

## Canonical affordances in context\*

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### Abstract

James Gibson's concept of affordances was an attempt to undermine the traditional dualism of the objective and subjective. Gibson himself insisted on the continuity of "affordances in general" and those attached to human artifacts. However, a crucial distinction needs to be drawn between "affordances in general" and the "canonical affordances" that are connected primarily to artifacts. Canonical affordances are conventional and normative. It is only in such cases that it makes sense to talk of *the* affordance of the object. Chairs, for example, are *for* sitting-on, even though we may also use them in many other ways. A good deal of confusion has arisen in the discussion of affordances from (1) the failure to recognize the normative status of canonical affordances and (2) then generalizing from this special case.

**Keywords:** affordances; canonical affordances; dualism; ecological psychology; archaeology.

*Gibson ... gave us affordances as a hopelessly tangled but important attempt to account for meaning in the mutuality of the perceiver and environment. (Cutting 1986: 252)*

Within western thought a profound gulf has long been claimed to exist between the world as it really is, and the world as we perceive it, or, better, *live* in it. For many scientists, this assumption does not itself *seem* to be an assumption at all, but the inescapable implication of two supposed facts:

1. *The poverty of the stimulus.* The structure or information available to our senses is hopelessly limited and entirely insufficient to specify the properties and events of the real world.
2. *The poverty of the real world.* A very large part of what we experience and *believe* to belong to the real world is not real. It is purely subjective, a mental projection upon an inherently colourless and meaningless world.

It is this second assumption that is the really troublesome one, for as John Dewey put it, “subject and object antithetically defined can have logically no transactions with each other” (Dewey 1958 [1925]: 239).

Curiously, this assumption about the profound subjectivity of human experience is often actually relished within empirical science itself, even though it undermines the very conditions of possibility of *empirical* science. Here is the perceptual psychologist, Richard Gregory, claiming, within the space of a few lines, that we human beings are both capable of conducting objective scientific research, and, on the basis of the results of such research, that all of us – presumably scientists included – are nevertheless imprisoned within our own subjectivity:

*... it used to be thought that perceptions, by vision and touch and so on, can give direct knowledge of objective reality. ... But, largely through the physiological study of the senses over the last two hundred years, this has become ever more difficult to defend. ...ultimately we cannot know directly what is illusion, any more than truth - for we cannot step outside perception to compare experience with objective reality.* (Gregory 1989: 94, emphasis added)

This opposition of the subjective and the objective simply does not make sense. An ideal of *mindless* objectivity – of science somehow being *done* and yet also untouched by human subjectivity – can be remarkably persuasive as long as we view science in the rear-view mirror, as a body of established facts and theories. However, as soon as we regard science as the ongoing open-ended enterprise that it actually is, it becomes clear that we urgently need an alternative conception of the objective – of the *real* – that can find a place for *us*. After all, it is only *subjects* who can be objective.

When I first encountered James Gibson’s writings, as a student, I was struck straight away, given my background in physics, by the serious challenge he was posing to the dualism of the physical and the mental – of the objective and subjective.

For a long time, Gibson’s work seemed to be directed exclusively against the assumption of the poverty of the *stimulus*.” He argued that if we regard stimulation” as relational and transforming, rather than punctate and static, then we can begin to appreciate that it is already richly endowed. Later, he rejected the very idea of the stimulus. Information, he insisted, is obtained, not imposed.

Gibson’s attack on the “poverty of *reality*” is now widely identified with his last book, *The ecological approach to perception* (1979), in connection with his concept of affordances. In fact, he had also used the term “affordances” in his 1966 book, *The senses considered as perceptual systems*, and had even anticipated the concept in several important ways in a remarkable, though largely forgotten, chapter on meaning, in his first book, *The perception of the visual world* (1950):

*... there are all the simple use-meanings or meanings for the satisfaction of needs such as are embodied in food-objects, tool-objects, dangerous objects, and what Freud called love-objects, the parents being the first instances of the latter. For example, food looks eatable, shoes look wearable, and fire looks hot. (Gibson 1950: 199).*

Taking the example of our distant human ancestors, Gibson argued that such “use-meanings” are, from a biological perspective, more fundamental than the detailed properties of objects (and also, of course, symbolic-meanings):

*The color, shape, motion, and distance of things [were] of no interest ... in themselves. These abstractions were merely the identifying features, often slight and subtle, of objects which invited or compelled action. (Gibson 1950: 198).*

Here is perhaps Gibson’s earliest use of the actual term, “affordances”:

*I have coined this word [affordances] as a substitute for values, a term which carries an old burden of philosophical meaning. I mean simply what things furnish, for good or ill. What they afford the observer, after all, depends on their properties. (Gibson 1966: 285)*

Gibson’s concept of affordances continues to give rise to a good deal of controversy and confusion. It has not helped that Gibson’s presentation of the concept was itself sketchy and confused. My purpose in the rest of this article is to identify some of the main sources of this confusion – not least, Gibson’s failure to distinguish properly between what I call “canonical affordances” and “affordances in general.”\*\*

### **Affordances as relational**

Gibson took care to stress that affordances are *not* animal independent:

*An affordance is not what we call a “subjective” quality of a thing. But neither is it what we call an “objective” property of a thing if by that we mean that a physical object has no reference to any animal. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy. The affordances of the environment are facts of the environment, not appearances. But they are not, on the other hand, facts at the level of physics concerned only with matter and energy with animals left out. (Gibson 1977: 69-70, emphasis added)*

Initially there was a lot of resistance to acknowledging the relational status of affordances (and indeed information) because it threatens Gibson’s claim to be providing us with “reasons for realism,” and an escape from relativism. Even Gibson wavered on this crucial point (see Costall and Still 1989, Costall 1995). Yet it is now widely agreed that affordances are indeed relational, and, furthermore, that it is precisely because

they are relational that the concept holds out the great promise to undermine the traditional dualism of the subjective and objective. Affordances are not, however, as many commentators have claimed, relative to the animal as a mere “observer” (Gibson 1966: 285), but, rather, to the animal as *agent*:

*... a combination of physical properties of the environment that is uniquely suited to a given animal - to his nutritive system or his action system or his locomotor system (Gibson 1977: 79).*

*[The physical properties that constitute affordances] have unity relative to the posture and behavior of the animal being considered. So an affordance cannot be measured as we measure in physics.” (Gibson 1979: 127-8, emphasis added)*

In my view, the concept of affordances marks a fundamental shift in Gibson’s “ecological approach” from a theory of perception towards a more encompassing ecology of agency (Costall 2003). Furthermore, by undermining the traditional dualism of the subjective and objective, it takes us beyond the limited alternatives of either idealism or realism.

### **Affordances as “directly perceived”**

Gibson’s claim that affordances can be “directly perceived” has been the most controversial, and rightly so:

*The theory of affordances is a radical departure from existing theories of value and meaning. It begins with a new definition of what value and meaning are. The perceiving of an affordance is not a process of perceiving a value-free physical object to which meaning is somehow added in a way that no one has been able to agree upon; it is a process of perceiving a value-rich ecological object. Any substance, any surface, any layout has some affordance for benefit or injury to someone. Physics may be value-free, but ecology is not.*

So far, so good. But Gibson then immediately went on as follows:

*The central question for the theory of affordances is not whether they exist and are real but whether information is available in ambient light for perceiving them. (Gibson 1979: 140)*

There are three big problems here. The first is that Gibson once again frames the issue of affordances in terms of perceiving rather than acting, yet it is often only in acting upon things that we discover or reveal or even create what it is they really afford. The second problem is that over the years Gibson had come to define his concept of “direct perception” (and also his earlier term, “literal perception”) by contrast to a wide diversity of examples of what he deemed to be *indirect* perception including picture perception, social stereotyping, and even looking through microscopes and telescopes (see

Costall 1988). Many of these examples of indirect perception involve *social mediation* of one kind or another. Critics of Gibson's claim that affordances can be directly perceived rightly pointed out that the affordances of human artifacts, such as their favourite example of the mail box, could not be determined by a stranger to such things by merely peering at them in sublime isolation from other people.

The third and biggest problem is that by foregrounding the issue of perception Gibson put the epistemological cart before the ontological horse: "what value and meaning *are*" (Gibson 1979: 140, emphasis in the original). The central question for the theory of affordances is precisely "whether they exist and are real." It is this claim that marks Gibson's truly radical break with the long tradition of Western thought that has held that meanings and values are purely subjective and hence *unreal*.

### **Affordances are not stimuli**

As Gibson himself emphasized, affordances are not efficient causes. They do not *make* us do things:

*The fact that a stone is a missile does not imply that it cannot be other things as well. It can be a paperweight, a bookend, a hammer, or a pendulum bob. ... The differences between them are not clear-cut, and the arbitrary names by which they are called do not count for perception. ... You do not have to classify and label things in order to perceive what they afford.* (Gibson 1979: 134, emphasis added)

Some critics have argued that if it is the case that any particular thing has a great diversity of *different* affordances, then the concept of affordances is vacuous. James Cutting gives the example of the limitless affordances of paper:

*To be sure, it does not afford flying to Baghdad upon, but the exclusion of a large domain of behaviors does not diminish the fact that an infinity remain.* (Cutting 1982: 216)

But this is the crucial bottom line: although we can do many things with any single thing, we cannot do *anything* with any thing. We can use an apple as a missile or for archery target practice, for example, but if there is no food around we simply starve. And, for sure, we cannot fly to Baghdad on a sheet of paper (or, for that matter, on a carpet).

### Canonical affordances

A related criticism of Gibson's treatment of affordances has come from exactly the opposite direction. John Shotter has argued that Gibson presents us with an entirely *static* account of affordances, of meanings *inhering* in objects just waiting to be "discovered." Yet, of course, in many of our spontaneous interactions with things their meanings come into being within the flow of activity:

*... the beings in Gibson's world are depicted merely as observers, not as actors, i.e. not as beings able to provide for themselves, by their own actions, conditions appropriate to support their action's continuation. They may move about, but they do not act; thus rather than "makers", they are presented merely as "finders" of what already exists. Such a view, I would argue, fails to recognize the peculiar form-producing character of activity in a biological and social world; it fails to assign a proper role to time and to processes of growth and development. (Shotter 1983: 20)*

According to Shotter, therefore, *everything* is in flux: "an affordance is only completely specified as the affordance it is when the activity it affords is complete" (Shotter 1983: 27). In short, we can never "step" into the same flow of affordances twice.

Bill Noble has also criticized Gibson for being blatantly inconsistent in his account of affordances, at times acknowledging their fundamentally "open," relational status, and, at other times, "lodging" affordances in an "objectivated world" (Noble 1991: 204). In my view, both Shotter and Noble were right to point out that Gibson was confused on this issue, but I think they too were confused, and for the same reason. They failed to make a crucial distinction between "affordances in general" and what I call "canonical affordances" – the conventional, normative meanings of things, notably in relation to human artifacts.<sup>\*\*\*</sup> For example, a chair is for sitting upon, even if no one happens to be sitting upon it, or else is standing on it in order to change a light bulb. In such cases, the affordance has indeed become "objectivated" or, better, "impersonal" (Morss 1988): *one* sits on chairs. The meaning of artifacts cannot, therefore, be understood in terms of the individual-object dyad, but, rather, within a wider social framework.

Gibson was keen to insist upon a continuity between "affordances in general" and those of cultural artifacts in particular:

*It is a mistake to separate the natural from the artificial as if there were two environments; artifacts have to be manufactured from natural substances. It is also a mistake to separate the cultural environment from the natural environment, as if there were a world of mental products distinct from the world of material products. There is only one world, however diverse, and all animals live in it, although we human animals have altered it to suit ourselves. (Gibson 1979: 130)*

Gibson's treatment of the affordances of artifacts in much the same terms as "natural" objects has led to two important problems. The first is the one identified by Shoter and Noble: the objectification of affordances *in general*. The second problem is the failure of Gibson (and, indeed, Shoter and Noble) to recognize that the meanings of things can indeed become *objectified* and *normative*. Artifacts embody human intentions. Indeed, it is through the tacit, embodied understanding of the "canonical affordances" of things, as much as through explicit representations, that young children enter our cultural world (Williams, Costall and Reddy 1999). To a remarkable extent, psychological theory has treated the conventional use-meanings of things as totally transparent and given. And this includes developmental theory:

*In the study of early infancy, it is very common for objects to be treated as natural signs [rather than conventional signs] ... The object is rarely placed within a network of interpersonal relationships where its uses affect the ways subjects communicate with each other. (Rodríguez 2007: 261)*

In short, a major source of confusion concerning the concept of affordances has been (1) Gibson's failure to distinguish "canonical affordances" from "affordances in general," and (2) his unwitting generalizations *from* the very special case of "canonical affordances" to "affordances in general."

### **Canonical affordances as part of a wider "constellation"**

The real limitation of Gibson's treatment of affordances is that although it is relational, the relation is restricted to an agent-object dyad. The concept of "canonical affordances" itself alerts us to those important cases where the affordances of some thing are not simply shared between people but also normatively predefined. Yet the affordance of any artifact is not confined to that object in isolation, but depends on a "constellation" (Keller and Keller 1996) or "utensil-totality" (Gurwitsch 1979: 82-83) of not only other objects but also events. The affordances of artifacts are not usually self-contained but depend upon a wider context of other artifacts (as in the case of a tool-kit) but also upon the encompassing practices in which they *go* together.

A group of archaeology students at Copenhagen University engaged in an excavation of the camp area attached to the annual rock music festival at Roskilde. They found plenty of used condoms and beer cans, a few food wrappers, and a single hash-pipe (needless to say, these items have pretty definite canonical affordances). Although they remained mute on the subject of condoms, the students suggest that future archaeologists excavating the same site in a thousand years time might well conclude that the people they were studying drank much more than they ever ate. They themselves were mainly impressed, however, by what their excavation *failed* to reveal – the event that was *holding* these various artifacts together. "We cannot see the music in the festival's soil" ("*man ikkekan se musikken i festivalens muld*") (Skyum-Nielsen 2007: 25).

## Conclusion

I have been arguing that we need to recognize the special status of “canonical affordances,” the established, widely agreed use-meanings of things. In the case of “canonical affordances,” the task of the uninitiated is not typically to find their *own* meanings in the object, but to find out the intended function of the object. “Canonical affordances” have an apparent objectivity or impersonality that contrasts with the fluid and open-ended interactions with objects highlighted, for example, by John Shotter. A theoretical understanding of “canonical affordances” will not be achieved by fixation upon the object in isolation, nor the individual-object dyad. The object needs to be understood within a network of relations not only among different people, but also a “constellation” of other objects drawn into a shared practice.

In fact, this conclusion echoes the “manifesto” of a book I recently edited with Ole Dreier, based on workshops we held at the University of Copenhagen. Even “objectivated” affordances are not as static and self-contained as they might seem:

*Things are best understood ... not as fixed and independent of people, but as themselves transformed, even coming into being, within ongoing practices, and which these objects, in turn, transform. We ... learn more about both people and things by studying them as worldly, not just as in the world, but as incorporated into practices in the world. (Costall and Dreier 2006: 11)*

\* A version of this article was presented at the Conference “Perception and design” at Università Luav Venice, 26<sup>th</sup> October, 2012.

\*\* Donald Norman’s very attractive and informative book *The psychology of everyday things* (1989) was the first to bring Gibson’s concept of affordances to wider attention. Unfortunately, this book was also yet another source of confusion (see Torenvliet 2003).

\*\*\* In an early article, Loveland (1991) used the term “preferred affordances” but this does not really capture the institutionalized, normative status of such affordances.

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