally in two directions, being at the same time an awareness of an affordance property of a thing in the environment and, also, an awareness of the experience itself, thus the experience thereby afforded, this is hardly to hold the experience to instantiate the affordance property. With respect to reflexive perceptual experiences, the distinction would be no less applicable: between what a thing affords and the affordance property of the thing that enables it so to afford.

3. Distinguishing as above between experiences and affordances does not entail their being or occurring in different worlds: respectively, in *the world*

of mind and *the world of matter*. Once more, Gibson advances his single-world thesis, stating,

> There has been endless debate among philosophers and psychologists as to whether values are physical or phenomenal, in the world of matter or only in the world of mind. For affordances, as distinguished from values, the debate does not apply. Affordances are neither in the one world or the other inasmuch as the theory of two worlds is rejected. There is only one environment, although it contains many observers with limitless opportunities for them to live in it. (p. 138)

Both affordances and experiences exist within the only world there is, which Gibson calls here "the environment."

I suggest that his reference to those many observers that the world contains is implicitly a reference to their experiences. Their being observers means their having perceptual experience of the world and of many of its parts and features (see my paragraph following the next two). These include the affordances of things in the world. What is an observer absent having any perceptual experiences?

A tuning fork does not qualify as being an observer notwithstanding how precisely it picks up information from the stimulus flux that is causing its vibrations. Awareness is not simply the pickup of stimulus information. A system that can pick up information from the ambient light, a system that is responsive discriminatively to photic invariants, does not qualify as an observer if the system cannot make use of the picked-up information in such a way that the system produces within it perceptual experience of the environment that is determining the information contained by the stimulus flux.

There is a common tendency to detach experiences somehow or other from the world and to place them instead in some uncertain elsewhere. But *where* is the phenomenal world that some psychologists so easily speak of, if it is not the world that we literally inhabit? I am reminded of a psychology colloquium speaker who, long ago, instructed the members of his audience simply to look around them in order each to see his or her own phenomenal world.

On Gibson's view, looking around results in having visual-perceptual awareness of part of the environment, where the latter is identical to the world of physics although taken at a different structural level. However, according to the colloquium speaker, looking around results in being aware of something else, namely, one's phenomenal world. Every observer was proposed to have a different phenomenal world. And none of these worlds was equivalent to the environment in the Gibsonian sense. Nobody has direct access to the one world.

Those in the speaker's audience who, following his instructions, looked out of a particular window, what they actually saw included a very old tree, older than anyone who was present in the hall at the time. Those who saw the tree

could have carried out tests to demonstrate that they had not imagined the tree to be there, that it had many of the properties it perceptually seemed to have, including the distance one would need to walk before the tree could shade one from the sun (cf. pp. 256–258). The tests showing that the environmental tree possessed the properties that it seemed perceptually to have, would have counted against a proposed location for the tree in the observers' minds who perceived it. There would have been many such contrary demonstrations, because the phenomenal worlds to which the speaker intended to refer were in actuality no other than the Gibsonian environment, the world in which we all reside — including the speaker, who would multiply worlds to explain differences in perceptions.

Later in the book, Gibson again contends the matter–mind distinction should be eliminated: "Perception is not a mental act. Neither is it a bodily act. Perceiving is a psychosomatic act, not of the mind or of the body but of the living observer" (pp. 239–240). And, as we have seen, the observer in every respect, in all constituent parts, occurrent and non-occurrent, occupies the one world that there is.

Just in case there are doubts concerning Gibson's countenancing of experiences, given that he denies a separate mental realm, I refer the reader to certain past articles of mine (Natsoulas, 1993, 1998, 2003a), and I call attention to these statements of his:

> Perceiving is an experiencing of things. It involves awareness-of . . . . It may be awareness of something in the environment or something in the observer or both at once . . . . This is close to the act psychology of the nineteenth century . . . . Perceiving is a stream, and William James's description of the stream of consciousness (1890/1950, Ch. 9) applies to it. (1979/1986, pp. 239–240)

4. These enumerated comments, of which this is the fourth, are concerned mainly with the relation of affordances to experiences according to Gibson's account. Therefore relevant is his historical discussion of the Gestalt theorists' efforts to comprehend what they called the thing's "demand character" (Koffka, 1935) or "*Aufforderungscharakter*" (Lewin, 1935, translated there as "valence"). These psychologists held these properties, which resemble Gibson's affordances, to be phenomenal. They conceived of these properties not to belong to those things that affect the stimulation of the senses, geographical objects, but rather to belong to a different sort of object that exists in a counterpart, phenomenal world.

Gibson brings out that an important consideration in the Gestaltists' reaching this conclusion was their understanding of those affordance-like properties as varying with the observer's needs. The observer's needs can affect an object that exists in the phenomenal world of the individual. They can actually alter certain properties of that object; in contrast, such needs

cannot determine a geographical object's properties in the same way, as it were, simply by the observer's wanting something in particular to be the case. *Ex hypothesi*, as the relevant needs grew or diminished, the phenomenal object would undergo change so as to be more or less demanding or inviting.

Insofar as need affects the experiencing of ecological objects, according to Gibson, it does so by affecting how the process of perceiving proceeds, not by having effects on the object itself that is experienced. It would seem that the animal's needs belong to a subsystem that functions in such a way as to affect the functioning of the animal's perceptual systems or how the animal puts the latter to use. Thus, the affordances of an object do not change with a change in need, but the perceptual process can change, with need, so that certain affordances get noticed and others fail to be noticed. As Gibson expresses it, "The observer may or may not perceive or attend to the affordance, according to his needs, but the affordance, being invariant, is always there to be perceived . . . The object offers what it does because it is what it is" (p. 139).

Gibson here states, probably unintentionally, that an affordance is *invariant*? This is not of necessity the case. Of course, environmental objects sometimes do change and it is possible for some of them to lose their affordance properties just as they can lose their shapes, colors, and so on. *Independent* would be the better word in this case. Accordingly, changes in the affordance properties belonging to an environmental object are not owed to the process of perceiving them, nor are they owed to a need's influence upon that process. No affordance property is bestowed thereby on such objects, when any change in their affordance properties takes place. I shall not enter here into the effects of needs on the affordance properties of experiences themselves, that is, the properties of experiences that affect which behaviors occur.

5. The quote from Gibson contained in the preceding section states that an observer's need may determine whether the observer perceives or attends to a particular affordance. This means that there transpires in an animal more that is of a psychological nature and relevant to the way that perceiving proceeds, than the processes which make up the activity of perceiving, however complex this may itself be. Therefore, the ecological theory of visual perception cannot stand by itself. Not even if it is conceived of as giving perceptual experience of values and meanings that exist in the environment.

Perceptual activities transpire in a context that is comprised not only of environmental things and energies, but also of other subsystems, than the perceptual, belonging to the same animal. It does not seem off the mark to say that an observer engages in a bout of perceiving before going on to another bout, and so on, and what gives to these bouts the direction that they take is not just stimulus information. Needed, also, is a theory of the other subsystems of the animal that affect the functioning of its perceptual systems, among their other effects.

Perceiving does not proceed in isolation from other "psychosomatic" processes taking place at the same time with perceiving and having effects on it. This is already indicated theoretically by Gibson's insistence that the theory of perceiving must be a theory of an active animal. Notice what Gibson says of locomotion and manipulation in which an animal engages; as will be seen, it also applies to the activity of straightforward visual perceiving itself.

> They are constrained, guided, or steered, and only in this sense are they ruled or governed. And they are controlled not by the brain but by information, that is, by seeing oneself in the world. Control lies in the animal–environment system. Control is by the animal *in* its world, the animal itself having subsystems for perceiving the environment and concurrently for getting about in it and manipulating it. (p. 225)

The animal controls locomotion and manipulation by perceiving itself in the world. So too, the animal controls the activity of perceiving through movement, locomotion, and manipulation. These, in turn, depend on the stimulus information that the animal's deployment of a perceptual subsystem picks up and extracts. The extraction stage in the process proximately produces the stream of perceptual experience. Thus, it would seem that it is perceptual experience that makes it possible for the animal to engage in further perceptual activity, as well as in locomotion and manipulation of external objects (Natsoulas, 2003a).

Moreover, the animal has subsystems not only for perceiving, moving, locomoting, and manipulating, but also one or more additional subsystems that affect the control exercised on perception and action, among these additional subsystems being a system of motives and needs. Owing to the processes of such a system, one may intend to mail a letter in the nearest postbox.

With reference to the latter example, Gibson distinguishes two effects that the stimulational presence of a postbox has. (a) One of these effects is the perceiving of the postbox and some of its properties, including those whereby it is taken to be a postbox, its affordances; it is perceived as such, as a postbox, suitable for mailing letters. (b) Gibson also mentions a distinct effect: "to feel a special attraction to [the postbox] when one has a letter to mail" (p. 139), emphasizing that perception of the objects's affordance should not be confused with the special attraction that one may feel to the postbox.

The contribution of a motivational subsystem serves, in this example, to take the observer beyond simply having the visual-perceptual experience of the object's affordance. Which may be perceived whether or not one has a letter to mail — a point that Gibson emphasizes. Perception of the postbox's affordance does not suffice for locomotion to the postbox to take place.

The feeling of special attraction may correspond, I infer, to the operation of the intention to mail the letter upon the subsystem for locomotion. The intention would be active alongside the perceptual experience of the mail-

box and one's position in relation to it. Experiential products of the visual perceptual system and the motivational system would, both of them, have an effect on how the observer puts the subsystem for locomotion to use.

Alternatively, the intention could be conceived of in a way which respects some of what the Gestalt psychologists claimed. The intention would operate on the subsystem for locomotion by affecting the visual-perceptual system and the visual-perceptual experience of the postbox. Just as, in many instances, need determines how pleasurable a gustatory perceptual experience is, so the intention to mail a letter would affect how inviting the postbox is perceived to be. However, this would not be, as Gibson warns, mutually to confuse the special attraction and the perceptual experience of the affordance. The latter would take place under many circumstances whereas the valence character of the postbox would vary depending on the motivational factor.

Concluding Comment

Judging from the last example, as well as from this article as a whole, it would be quite right for readers to conclude that Gibson's theory of affordance requires more detailed exposition and more analysis than has been possible to give it in the space of the present article. For one thing, recall my having left for later his conception of perceptual learning as it applies to the perceiving of affordances. Note, too, that I have not brought into the discussion any of the literature that has sought to make more explicit and to improve Gibson's conception of affordance properties.

I am thinking of articles and books by authors who consider themselves to be "Gibsonians" or "ecological psychologists," and who are concerned with the actual content and implications of his ecological approach to the perceiving of the environment. Of special relevance and use for my purposes would be how these psychologists want the theory published in 1979 to be modified and why. This would help me to assess my own interpretations of Gibson. Can his account as I understand it be shown to withstand their objections or modifications?

I am planning the next article in the present series to be a comparison between what I have made of Gibson's theory of perceiving affordances and what other psychologists have produced along the same lines, including their proposed modifications. Besides helping me to improve my understanding before I go on with the present series of article, the next installment will be, also, an opportunity to address what I have not yet spelled out in Gibson's account of environmental affordances.

References

Brentano, F. (1973). *Psychology from an empirical standpoint.* London: Routledge and Kegan Paul. (Corresponding German edition published 1911)

Gibson, J.J. (1977). The theory of affordances. In R. Shaw and J. Bransford (Eds.), *Perceiving, acting, and knowing: Toward an ecological psychology* (pp. 67–82). Hillsdale, New Jersey: Erlbaum.

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

Hebb, D.O. (1974). What psychology is about. *American Psychologist, 29,* 71–79.

Husserl, E. (1977). *Phenomenological psychology: Lectures Summer Session 1925.* The Hague, Netherlands: Nijhoff.

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

Koffka, K. (1935). *Principles of Gestalt psychology.* New York: Harcourt Brace.

Kriegel, U. (2003). Intrinsic theory and the content of inner awareness. *The Journal of Mind and Behavior, 24,* 169–196.

Lewin, K. (1935). A dynamic theory of personality. New York: McGraw–Hill.

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

Natsoulas, T. (1993). Perceiving, its component of perceptual experience, and Gibson's ecological approach. *Psychological Research/ Psychologische Forschung, 55,* 248–257.

Natsoulas, T. (1994). On the distinction between the object and content of consciousness. *The Journal of Mind and Behavior, 15,* 239–264.

Natsoulas, T. (1998). Two proposals regarding the primary psychological interface. *The Journal of Mind and Behavior, 19,* 303–324.

Natsoulas, T. (2003a). "Viewing the world in perspective, noticing the perspectives of things": James J. Gibson's concept. *The Journal of Mind and Behavior, 24,* 265–288.

Natsoulas, T. (2003b). The case for intrinsic theory: VIII. The experiential in acquiring knowledge firsthand of one's experiences. *The Journal of Mind and Behavior, 24,* 289–316.

Natsoulas, T. (2004a). The case for intrinsic theory: X. A phenomenologist's account of inner awareness. *The Journal of Mind and Behavior, 25,* 97–122.

Natsoulas, T. (2004b). The case for intrinsic theory: XI. A disagreement regarding the kind of feature inner awareness is. *The Journal of Mind and Behavior, 25,* 187–212.

O'Shaughnessy, B. (2000). *Consciousness and the world.* Oxford, England: Oxford University Press.

Rachlin, H. (1985). Ghostbusting. *Behavioral and Brain Sciences, 8,* 73–83.

Rosenthal, D.M. (1986). Two concepts of consciousness. *Philosophical Studies, 49,* 329–359.

Rosenthal, D.M. (1993). Higher-order thoughts and the appendage theory of consciousness. *Philosophical Psychology, 6,* 155–167.

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

Woodruff Smith, D. (1989). *The circle of acquaintance.* Dordrecht, Netherlands: Kluwer.