

Richard C. Schmidt

Department of Psychology, College of the Holy Cross

Apprehending the Absent Present

(Commentary to Jytte Bang: Steps towards an ecological approach to thinking)

In positing an ecological approach to thinking, Jytte Bang contrasts the traditional cognitive psychological approach to thinking in which thought is viewed as operations on representations inside the head with an approach that views thinking as an embodied and dynamic part of the “life-world of intentional living organisms”—an emergent property of behavior. The former traditional approach Bang argues fails to capture all of what thought is by virtue of its implicit Cartesian dualism, a constraining emphasis on mechanistic operations and its representational theory of meaning. Her ecological approach views thinking alternatively as a non-dualistic property of environment-organism mutuality. Ecological thought is the meaning making that allows organisms to coordinate their behavior not only with present circumstances of the physical and social environments (which is the domain of perception) but also with past and future circumstances (the traditional domain of cognition). Key to Bang’s unique re-conception of thinking is her replacing of the dualistic representational theory of meaning with the non-dualistic theory of affordances from the direct perception theory of James Gibson (1979/1986). Just how this theory of perceptual meaning can be used to understand the apprehension of cognitive meanings is less than straightforward. In this commentary I would like to review Gibson’s theory of perception and suggest how it can be extended to accommodate the more cognitive aspects of knowing required by an ecological theory of thinking. To make this extension, one needs to understand how what has been traditionally conceived as a perceptual process can also be used to apprehend meanings about what Bang refers to as the *global situation* and its *absent present* contents—past and future environmental facts that form the epistemic context for a particular present situation. What Bang’s ecological theory of thinking requires is that we not only directly perceive the present which is available in the occurrent stimulation but the past and the future as well which traditionally have been considered as absent from occurrent stimulation. I argue (Schmidt, in press) that the dynamic nature of the environment and the necessity for organisms to be in constant attunement with environmental change of events in order to survive suggest that animals engage in an on-going long-term pickup of higher-order event information or transformational invariants that specify the past actualities and the future possibilities. This *tonic perception* of the environmental change form the epistemic context for the more traditional phasic perception of the environment that is the traditional domain of perception and action.

In the Gibson’s ecological theory of direct perception (Gibson, 1979/1986), aspects of the environment will have

certain meanings because they afford or are opportunities for a purposive behavior. Such a theory of affordances is a relational theory of meaning. Hence, the meaning of environmental properties and objects is a relational property that depends upon the action capabilities of the perceiver as well as the structure of the environment, and consequently, exists neither in the perceiver nor in the physical environment, but as part of an *econiche*—the aggregate of the relations between the perceiver and the environment he/she acts upon. The cup on the desk in front of me affords me many behaviors, and therefore, has multiple meanings. It affords the action of grasping; and hence, I perceive its graspability meaning because I can pick up information about the diameter of the cup and the size of my hand and the relationship between my body’s structure and the object’s structure (Newell, McDonald, & Baillargeon, 1993). The cup also affords me a place to put pens and I can perceive its pen holder meaning because I can pick up information about the relative diameters of the pens and cup as well as my ability to pick up pens and place them in the cup. Note that the cup’s affordances are neither subjective nor objective but defined in a way to make the subjective/objective distinction irrelevant. Ecological meanings exist as non-dualistic properties of environment-organism mutuality.

Theorists (Fodor & Pylyshyn, 1981; Baron & Boudreau, 1987; Clark, 1997) have criticized ecological theory of meaning as not being sufficiently general for explaining the apprehension of all meanings. The meanings in question are those that arise in thinking acts such as planning, remembering, and day-dreaming in which the present environment has nothing to do with the current meaning (Wilson, 2002; Iverson & Thelen, 1999). If there is no environmental information currently available about an object, having it “in mind” cannot be sustained by my relationship to the current environment but must be the result of a representation stored inside my head. To use Bang’s example of buying a gift for a friend, if I see a cup in a store that I think is appropriate to buy for a friend for their birthday, there is no perceptual information immediately present for the gift affordance of this object (i.e., that I can use this object to give to a friend as a gift). Information for its graspability or its pen-holder function are perhaps available for my perceptual systems to pick-up, hence, allowing me to actualize these meanings. But no information about my friend, his birthday, his needs nor his preferences are currently available if the perceptual stimulation before me. They are, as Bang points out, *absent present* and are part of the *global situation* extended over space/time within which I am participating. Traditional accounts would assume information about the

global situation is represented by stored information inside the head. The question is whether and how this absent present information can be part of my meaning making in a way that avoids such a representational account and is consistent with Gibson's theory of direct perception. How is it possible for past interactions with my friend to be present in order to be directly perceived? How is it possible for the future event of the birthday party to be present in order to be directly perceived?

To address these questions adequately, we need to ecologize the notion of time and note that what is missing from psychological theories of knowing is countenancing the 'process' nature of our epistemic reality. Not only do environmental objects and surfaces need to be defined in reference to the animal (hence, ecologized) to determine the "life-world" of the organism (i.e., its *econiche*) but time too needs to be taken in reference to the animal. Units of ecological time need to be defined in terms of meaningful environmental events in which a perceiver has participated. A day ecologically defined is not 24 hours but the intrinsically defined by the sequence of actions making up the day: waking, taking a shower, eating breakfast, traveling to work, teaching class, having office hours, analyzing data, traveling home, eating dinner, putting the kids to bed, watching the news and going to bed. Such constituent ongoing events are the primary realities of *econiche*, the 'process' nature of our epistemic reality. Ecological time does not exist except in terms of a sequential order of meaningful events that make up an organism's existence.

Assuming this redefinition of time and the primary nature of 'process' in the nature of *econiche*, we need to countenance that the perception of any aspect of environment does not occur in isolated "nows" but as part of unfolding events as experienced during encounters (Warren & Shaw, 1985) we have had with like environment aspects. That is, we do not perceive static moments in time divorced from the past and future. We perceive the present in terms of the flow of ongoing ecological events that provide a past and future context for the present. Each perceptual instance 'is embedded within a temporally extended flow of events that includes the perceiver's history of engagement with the environment (Heft, 2003, p. 158)'. Consequently, when I perceive the cup I would like to buy as a gift for a friend's birthday, I am perceiving the cup in the context of an intersection of a number of ongoing events of which this gift buying episode is part, namely, a unfolding cup event (the series of encounters I have had with cups since the beginning of my life), a unfolding birthday gift event (the series of encounters I have had with birthday gift giving), the unfolding event of my friend etc. What binds these episodes together into unitary events as particulars in *econiche* is their existential identity—an ontological property—rather than their formal similarity—an epistemological property (Shaw & Pittenger, 1978). These *econiche* properties are my ecological 'memories' and form the basis of my ecological 'knowledge' (Schmidt, in press).

But the question is how is information available now that specifies the past and future aspects of these ongoing events (the absent present)? How can my perceptual system be attuned to the past and future epistemic context for the

present? How is this *tonic* perception possible? Gibson addressed how the past and future can be specified in an unfolding event when he discussed the phenomenal existence of an object when it becomes occluded such as when a ball bounces behind a wall and then reappears on the other side of it.

The surface that was being covered was seen to persist after being concealed, and the surface that was being uncovered was seen to pre-exist before it was revealed. The hidden surface could not be described as remembered in one case or expected in the other. A better description would be that it was perceived retrospectively or prospectively. It is certainly reasonable to describe perception as extending into the past and the future, but note that to do so violates the accepted doctrine that perception is confined to the present (Gibson, 1979/1986, p.190).

The way that "in the present" the past is perceived retrospectively or the future is perceived prospectively in this example is a result of the perceiver's being attuned to a higher-order informational invariants unfolding across the course of the event that specifies the existence of the object in its absence. Gibson's example of this occluding edge occurs over a short time scale. But is there any reason why it cannot also be applied to episodes of events that unfold not over seconds but minutes, hours, weeks and years? I submit that we perceive a reappearing object in terms of its "not being there but having been there before" whether the event has a short period (like a ball being occluded by a surface momentarily) or the event has a long period (like a child returning home from summer camp or from college for a break). Ecological theorists have claimed for some time that higher-order *transformational* invariants specify the kind of change that occurs in short-term and long-term events (Michaels & Carello, 1981; Shaw, McIntyre, & Mace, 1974; Shaw & Pittenger, 1978). The argument here is that this long-time scale event information keeps us attuned to past episodes and anticipating future episodes of an ongoing event and effectively informs the animal making psychologically present what is physically not present. In summary, apprehending Bang's absent present, the past and the future context of the present situation, becomes a problem of perceiving ongoing long-term events of which the present situation is part.

One does not have to move to far away from what are traditionally considered perceptual phenomena to see the need to bring in the global situation and the absent present into interactions with environment. The perceptual information available for the intercepting of moving object has been well studied (Bootsma & Peper, 1992; Regan, 1997). For example, in hitting a ball with a bat such as in American baseball, the time-to-contact of the ball is specified in the moving object's rate optical of expansion whereas the ball height is specified by the ball diameter, rate of expansion, and angular drop speed. Research by Gray (2002a), however, found that batters seem to use cognitive judgments (i.e., operations on mental representations) to guide their hitting behavior even when this direct visual information is available. In particular, Gray found that batters use the history of previous pitches (i.e., whether the preceding pitches were fast or slow and how

many balls and strikes they have) as a basis for controlling their swing.

Note that here we have a very simple example, in Bang's terms, of a *global situation*—my time at bat—which is comprised of the present pitch, the pitches I have experienced (the recent past) and pitches I have not experienced (the near future). Note as well that the past and future pitches, because they are part of my dynamic unfolding life-world (econiche) and affect my behavior either in a retrospective or prospective way, are absent present. Gray argues that traditionally conceived cognitive processes (i.e., mental representation of past and inference of future pitches) must be brought to bear in order to rationalize why after three fast pitches I swing to a fourth pitch like it was a fast pitch even though there is direct perceptual information (e.g., rate of optical expansion) available that it is a slow pitch. He uses a probabilistic two-state Markov model to explain the cognitive processes involved in creating a batter's expectancy states (expect a fast ball or a slow ball) that are used to control the batter's behavior (Gray, 2002b). Following Bang's intuition, however, these intensionally conceived cognitive processes which model the effect of history on hitting behavior can be reconceived in extensional, ecological terms. If one accepts that information about the previous pitches is available in the unfolding of the event structure of the time at bat (i.e., that they are perceived retrospectively in that I am attuned to the previous state of the environment as a related previous episode for the current state), there is no need to have mental representations to make the past present. The past is present in that a relationship to a previous environmental fact exists in my econiche and it is sustained by current event information. Further, my behavioral expectancy (Markov model) then is not inside my head either but is rather in the dynamic relationships that make up my econiche. Consequently, one can argue that Gray's probabilistic model is not capturing internal mental processes but rather extensional econiche processes.

Bang's ecological reformulation of thought requires that thought be taken outside of the head and spread into the body (action system) and out into the world. The property unit of analysis, the container of thought, is no longer the inside the head (and that interior's mental processes) but the econiche and its processes. Ecological meanings and knowledge are written in the relationships of animal-environment system and their mutuality. This is the level of analysis described by Bang as the 'life world of intentional living organisms' (p. 10). It is straightforward to understand such extensional meanings if we only consider behavioral situations that traditionally have been called perceptual: The epistemic relationships of the econiche in these instances are sustained by perceptual information currently available to the knower's sense organs. This is the basis of the ecological theory of perception developed by Gibson and his followers (Carello & Turvey, 2002; Turvey, Shaw, Reed & Mace, 1982; Reed, 1996). The problem with this re-conception is how extensional epistemic relationships to the environment can sustain knowledge about what is described by Bang as the global situation which includes facts that are absent present—physically absent but psychologically present facts about the past and future. The ecological argument is that the information about the past and future is

not present as a stored mental representation inside my head but that information about the past and future is present in the environment as slowly unfolding transformational invariants that specify ongoing long-term events in which I have been participating (Schmidt, in press). Only in assuming the existence of such invariants can one understand how an extensional, relational theory of meaning like that underlying the theory of affordances can possibly sustain cognitive as well as perceptual processes.

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