



## Brief article

# Information without content: A Gibsonian reply to enactivists' worries



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## ABSTRACT

In this article, we aim to strengthen the emerging radical, non-representational, approaches to cognitive science by defusing the worries radical enactivists have with the use of information in the ecological approaches – namely the worry that information carries content. We show that Gibson's later use of the concept is meant to allow for a content-less notion of information, but that the language surrounding information in ecological psychology has subsequently slipped into a more cognitivistic vocabulary. We argue that by considering ecological information not to be information *about*, but information *for* affordances, the notion of information can be fruitfully applied without invoking notions of content. Gibson's later notion of information for perception, stresses the insight that in ecological theory there is no information in content, but only in use. It is suggested that radical cognition should embrace this notion of information without content, as doing so can help to situate the enactivist's "basic mind" into large and complex scales of coordination.

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## 1. Introduction

Representational cognitive science is currently being challenged by two flavors of radical cognitive science: Radical embodied cognitive science (e.g., Chemero, 2009) that developed out of Gibson's ecological psychology (e.g. Gibson, 1979/1986), and radical enactive cognition (e.g., Hutto & Myin, 2013) that developed out of the works of Varela (e.g. Varela, Thompson, & Rosch, 1991). Although both have a long but more or less independent history in philosophy and psychology, they converge on a shared commitment to develop a non-representational approach to cognitive science. In particular, they each aim for a way of thinking about cognition that does not involve processing or manipulating states with content.

A mental state or process (i.e. a representation) has content – if "there are specified conditions of satisfaction" (Hutto & Myin, 2013, p. x). Likewise, information carries content about something if it can be said to reflect correctly or incorrectly (or accurately or inaccurately) some state of affairs. There have been many attempts to ground such informational content e.g. in causation or in covariance – but according to Hutto and Myin, all such attempts fail. None of them suffice to explain the origin of informational content in the natural world, and therefore "cognitive systems don't literally traffic in informational content" (Hutto & Myin, 2013, p. xv). So, information simply cannot get its intentionality, that is, its "aboutness" from any content it carries. To radical enactivists thus, information cannot be said to carry content, nor can a cognitive (sub)system be said to interpret or "take in, store or process informational content" (Hutto & Myin, 2013, p. 82). The ecological theorists most certainly agree: "information for perception is not transmitted, does not consist

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of signals, and does not entail a sender and a receiver” (Gibson, 1979/1986, p. 63). In accounting for cognition, to radical enactivists and ecologists an appeal to content will therefore not do.

Nonetheless, ecologists typically talk of information a lot, and it is not always clear whether this information is of a content-less kind. Indeed, the enactivist tradition seems worried about this. Varela et al. (1991), for example, felt that Gibsonians were building their “theory of perception entirely from the side of the environment” (Varela et al., 1991, p. 204). They worried that the ecological notion of information that grounded information in the correspondence between the structure of ambient light and the environment, required too little active participation of the animal. Environmental correspondence alone could not guarantee that ecological information allowed for perception without mediating content, and the process of information pick up did not alleviate trafficking content (Varela et al., 1991, p. 204). Moreover Hutto and Myin (2013), who do not dismiss a covariance notion of information, are also worried as they feel theories appealing to information pick up suggest a “teleosemantic” notion of information that smuggles in content when accounting for its aboutness (Hutto and Myin (2013), p. 73 ff.). In fact, Hutto and Myin (2013) never mentioned Gibson’s pioneering work to clear cognitive science of representations or his attempt to rid it of the concept of information as the transmission of signals (with content). However, they emphasized that: “Cognitive systems don’t “pick up” or “take in” any informational contents; there are no such things as informational contents to take in” (Hutto and Myin (2013), p. xvi).

We agree that cognitive systems do not pick up informational content – and that there is no content to take in at all. However, this does not imply that cognitive systems do not pick up ecological information – properly conceived. In this short paper, we want to circumvent the enactivist’s worries that ecological information might still be appealing to content by adjusting the picture that seems to have come to stick to the ecological notion. We aim to show that in his aim not to conceive of information as carrying content, Gibson’s notion of information developed considerably. Indeed, Gibson’s changing vocabulary surrounding the use of “information” suggests he was trying to “flatten out” the concept so that there is information in use, not in content. Thus Gibson’s later concept of information places the actively participating animal center stage, and emphasized the animal-environment mutuality Gibson and Varela equally hold dear. It moreover provides modern radical cognitive scientists with a tool for studying this mutuality on scales of interaction beyond the “basic mind” (Hutto & Myin, 2013, p. ix).

## 2. For lack of a better word

In his last book Gibson made very clear that he did not want a content transmitting, what he called a “communicating”, conception of information: “The assumption that information can be transmitted and the assumption that it can be stored are appropriate for the theory of commu-

nication, not for the theory of perception” (Gibson, 1979/1986, p. 242). He felt that doing so had an undesirable circularity, and thus hoped for a radically different understanding of information:

We cannot explain perception in terms of communication; it is quite the other way around. We cannot convey information about the world to others unless we have perceived the world. And the available information for our perception is radically different from the information we convey (Gibson, 1979/1986, p. 63).

Gibson was clear that his “radically different” notion of information “for our perception” (emphasis added) should never be made to carry content. Despite these warnings, Gibson was well aware that the radically different use of “information” he was developing could easily be misinterpreted. Since we are “intellectually lazy” (Gibson, 1979/1986, p. 63), the dominant content-carrying conception remained ever lurking. Thus, Gibson knew his use of the concept of information engendered the cognitivist, content carrying, interpretation: “I would use another term if I could” (Gibson, 1979/1986, p. 242).

### 2.1. About information

The enactivist’s worries that ecological information may still appeal to content is not very surprising in light of Gibson’s own early work and in light of the paradigmatic research efforts that followed in his tracks. Gibson changed his mind on the details of the information concept many times (cf. Gibson, 1950, 1966, 1979/1986, see also Reed, 1988). Before moving toward a usage based account of information, in his early work Gibson certainly aimed to ground information in the relation between the patterning of the ambient array and properties of the environment only (see Costall, 2003; Reed, 1988). For example, laying out his *ecological optics*, he hypothesized that information about the world came from the correspondence of energy patterns to their environmental source:

[...] the variables of an optic array may carry information about the environment from which the light comes. This is a central hypothesis for ecological optics. By “carry information”, I mean only that certain variables in an array, especially a moving array, will correspond to certain properties of edges, surfaces, things, places, events, animals, and the like – in short to environmental facts. They will not, of course, replicate but only specify such facts. (Gibson, 1961, p. 259).

Gibson clearly did not want to allow for information to bring content into the mind. Yet talking of the array as “carrying information about”, suggests the aboutness is contained in the array prior to using the array for something. By not making reference to an active perceiver, the environmental correspondence alone needed to suffice for the patterns “carrying” aboutness – that is, for there being information. This information is then waiting to be “picked up” or “detected”. In other words, content-less information of the covariance type risks getting conflated with a content-full notion (see also Hutto, 2011). In Gibson’s early work, talking of the array as “carrying”

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