

# The Social Constitution of Perceiver-Environment Reciprocity

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Although animal–environment reciprocity is central to ecological psychology, one facet of this viewpoint remains underappreciated: organisms alter environments so as to better function in them. In many species this activity of “niche construction” includes coordinated actions by individuals jointly working toward common ends. Mounting paleontological and archeological evidence indicates that human evolution should be viewed in the light of such social considerations. The environment of our immediate human ancestors was marked by, among other things, group settlements, manufactured stone tools, and extensive migration. An emerging species such as ours, whose distinctive psychological qualities offered a selective advantage relative to these conditions, would flourish particularly if it could preserve the gains of prior generations even as its members continued to transform econiche features in functionally significant ways. This evolutionary perspective, with its due recognition of sociocultural processes, highlights 3 factors of importance for ecological psychology: (1) the history of person–environment reciprocity results in human environments whose natural and sociocultural factors are inextricably intertwined. (2) developing individuals enter human environments not as solitary explorers but through the guidance of more experienced persons with the result that much development takes shape through social mediation; and (3) a distinguishing and ubiquitous feature of human environments that is a product of collective human actions is *places*. Nearly all human activity, including most psychological research, occurs in places, and owing to their psychological significance, it would seem impossible to disentangle psychological and social processes. These 3 factors illuminate that a fully-realized ecological psychology will be one that includes recognition of the constitutive role played by social processes.

Historically and programmatically, ecological psychology is first and foremost about perception and action. With its primary concern long having been the

individual's adaptive functioning in an environment, ecological psychology's focus is the ongoing perceptual processes by which the individual monitors and adjusts to stable and changing environmental conditions. What then is the place of the "social" in ecological psychology?

Issues of a social nature would seem to fit readily into ecological psychology under the general rubric of *social perception*. The environment for an individual is filled with animate features, and prominent among them are other persons. That being the case, a full accounting of environmental perception would by necessity include consideration of the information and the processes underlying person perception. And indeed, there is a substantial literature concerning such topics as perception of faces (Alley, 1990; Berry & Wero, 1993), of gender through gait (Cutting & Kozlowski, 1977; Runeson & Frykholm, 1983), of body size (Snyder, 2003), of social causality (Berry, Misovich, Kean, & Baron, 1992) and of possibilities for social interaction (Van Acker & Valenti, 1989). As such, social issues have been treated as one of several concerns of ecological psychology, akin perhaps to picture perception and ergonomics, that is, as a topic welcomed in order to expand the range of issues encompassed by the approach and as a subdomain for evaluating how widely ecological psychology's concepts and research findings can be generalized.

I submit, however, that this point of view seriously limits our understanding of *the place of the social* in ecological psychology. In addition to being one of several topics that is subsumed *within* perception-action studies, significantly the "social" constitutes part of the *background conditions* from which ecological psychology itself operates. Viewed as such, social issues take on a much more central role in ecological psychology than is typically recognized.

### THE "SOCIAL" AS A BACKGROUND CONDITION FOR AN ECOLOGICAL PSYCHOLOGY

By "background condition" for ecological psychology, I refer to a pattern of ideas that are *constitutive* of a fully realized, and still emerging, ecological psychology. If we imagine a fully realized ecological psychology as a woven fabric, then its warp is an evolutionary perspective. A defining characteristic of an ecological approach to psychology is an appreciation for species' evolutionary histories. As J. Gibson (1966) argued persuasively, evolutionary considerations, including attention to the character of an organism's *ecniche*, establish part of the groundwork for understanding an organism's perception-action systems. The grave error committed in much of mainstream perceptual and cognitive psychology has been its failure to explore fully the theoretical implications of a species' evolutionary history. Gibson came to realize by the late 1950s that the received views of perception, stemming as they do from a pre-Darwinian era, needed to be wholly revamped post-Darwin. As John Dewey pointed out repeatedly beginning in the 1890s, what happened in-

stead was that psychologists tended merely to amend their representational approaches to perception in light of evolution, leaving unchanged many of their pre-Darwinian assumptions, which were rooted in 17th- and 18th-century approaches to epistemology. In other words, typically evolutionary considerations have been tacked onto variations of the received view of perception. For ecological psychology, in contrast, a species' evolutionary history plays a constitutive role in formulating a functionally adequate account of perception-action processes. On that critical point turns the radical break of ecological approach to perception from mainstream views.

In what sense, then, do social considerations, like an evolutionary perspective, also constitute background conditions for an ecological approach to psychology? As a matter of fact, they do so in *exactly the same way*: social considerations *are* constitutive because they are foundational to an evolutionary approach to the study of complex organisms. If an evolutionary perspective is the warp of a fully realized ecological psychology, then social considerations constitute much of its woof.

### HUMAN ORIGINS AND ORGANISM-ENVIRONMENT RECIPROCITY

Let us consider this assertion with respect to human evolution. What is our current state of knowledge concerning human evolutionary history?

Paleontological and archaeological research has revealed that our immediate predecessors in the hominid line, *Homo erectus*, established relatively permanent settlements, manufactured stone tools, used fire for a variety of purposes, and engaged in collective actions such as hunting and extensive migrations (Cole, 2006; Donald, 1991; Ruse, 1998; Tattersall, 1998, 2000). Emerging evidence indicates that several of these and like products of social activities, such as blade technology, bone tools, long-distance trade, and use of pigment in art and decoration, appeared somewhat independently among scattered groups that gradually established contact over time (McBrearty & Brooks, 2000). These findings all point to a measure of cultural complexity among *Homo erectus* that is greater than previously believed. They strongly suggest the presence of sociocultural processes—albeit in rudimentary form—*prior to* the evolution of *Homo sapiens*. The picture of human evolution that is emerging is that of a species whose distinctive psychological attributes were of selective advantage in an environment where protocultural processes were already in place. These psychological attributes include a capacity for complex planning, social cooperation within a matrix of multiple relationships, transmission of skills through deliberate instruction as well as learners receptive for such instruction, and symbolic communication and expression. In short, this developing picture of human origins has turned the old story of *Homo sapiens* creating culture on its head. In turn, it has far-reaching implications for psychology.

This account is in keeping with the central tenet of ecological psychology: organism-environment reciprocity. In short, the qualities of the econiche that organisms monitor and adjust to are themselves partially created and sustained by activities of individuals acting singly and collectively. The protocultural qualities of the prehuman econiche fit this schema. A new species that could exploit these existing econiche resources for its own benefit; that could elaborate and extend the functional possibilities of these resources, and that could transmit across generations the skills and knowledge needed to utilize these resources would have a selective advantage.

This brief sketch carries with it an important lesson for ecological psychology: *When we take our species' evolutionary history as a background condition for an ecological approach to psychology, that history will by necessity include an appreciation for the sociocultural domain.*

### GIBSON'S ATTENTION TO SOCIAL FEATURES OF THE ECONICHE

James Gibson was quite aware that the human econiche is at least in part a product of human activities, although these ideas were not fully developed in his writings. In the seminal first several chapters of *The Ecological Approach to Visual Perception* (1979/1986), where Gibson offers an introduction to his vision of the nature of the environment from a psychological perspective, he includes among the affordances of the human environment other animals, tools, and representations (e.g., pictures, texts). Such features are treated as classes of affordances, and although it is acknowledged that they are the products of sociocultural processes, this fact is understated. Gibson explicitly comments that he is not exploring these features in much detail in this introductory material. For example, in closing the section on tools, he writes,

Much more could be said about tools, but this will serve as an introduction. ... Technological man has made larger tools, machines, for cutting, boring, pounding, and crushing, and also for earth-moving and for construction and also, of course, for locomotion. (p. 41)

Similarly, the last paragraph of the section on "other animals" states,

This brief description does not even begin to do justice to the power of the notion of affordances in social psychology. ... An understanding of life with one's fellow creatures depends on an adequate description of what these creatures offer and then on an analysis of how these offerings are perceived. (p. 42)

In parallel fashion, in the "human displays" section he writes,

There will be more about displays [later in the book]. ... [I]mages, pictures, and writing insofar as the substances shaped and the surfaces treated are permanent, permit the storage of information and the accumulation of information in storehouses, *in short, civilization* [italics added]. (p. 42)

Gibson does return to each of these classes of affordances later in the book (pp. 133–136; p. 262, pp. 270 ff.). However, the theoretical consequences of recognizing these products of sociocultural processes remain implicit, with one notable exception where he returns to a point previously made concerning displays:

Pictures are like writing inasmuch as they can be looked at again and again by the same observer and looked at by many observers. They allow the original observer to *communicate in a fashion with unborn generations of other observers*. Art museums, like libraries, are storehouses of knowledge, and they permit knowledge to accumulate. *Pictures convey knowledge second hand and thus are efficient methods of teaching the young*. (p. 274, italics added)

Gibson is making several important points here, including that there are some features of the human environment that are constructed explicitly for the purpose of transmitting information to others, most significantly, across generations. Cultural evolution rests to a considerable extent on the availability of environmental resources that carry secondhand information, as well as on teaching the psychological skills that allow others to utilize these resources.

J. Gibson's (1979/1986) most detailed consideration of features of the environment that are products of human activity appears under the heading "Man's Alteration of the Natural Environment" in his chapter on affordances:

In the last few thousand years ... as everybody now realizes, the very face of the earth has been modified by man. The layout of surfaces has been changed, by cutting, clearing, leveling, paving, and building. ... *Why has man changed the shapes and substances of his environment? To change what it affords him*. ... Over the millennia, he has made it easier for himself to get food, easier to keep warm, easier to see at night, easier to get about, and *easier to train his offspring*. (pp. 129–130, italics added)

Moreover, the first chapter of *The Senses Considered as Perceptual Systems* (J. Gibson, 1966), "The Environment as a Source of Stimulation," includes a section on "The Cultural Environment" (pp. 26–28). Following that section is a chapter appendix, "References for a Stimulus Ecology"; of the four books cited there, one concerns human cultural evolution (LeBarre, 1954) and the other is a history of technology (Singer, Holmyard, & Hall, 1954).

I bring these various sections of James Gibson's later two books together in order to emphasize an aspect of his writings that subsequently has received very little attention, namely, the significant role that human activities play in shaping the environment. Although he did not develop these ideas extensively, he clearly recog-

nized that “the environment to be perceived” is in very large measure an environment forged by human actions from the natural resources of the earth. With the notable exceptions of Costall (1995) and Reed (1996a, 1996b), few ecological psychologists have explored the implications of this fact. Receiving even less attention in ecological psychology circles is the impact of these constructed conditions on psychological skills emerging over ontogenetic development and in turn, their implications for cultural evolution.

This picture of organism-environment reciprocity undermines any simple distinction between the natural world and the social world. Is “the social” in its various manifestations in some way unnatural or nonbiological? Surely not: all that is “the social” ultimately stems from functions of biological organisms. Moreover, the biological and the social are fully enmeshed. For example, one would be hard-pressed to find a place on Earth that does not bear the mark of human actions of both an intentional and an unintentional nature (Kolbert, 2006; McKibben, 1987). Even our so-called natural areas in cities (urban parks) are in fact designed and require constant maintenance to preserve their “natural” qualities. In more remote locations in the United States, places such as national parks are *products* of conservation efforts that go back to the early 20th century.<sup>1</sup> Finally, to return to a point raised earlier, the interweaving of the biological and the social becomes undeniable in light of the fact that rudimentary hominid sociocultural processes were already in place prior to appearance of *Homo sapiens*. To reiterate, human evolution occurred against the backdrop of the products of such processes. Quite likely, selective advantages were conferred on those individuals who could capitalize on those resources. Similarly, like-minded groups of individuals collectively would have selective advantages accruing from their collaborative potential relative to other neighboring groups. It is time that ecological psychologists explored these insights more fully and brought them front and center.

## NICHE CONSTRUCTION

Humans live in habitats largely of our own making. That said, although the alterations of the environment by humans are more extensive and widespread than by any other animal, they are hardly unique to us. Indeed, it is becoming increasingly clear that most species modify their niches in the course of their activities in order to live in them. Too often the concept of adaptation is mistakenly understood to be a one-sided affair. But as Lewontin (1993) has pointed out, organisms do not

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<sup>1</sup>In the domain of environmental policy there is a long-standing tension between preservation and protection from human activity, on the one hand, and conservation and environmental management, on the other—in either case, a human choice. The United States has decidedly tilted toward a more interventionist conservation policy. For these reasons as well as others, the very concept of “nature” has been questioned in environmental philosophy (Vogel, 1996).

simply adapt to environments, they also “construct them out of bits and pieces of the external world” (p. 280).

The term “niche construction” is gaining currency in the evolutionary biology literature to refer to such processes. Odling-Smee, Laland, and Feldman (2003) have documented case after case of niche construction processes. They cite, for example, leaf-cutter ants that forage for leaves that they then transport into their nests to serve as the basis for fungal gardens. These gardens provide an abundance of food for a colony that can reach very large sizes as a result of these “agricultural” activities. This is a striking example but by no means unique. When one begins to examine environments from the perspective of niche construction, what becomes apparent is that such instances are ubiquitous. Odling-Smee et al. claim that niche construction is a feature of all animal–environment relations.

This notion is not altogether new to the ecological psychology literature. Reed (1996a) has raised this same point in an analysis of Darwin’s investigations of the ways earthworms modify their environments to create and sustain a habitat necessary for their survival. Further, activities of living organisms not only have an immediate bearing on their own existence but they can also create conditions that make the life of other organisms possible. Perhaps the most far-reaching instance of this is the accumulation of vast quantities of oxygen in the atmosphere over eons of time as a result of activities by photosynthetic organisms (Swenson & Turvey, 1994).<sup>2</sup>

In short, ecological psychologists need to embrace an expanded sense of animal–environment reciprocity. It is a *maxim* of ecological psychology that the activities of perceivers are an integral facet of perceiving; that dynamic perception–action processes more adequately characterize perception than standard input models that treat perception as a one-sided affair. But this maxim is only one expression of a more overarching vision of *animal–environment reciprocity*. Another expression of this vision is that *an econiche is a habitat fashioned to varying degrees by the animals who occupy it* (Drake, 2003).

Calling the attention of ecological psychologists to the ubiquity of niche construction is unlikely to be controversial. All the same, one anticipated response to the preceding might be something along the following lines: “Certainly social matters are important, but mostly as a subtopic of the area. Of greatest interest to ecological psychology are those processes that all organisms share (or alternatively, that all vertebrates share, or that all terrestrial animals share, or that all primates share). *In due course*, work on social issues can be incorporated into the main body of ecological psychology research on perception and action, and in fact, we have already seen the beginnings of those efforts.” If such a hypothetical response to the

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<sup>2</sup>And of course, activities of organisms can alter the environment in ways that can have dire consequences for future generations of its offspring and for the future of the biosphere generally. Tragically, we are witnessing such life-altering products of human actions today, while making meager efforts to alter this course of events.

preceding were to be offered, it would parallel the attitude of those representational theorists who seem to treat evolutionary considerations as an afterthought. My hypothetical respondent is in effect saying that concerns for social issues can be appended to the main body of work on perception-action systems. I contend, however, that social considerations need to be recognized as *constitutive* rather than peripheral features of the ecological approach. This is the case for two reasons: first, the environment, to varying degrees, is a product of ongoing actions of animals. In the case of humans, it is exceedingly rare that we *ever* encounter environments that do not bear the mark of our actions. Second, we learn from contemporary paleoanthropology and developmental psychology that the social is woven into the very fabric of what it is to be human. Let us explore this latter point further.

### SOCIALLY MEDIATED ACTION AND ATTUNEMENT

Not only is it true that *what* is perceived is steeped in the social but also perception-action processes are so steeped. Indeed, to a considerable degree once an individual's ontogenetic history is taken into consideration, perception-action processes need to be viewed as *socially mediated processes*, even when what is perceived might be conventionally regarded as a nonsocial feature of the environment. Social influences are at work from the earliest points of ontogenetic development.

To understand what role social influences play, it is necessary to bear in mind that perceiving is fundamentally an act of selection (E. Gibson, 1994; James, 1890; Neisser, 1976). Perceiving "involves an awareness-of instead of just awareness" (J. Gibson, 1979/1986, p. 240). But what factors direct selection? The bases for selection in perceiving surely reside in our history, certainly in a phylogenetic sense, and also, especially in the case of humans, in our history as sociocultural beings as well as in our individual histories (Reed, 1996b).

Significant work, most prominently from a Vygotskian perspective, has attempted to correct the long held view that infants and children face the world as solitary beings. A passage that Costall (1995, p. 472) extracts from Leontiev (1981) bears repeating:

[The] notion of an individual, a child, who is all by itself with the world of objects is a completely artificial abstraction. The individual is not simply thrown into the human world; it is introduced into this world by the people around it; they guide it in that world.

Caregivers and other more experienced individuals bring to the attention of infants and toddlers various objects and artifacts and in the process also demonstrate conventional ways in which those things are engaged (Rogoff, 2003; Vygotsky, 1978). Some of these caregiver actions are intentional, while no doubt many actions that serve to highlight particular objects and their affordances occur incidentally. Reciprocally, beginning around 6 months of age, the infant begins to play a more

active and participatory role in discovering the culturally significant affordances of the immediate environment. Specifically, there is an emerging propensity for the infant to follow the gaze of others, to look where others are looking. The result is a triadic interaction, with child and the caretaker both focusing on a common object or task. Often triadic interactions include the adult scaffolding the child's actions. Adults point out objects to infants, hand objects to them, and bring things into their field of view; and on her part the child directs actions toward those features. Such intersubjective acts of "joint attention" seem to be well established by 12 months (e.g., Butterworth, 1995; Corkhum & Moore, 1995). These mutual actions that are guided by others contribute to the developing pattern of selection in perception–action, a process of *guided attunement*, which forms a critical part of the child's history as an agent.

The potential for establishing joint attention, and thus for others to direct one's attention, may be among the hallmark features of our species (Tomasello, 1999). There is some debate among comparative psychologists concerning whether or not nonhuman primates exhibit joint attention (e.g., Povinelli, Bierschwale, & Cech, 1999). All agree, however, that only humans develop this propensity readily and as a matter of course during development. Further, Warneken, Chen, & Tomasello (2006) have recently shown that children begin by 18 months to participate in cooperative actions with a third party, but laboratory-reared, young chimpanzees do not. Moreover, 18-month-old children engage in cooperative play not only to achieve a common goal but for the playful act of cooperating itself. In short, processes of joint attention, broadly construed, play a critical role in the child's *socialization*.

Note that I am using "socialization" here in a much more inclusive sense than its commonplace definition. Usually, socialization connotes the development of social behaviors appropriate to some sociocultural context. But that is far too limited a definition suggesting as it does that "the social" refers to a particular domain of action and cognition. Does this walling off of the social from other psychological domains reflect our discipline's penchant for divvying up the psychological into separate faculties? As the earlier discussions of the social nature of the environment, as well as recognition of the commonplace character of socially guided attention and triadic interactions suggest, "the social" is a background condition for nearly all of human development.

The pervasive influence of sociocultural factors on psychological processes is becoming increasingly evident across numerous domains of psychology. Consider this brief and partial list:<sup>3</sup>

- Children develop strategies for remembering that arise out of sociocultural practices. These practices are expressed through the tasks children find themselves

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<sup>3</sup>For a more thorough examination of this topic see Reed (1996), especially chapter 9. Excellent reviews of this literature are offered by Cole (1996, 2006), Ellis (1997), and Rogoff (2003).

engaged in and the type of performance that may be valued by the local culture. To illustrate, middle-class American children outperform Mayan children in list-learning, whereas comparatively, Mayan children have a slight advantage for memory of the position of objects in a model town (Rogoff & Waddell, 1982). Rogoff (2003) proposed that both of these differences reflect rehearsal remembering strategies that the U.S. sample developed in school: rehearsal may facilitate list learning, but it impedes learning that benefits from attention to context and patterns of relationships.

- The ways in which adults classify objects into common groups have been found to vary across cultures and even across groups within the same culture. For example, experiences in schools, and with that the development of literacy, is associated with the use of abstract taxonomic categories, (e.g., objects used for very different functions can be commonly classified as tools). Individuals who have not had formal schooling experiences will often classify objects according to a common function, (e.g., a hoe and a potato being grouped together because hoes can be used for digging up of potatoes; Cole, Gay, Glick, & Sharpe, 1971; see Rogoff, 2003).

- The use of particular reasoning procedures has been tied to sociocultural practices. The classic case study in this regard is Luria's demonstration that the willingness to accept hypotheticals in syllogistic reasoning is not a universal but seems to be derived from practice with such reasoning, especially in formal educational settings (see Cole, 1996). Also, the problem-solving strategies that children are exposed to can vary cross-culturally. For example, it has been reported that American children are less likely to seek out group solutions to problems than to work as individuals. (Markus & Kitayama, 1991; see Ellis, 1997).

- Forms of mathematical reasoning can vary as a function of the practices of daily life (Lave, 1988; Lave, et al., 1984). To illustrate, Saxe (1988) reported that children with little experience in schools who sold candy on the streets of Brazil developed their own idiosyncratic calculating methods. Beach (1995) found evidence for flexible strategies of calculation in a western Nepal village after shopkeepers who had no prior schooling experience attended adult education classes. Further, mathematical reasoning can reflect the procedures and tools invented for calculation. Stigler (1984) compared the kinds of calculation errors made by Chinese and American children and found that errors made by Chinese children trained using an abacus reflected the ways that device operates.

- Nisbett and his colleagues have documented differences in the information that Westerners (Americans and Western Europeans) and Asians apparently extract from visual representations of scenes (Nisbett, 2003). Westerners were most sensitive to characteristics of focal objects and inversely, less aware of the contexts in which focal objects were located. Asians reliably demonstrated a greater sensitivity to the character of nonfocal features and to relationships in the contextual field. Some preliminary evidence suggests that cross-cultural differences in the

design of environmental layouts may partially account for these findings (Miyamoto, Nisbett, & Masuda, 2006).

- Accelerated motor skills, such as the ability to sit up independently, has been tied to social practices in particular African communities as compared to American homes (Kilbride, 1980; Super, 1976, cited in Bril & Sabatier, 1986). Moreover, caregivers vary in the ways and the frequency in which they scaffold children's early attempts at walking (see Adolph & Berger, 2006, p. 200).

Some might object that only a few of the examples just cited pertain to perceptual processes, and so they have little relevance to ecological psychology. But to make this assertion would express an exceedingly narrow view of the role that perceptual processes play in daily life—not to mention that it would also adopt an unnecessarily narrow view of ecological psychology. It would take perceiving to be a distinct faculty rather than viewing perceiving as participating in a wide range of psychological processes of an individual considered as an integrated functional being. The fact is the stamp of “the social” appears to be all over cognitive and motor functioning. And this is precisely what we should expect if selectivity in perceiving and acting emerges for each individual out of a social matrix of designed environmental features, artifacts and tools, joint attention, and guided attunement and development.

### SUMMARY: PERCEIVER-ENVIRONMENT RECIPROCITY RECONSIDERED

The picture that emerges from the preceding discussion of both the environment and the perceiver is one much more saturated with “the social” than is usually admitted. The environment for animals bears the mark of their activities. Niche construction—a very tangible indication of animal–environment reciprocity—is commonplace, and this is most especially the case for humans. The environments we live in have been transformed by human activity. To treat those environments apart from the ways human actions have transformed them is to treat “environment” in the most abstract of ways. To do so is a variation of the intellectualist fallacy whereby an entity or category—in the present case *nature*—that is an abstraction based on analysis and reflection is taken erroneously to be an elemental factor of that which is under consideration.<sup>4</sup> Perhaps a shift in terminology will be of help here. The term “environment” taken as that which surrounds may not connote sufficiently the fact that the environment simultaneously serves as a context for

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<sup>4</sup>See James (1890), chapter 7, on “the psychologist’s fallacy,” where he describes a simple sensation as a product of analyzing the flow of experience rather than being a building block of experience as commonly and unquestioningly assumed.

on-going psychological processes and to varying degrees is a product of psychological processes (Shotter, 1983). “Habitat” rather than environment may be preferable because habitat more immediately suggests the dynamic, reciprocal character of animal and environment relations.

Perception—action processes, like the environment, also need to be seen as nearly always permeated with the social. This is so in two respects. First, many perception—action skills develop in relation to particular socially constructed features of the environment. To cite two examples investigated by ecological psychologists but rarely considered in terms of their social character, take stair-climbing and ball catching. Stairs and balls are human artifacts. Stairs exploit the ease with which humans can engage in stepping, and extend action possibilities. Stair-climbing develops in relation to these constructed features, and typically adults scaffold children’s earliest attempts at stair-climbing. As for ball catching, even if one wished to argue that the ball itself is incidental—that it is the event of a projectile on a trajectory toward the perceiver that is central—still there must be *someone* who is throwing the ball (or at least someone has constructed some device for doing so).

A second reason perception—action processes are commonly infused with the social is that perceiving is an act of selection, and selectivity in perceiving stems in part from a developmental history that is a *collaboration* with other individuals, if sometimes only incidentally. The intentionality of perceiving is an historical matter, resting as it does not only on the phylogenetic history of the species but most especially for sociocultural beings such as ourselves on the social history of the culture and on the ontogenetic history of the individual.

## THE SIGNIFICANCE OF PLACES

In order to appreciate the social nature of perception-action processes even more thoroughly, let us consider a recurring feature of human environments that to date has received little attention in the Gibson-inspired ecological psychology literature, namely, *places*. Besides highlighting an overlooked environmental feature, a brief examination of place will also allow us to connect the present analysis of the social constitution of person—environment reciprocity to research practices in ecological psychology.

A defining quality of an environment is that it surrounds an individual (J. Gibson, 1979/1986, p. 43). Among other qualities, environments consist of a persisting layout of substantial surfaces that can be explored. What more can be said about this layout of surfaces? We can go beyond the surfaces per se to indicate what the various surfaces in a given locale afford. Affordances derive from an individual’s relationship to objects and to other persons. They also arise from *places*. Gibson offers the following remarks concerning the concept of a place.

The habitat of a given animal contains *places*. A place is not an object with definite boundaries but a region. ... The different places of a habitat may have different affordances. Some are places where food is usually found and others where it is not. There are places of danger, such as the brink of a cliff and the region where predators lurk. There are places of refuge from predators. Among these is the place where mate and young are, the home, which is usually a partial enclosure. (1979/1986, p. 136)

Places are notable because of their functional possibilities for an individual. They are locales where certain resources and hazards significant for an individual can be found regularly, or at least predictably; and they are locales where certain *social* possibilities for an individual regularly go on. Homes, playgrounds, restaurants, coffee bars, libraries, classrooms, courtrooms, doctors' offices, banks, post offices, car repair shops, government and business offices, flower shops, grocery stores, hardware stores—these are just a few of the places commonly found in communities. The social possibilities of any place derive primarily from the dynamic relationships among individuals in that place and from the objects and other inanimate features that support their shared actions. The possibilities that stem from social relationships and socially sanctioned actions constitute much of a place's affordances.

### **Behavior Settings**

The most thorough-going analysis of places from this vantage point is the seminal work of Roger Barker and his colleagues on *behavior settings* (Barker, 1968; Barker & Gump, 1964; Barker & Schoggen, 1973; Schoggen, 1989). The compatibility of J. Gibson's concept of affordances and Barker's concept of behavior settings has been discussed in detail previously (Heft, 2001). Among Barker's most critical insights is that the properties of any behavior setting derive from the relationship between *the dynamic, ongoing pattern of actions among individuals* and *the "milieu."* Taking up these two components separately, the first essential feature of a behavior setting is a sustained pattern of dynamic relationships among the individual participants of the setting. This pattern of actions is structured by a joint understanding among participants of the purpose of the collective activity, although depending on each person's function in the setting, understanding of its purpose can vary somewhat between individuals. By "milieu" Barker refers to all of the inanimate features present that support the intended activities. These include ground surfaces, surfaces that enclose a region, as well as tools, implements—anything necessary to or facilitating the intended purposes of the collective activity of the setting.

Behavior settings come into existence, are sustained over time, and are even transformed as a result of collective actions of their participants. They cease to exist when collective actions among their participants dissipate and come to an end. That is, behavior settings have temporal boundaries that are typically established

by their participants. They also have a geographical locus. The activities that behavior settings afford occur in particular locations. In short, behavior settings are ecological entities that can be specified by their temporal and geographical boundaries. To a great extent, these boundaries are affirmed through the collective consensus of their participants.

Apart from some solitary activities, little happens in each of our lives except as participants in behavior settings. Behavior settings make certain psychological occurrences and experiences possible beyond the affordances of individual milieu features. For example, a basketball, owing to its properties, affords dribbling for an individual; but a sufficient number of willing and adequately informed persons in a gymnasium equipped with a basketball and hoops affords a game of basketball for that individual. In short, *the affordances of a place* for an individual derive from the dynamic, joint interrelationships among the participants and milieu.

Over the course of each day, behavior settings come into existence, operate for a time, and then close down. These settings can be counted among the *psychological resources of the environment* for individuals. Some behavior settings occur on a daily basis (e.g., a neighborhood convenience store), others periodically and with less frequency (e.g., a class that I am teaching several days a week; the weekly meeting of the city council), and some behavior settings may occur only once (e.g., closing ceremony for the 2006 Winter Olympics in Turin). Individuals who enter and participate in behavior settings tend to comply with the conventions of the settings as they understand them. That is, individuals tend to operate within the bounds of comportment of a behavior setting, including awareness of the setting's boundaries. Sometimes individuals' understanding of setting's possibilities and constraints is limited to the particular roles that they each play in that place.<sup>5</sup>

Theoretically, the manner in which the dynamic structure of a behavior setting operates may be most readily understood by recognizing that its constraints and possibilities emerge from the collective actions of its participants. Thus, one way of understanding why individuals tend to comply with the practices of a place—which they do, as a rule—is that their participation in the collective process, in effect, “holds” their individual actions “in place” and within bounds. Of course, that is only possible if individuals know what is expected of them, and knowing that must come from participating in the social structures of one's habitat or learning about them secondhand. Others often play a guiding role in these ways.

A great deal of the process of socialization *throughout* the life span involves discriminating among places and while doing so learning what they afford.

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<sup>5</sup>It is rarely the case that what is permissible and what is not are codified, but in those cases, such explicit codes of conduct greatly underspecify the “rules” that are operating.

A very important kind of learning for animals and children is place-learning—learning the affordances of places and learning how to distinguish among them. (J. Gibson, 1979/1986, p. 240)

Learning the affordances of places includes learning what they provide “for good or ill” for individuals who become participants in them. Moreover, it is possible that places play a wider role in cognition than is usually recognized. For example, there is some indication that objects are sometimes classified in terms of where they can be found (Mandler, Fivush, & Resnick, 1987). The role of place in cognition has received little attention to date (see Reed, 1996a, p. 144; Rosch, 1999).

Significantly, behavior settings would only seem feasible in a species that is intensely social *and* one in which individuals can establish a degree of intersubjectivity that makes joint action possible (Tomasello, 1999; Tomasello & Rakoczy, 2003). As far as we know, the only living species capable of generating behavior settings through joint action is the sole remaining hominid on the planet, *Homo sapiens*. That is, behavior settings are a notable and distinctive manifestation of our sociocultural nature.

The concepts of behavior settings and affordances have a great deal in common (see Heft, 2001, chap. 8). Related to the fact that they are both real ecological entities that can be specified in various ways, a feature that they share is their sheer ordinariness. Both affordances and behavior settings make up much of our habitat. In fact, the great utility of affordances and behavior settings *as concepts* for psychological science is that they refer to *psychologically meaningful structures in the environment*. In this regard, it can be noted that Barker’s discovery of the existence of behavior settings resulted from studying the daily activities of individuals in a small town. When Barker offered examples of behavior settings in his writings he typically turned to the nearly endless list of mundane instances he came across in that town. Typical of behavior settings appearing in his work are a pickup baseball game, a drugstore and a barbershop during operating hours, the high school orchestra Friday evening performance, and the Wednesday afternoon bingo group at the local church. Simply put, behavior settings are staples of human habitats.

Some types of behavior settings are much less common, however, than drugstores and bingo nights. Some settings occur only under the special circumstances of several exceptional sociocultural influences converging. A case in point is the psychological research laboratory.

### **The Psychological Laboratory as a Behavior Setting**

This type of behavior setting recurs in the habitats that ecological psychologists frequent, but they are very seldom experienced by much of the population. In spite of its relative rarity and its specialized function, the psychological research laboratory has all of the same attributes as fellow but more commonplace behavior settings.

Like them, it is composed of a dynamic pattern of actions among its occupants that are supported by various inanimate features (e.g., a partial enclosure, tools, and artifacts). When researchers and “participants” *collaborate* for the purposes of data collection, they are all *co-participants* in a specific type of behavior setting. Indeed, the roles of the investigator and the participant(s) in the laboratory are only realized in the course of their mutual interaction. These roles have a relational character and only exist with the often tacit affirmation of others’ actions. This fact is easily overlooked, but experimenters are occasionally made cognizant of it by the actions of the rare uncooperative participant. Those uncommon instances serve as a healthy reminder that the psychological laboratory’s existence as a behavior setting on any particular occasion rests on *all* parties following particular shared social conventions.

It is worthwhile for the purposes of this article to reflect further on some of the ways in which these types of behavior settings are unusual. Psychological research laboratories are unique to cultures such as ours, although they do follow the general pattern of settings where an assessment is carried out (e.g., a physician’s office). Within our cultural tradition, psychological research laboratories are quite recent social arrangements, and indeed, the structure of these settings has changed within their brief span of existence. As Danziger (1990) discusses in his excellent history of psychological research, the participants in psychological laboratories were initially the investigators themselves. Investigator and participant (or “observer,” to be more accurate) alternately switched roles, a pattern that is still preserved in some psychophysical investigations. When the discipline shifted to the use of naïve participants, the dynamics of the experiment changed with it. Such participants are by definition naïve to the purposes of the research, they are minimally invested in its outcome, and they typically find themselves sequestered in an unfamiliar place with relative strangers. Although they are technically volunteers, not infrequently they are unwilling ones. Further, there is the evaluative quality of the occasion; after all this is no “ordinary” scientific laboratory but a “psychology” laboratory. There exists an extensive literature from several decades ago that details the very peculiar nature of this type of setting and the kinds of undesirable participant actions from the experimenter’s standpoint that often arise (Rosenthal & Rosnow, 1969). Research psychologists might prefer to think of the research laboratory as a neutral place, but of course, it is no such thing. *No place is neutral*. Places have psychological significance. Broadly considered, a psychological research laboratory from the participant’s point of view affords some sort of psychological assessment.

My purpose here in considering psychological laboratories as behavior settings is probably obvious given the overall thrust of this article. Even though we may not wish to acknowledge it, *research in ecological psychology necessarily has a vein of the social running through it*. When we are engaging other people as our research participants, and when they agree to comply with our research demands, *all* parties involved—cultural animals that we are—are engaged in a sociocultural practice. In

principle, it may seem that this inescapable fact may have a negligible effect on what we are assessing. But in practice, this appears to be impossible to know.<sup>6</sup>

A common approach to stripping away culture from psychological research is by employing nonhuman animals as participants. But this solution is not as simple as it might first seem. For example, after reviewing the literature comparing nonhuman primates reared in the laboratory with those living in the wild, Call and Tomasello (1996; also see Tomasello & Call, 2004) conclude that “growing up with humans who control their world totally and who interact with them in ways that other apes do not ... apes acquire a different set of social skills than their wild counterparts.” One should not assume that laboratories are psychologically neutral for any complex organism, p. 214.

In sum, *laboratory research is a social practice*. We cannot readily separate the sociocultural nature of all the setting’s participants, including experimenters, from their psychological nature because, as I tried to show earlier, our psychological nature is, in large measure, sociocultural. For this reason, even in ecological psychology research apparently not in the least social in its focus, elements of the social are present nonetheless. It may seem unlikely that the social character of the setting has any bearing on some specific perception–action process under study, but in fact, how could we ever know? At a minimum, ecological psychologists need to be cognizant of the fact that research itself is a social practice.

### CONCLUSION: BEYOND AN ASOCIOCULTURAL ECOLOGICAL PSYCHOLOGY

Among the distinctive features of ecological psychology is its rejection of dualisms. The most obvious of these rejected dualisms is that between mind and world, or perceiver and environment. Other dualisms were also rejected by James Gibson following in the pragmatist tradition of eschewing dichotomies (Dewey, 1929), among them the natural world–cultural world dualism as it has been applied to characterizations of the human environment. Ecological psychologists have extensively explored implications of rejecting mind-world dualism. By comparison, the

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<sup>6</sup>A cultural anthropologist friend of mine once challenged me to identify a case where the assessment of some perceptual process “in the bush” could be conducted independently of any cultural factors. In response, I proposed the investigation of adaptation to prism-mounted spectacles. After all, adaptation shifts would seem to be independent of culture. The anthropologist replied in turn that apart from the fact that the equipment employed (the spectacles) is a cultural artifact, the very act of assessing performance in this instance is a cultural practice. After all, why assume that the person in question would be willing to put the spectacles on, much less participate in any way? Without some shared social understanding between the investigator and the prospective participant, such an assessment could not happen. In short, although *in principle* adaptation to a prism-shift may *seem* assessable independent of culture, *in practice*, how might this be carried out?

implications for ecological psychology of abandoning the natural world–cultural world dichotomy has received minimal attention.

The features of the human econiche are not solely biological and geological in nature; they are also sociocultural. Although we can separate these different classes of features analytically, experientially they are a composite. Likewise, our relationship to places is as biological and embodied beings, as well as sociocultural beings, and this appears to have been so from the beginnings of human existence. Our environments and our development bear the mark of all of these dimensions of human life (Merleau-Ponty, 1963).

Ecological psychology as a vital approach to inquiry will continue to develop by pushing forward in the directions that have been well established, and by widening its present scope. Many of the latter efforts will not solely be accretions to the existing body of work but will compel us to double back and rethink aspects of ecological psychology's foundations as well. Beginning with his 1966 book, J. Gibson recast perception and many standard topics of psychology in evolutionary terms. That reformulation was revolutionary. Since that time, and since Gibson's last book, *The Ecological Approach to Visual Perception*, considerably more information has emerged about human evolution and human origins. That information points to dimensions of the human condition that have received little notice in ecological circles in recent decades, although I have shown the Gibson was aware of these incipient developments. Reed (1996a, 1996b), of course, made considerable strides in this direction, and he is an invaluable guide for future connections with other areas of human inquiry.

An implicit question running through this discussion has been, "What makes ecological psychology ecological?" and the foregoing can be read as a call to reflect on this question. Is it because perceiver–environment reciprocity resides at its core? Is it because of its focus on stimulus information, relationally considered, and by extension on affordances? Is it because it is a psychological approach that takes seriously a species' history as well as an individual's developmental history? It seems to me that what makes ecological psychology ecological is that it *encompasses all* of these qualities, and it *excludes none* of them. Ecological psychology has been well-served to date by looking beyond artificial disciplinary (and intradisciplinary) boundaries. And it will be so served in its ongoing efforts by looking in the direction of the emerging literature on human evolution, as well as those evolutionary accounts of mind (e.g., Donald, 1991) and those portions of the cultural anthropology literature that complement ecological psychology (e.g., Ingold, 2000).

Finally, there is much benefit to be gained by returning to some of J. Gibson's intellectual antecedents in order to broaden the scope of ecological psychology (Heft, 2001). The pragmatist tradition of Dewey, and possibly Mead, cannot help but situate ecological psychology in the wider social world; and the Gestalt tradition of Wertheimer, Kohler, Koffka, and Lewin can continue to remind us that we live individually and collectively in a world of meanings and values.

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