Lewin’s “Psychological Ecology” and the Boundary of the Psychological Domain

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Résumé : Le psychologue gestaltiste Kurt Lewin a appelé à une « écologie psychologique » qui mettrait en lumière les structures sociales servant de contexte à l’action et aux choix individuels dans la vie quotidienne. Il envisageait des structures environnementales sociales et physiques affectant l’individu à une « frontière » de l’expérience psychologique (l’« espace de vie »). Mais comment pouvons-nous conceptualiser la manière dont ces structures environnementales influencent l’expérience et l’action individuelles ? Après tout, les domaines « non psychologiques » et psychologiques sont généralement formulés dans un langage conceptuel assez différent et, dans certains cas, à des niveaux d’analyse différents. Cet article examine cette question à la lumière de deux corpus de travaux. Dans le cas de la perception, l’analyse pionnière de Fritz Heider, suivie des décennies plus tard par l’approche écologique de James Gibson, a mis en lumière l’importance d’un moyen de perception qui transmet la structure spécifique des entités environnementales. En ce qui concerne l’action au sein des structures communautaires, les recherches de Roger Barker ont révélé l’importance de la structure hiérarchique de l’environnement de la vie communautaire et la manière dont certaines structures d’ordre supérieur (cadres comportementaux) peuvent influencer et limiter les actions individuelles qui s’y trouvent. Le traitement récent de la frontière psychologique dans la littérature sur la 4E cognition est également examiné brièvement et de manière critique.

Abstract: The Gestalt psychologist Kurt Lewin called for a “psychological ecology” that would bring to light the social structures serving as the context for individual action and choice in everyday life. He envisioned social and physical environmental structures affecting the individual at a “boundary” within psychological experience (“the life space”). But how are we to conceptualize the manner in which such environmental structures influence individual experience and action? After all, the “nonpsychological” and the psychological domains are typically framed in quite different conceptual
language, and, in some cases, at different levels of analysis. This paper examines this question with respect to two bodies of work. In the case of perception, Fritz Heider’s pioneering analysis of perception, followed decades later by James Gibson’s ecological approach to perception, illuminated the significance of a *medium* for perceiving that conveys structure specific to environmental entities. As for action among community structures, Roger Barker’s research revealed the significance of the hierarchical structure of the environment of community life, and how some higher-order structures (behavior settings) can influence and constrain individual constituent actions nested within them. Recent treatment of the psychological boundary within the 4E cognition literature is also briefly and critically examined.

Kurt Lewin (1890-1947) was among the first psychologists to employ the term “ecology” in his writings; and he did so in his call for a “psychological ecology” across a series of papers published between 1943 and 1947 [Cartwright 1951, xviii]. Since the 1960’s, “ecology” and its cognates have appeared in the writings of a number of psychologists, most notably those of James Gibson [1966, 1979], Urie Bronfenbrenner [1973], and Roger Barker [1968]. Their separate efforts continue to influence scholarly work in the 21st century, although Barker’s less so than the others.

The comparative neglect of Barker’s work is unfortunate for at least two reasons that are pertinent to the focus of this paper. First, Barker’s research program is most aligned with Lewin’s initial intentions for “psychological ecology”. Second, Barker’s approach, as well as Gibson’s, offer some ways to address one of Lewin’s—and indeed, psychology’s—chief conceptual challenges: what is the nature of the *boundary* between the domain of psychological processes and conditions in the surrounding environment?

This is a challenge if we consider that psychological phenomena and environmental conditions are typically framed using quite different conceptual language. With (a) conditions of the environment are often couched in terms of physical properties or with respect to extra-individual social processes, while (b) psychological phenomena are typically referred to in experiential terms (e.g., feelings, meanings, values). Explanations as to how the former non-psychological “variables” can have an impact on the psychological domain remain elusive, even now well into the second century of the science of psychology. It is not difficult to see that this is a variation of the mind-body problem that has bedeviled psychological thought for centuries. The seemingly incommensurate character of these conceptual domains prompted

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1. “Psychological ecology” appears as chapter 8 in [Cartwright 1951]. This chapter is, in fact, a compilation of three papers as edited by Cartwright [1951, xviii].

2. One solution, of course, is to reduce psychological phenomena to neurochemical states and processes; however, in doing so, essential psychological qualities such as meanings and values are, at best, treated as epi-phenomena, and psychology ceases to be the study of organic life forms.
Lewin to reflect on the nature of the boundary between the two, and these reflections come to the forefront in his limited writings about “psychological ecology”.

1 Psychological ecology

Lewin’s writings about “psychological ecology” grew out of the fact that while the central focus of his psychology was how the environment and the self were jointly experienced by an individual, quite obviously there is a world beyond immediate experience whose properties have some impact on the individual. His call for a “psychological ecology” was intended as a needed step for understanding the everyday context of immediate psychological experience.

His writings on “psychological ecology” seem to have been prompted mostly by practical concerns; namely, an attempt to understand how prevailing habitual patterns of action are sustained by existing environmental circumstances, and how those habits might be changed in the face of shifting social exigencies. The specific practical issue motivating these writings in the 1940’s was a matter of potential wide-spread societal consequence in the US during the early years of WWII: how might it be possible to change existing patterns of eating habits among US citizens in the face of a looming prospect of food rationing? This question was of considerable interest at that time among agencies in the US government concerned with the food supply and nutritional needs nationwide [cf. Marrow 1969, 128–131].

With that issue in mind, Lewin called for a “psychological ecology”, the task of which was to describe the wider societal circumstances within which individual choices are made. This is rightly described as an “ecological” effort, with its focus on those aspects of the everyday “habitat” within which actions are carried out. And it was noteworthy, and even novel, from the standpoint of psychological practice—and continues to be so—because psychologists, who as a rule are trained in laboratory investigatory methods, tend to neglect the everyday environment within which individuals live their lives.

2 Lewin’s dynamic field theory and the “life space”

For those unfamiliar with Lewin’s approach, it will be best to consider his proposal for a “psychological ecology” by first taking up the most central concept in his framework, the life space. Lewin, as well as most psychologists of his day and ours, adopted as his primary unit of analysis
the individual.\textsuperscript{3} Even so, in Lewin’s hands, like that of other Gestalt psychologists, the person-centered focus had a phenomenological character; and distinctively for Lewin, it had a particularly expansive one that included the environment. He proposed that an individual’s actions are best understood with reference to the individual’s immediate (first-person) experience of the environment and the self—with both factors jointly constituting the “psychological field” at the present time. He offered the construct the “life space” to refer to the psychological field as immediately experienced by an individual at a particular time.

But what is noteworthy about this claim? After all, psychologists today uniformly agree that both the environment and person should be taken into account when attempting to understand action or thought. Lewin, however, goes beyond what is typically that mere platitude by insisting that what is essential is their joint relationship.\textsuperscript{4} To explain, typically when psychologists call for the inclusion of environmental considerations in any analysis, the environment and person are treated as being independent of each other. Although the two surely can interact, they are treated as being conceptually separable.\textsuperscript{4} Lewin’s position is notably different from that. He claims that how the environment is experienced is dependent on the individual’s current motivational and biological state as well as their developmental history. That is, an individual’s immediate experience of features in the environment is to be understood in relation to that individual’s “state of being” at a particular time. It is for this reason, among others, that Lewin’s approach is properly called a field theory in the same sense that the concept of a “field” was developed in relativity theory in physics.

Briefly, a field theoretical point of view recognizes that any observed or measured property of an entity or variable depends upon the frame of reference that is adopted by the individual who is assessing it. Classically, for example, a measurable physical property of an object, such as its speed, depends upon the frame of reference held or adopted by measuring observer, such as the observer’s speed [Hoffmann 1983]. Lewin applies this approach to psychological phenomena: the psychological character of an object is a function of the frame of reference held by the person under consideration.\textsuperscript{5} Consider the simple example of an individual who is hungry (the frame of reference) at a particular time while in the presence of palatable food. The food in that case is experienced positively (a phenomenological claim). In Lewin’s terms, that food would have a positive valence within the life space, with valences conceptualized as psychological vectors in a dynamic

\textsuperscript{3} This choice might seem necessarily the case by definition because, after all, isn’t the unit of analysis for psychological inquiry “the individual”? However, early functionalist and some behaviorist approaches insist that the proper unit of analysis is the organism and its context, variously defined [e.g., Gibson 1979].

\textsuperscript{4} This is illustrated by the standard factorial experimental design.

\textsuperscript{5} It is surely no coincidence that the Berlin Gestalt psychologists, Wertheimer, Köhler, Koffka, and Lewin, were acquaintances of Einstein early in their career.
psychological field of forces. Accordingly, the person in a hungry state would be psychically (and perhaps motorically) “drawn” toward the food, and barring obstacles, will engage it.

However, if the individual were sated, that same food may now be experienced as having a neutral quality (valence) from a psychological standpoint. What has changed, in that case, is the frame of reference of the individual, from hungry to sated. Still, that example doesn’t simply mean that it is the state of the individual that determines how the food is experienced. If the individual is hungry and yet the food source is perceived as unpalatable, it could be experienced as repellant (having a negative valence), as something to be avoided. These examples may be straightforward in everyday terms, but couching them as vectors in a dynamic psychological field (the life space) is not. The reaction to some food at a particular time is jointly established by the state of the person and the character of the food. Lewin summarizes this general claim with his well-known heuristic, $B(f)PE$ (where $B =$ behavior, $P =$ person, $E =$ Environment).

More interesting from a psychological standpoint are those cases when a hungry individual is in the presence of a type of food that they consider to be prohibited, e.g., owing to religious practices, but otherwise is perceptually palatable. Or consider those cases when a potential food is available that falls outside the range of what is customary for an individual based on earlier eating practices. These two examples show how the developmental history of the individual can play a role in “immediate experience”. Indeed, these examples illustrate more clearly than those above as to why a particular food may be experienced as either attractive or a repellant in “life space” at a particular time as a function of the environment and the self considered jointly, but not as independent factors. These examples show that from a psychological standpoint, food type A does not have a fixed valence for an individual, anymore than the speed of a moving object is a fixed property of the object independent of the frame of reference of the observer.

Although in an experimental vein, a feature of the environment often is treated as being independent of the person (e.g., a participant in the experiment) in the sense that it can be systematically varied by the experimenter, its experienced (psychological) character from the point of view of the participant in an experiment is jointly realized by properties of that feature and the current state of the participant. As Helson [1964] showed convincingly through extensive psychophysical research, judgements of even the most basic physical parameters of a stimulus variable (e.g., intensity, weight) is established relative to an individual’s prior history of exposure to that variable. Consider, for example, being asked to judge the brightness of a light. A light of a fixed level of intensity is easily shown to be judged as either dim or bright following prolonged exposure to a high level of illumination or a low level of illumination, respectively. Prior experience establishes a frame of reference or “adaptation-
level”. The effects of adaptation-levels are extraordinarily robust across all manner of dimensionalized environmental factors.\(^6\)

The implications of these examples from Lewin and these findings by Helson challenge a long-standing assumption in philosophy and psychology—namely the assumption of essentialism. Essentialism is the position that there is an essence or inner core that makes some “thing” the kind of thing that it is. A field theoretical point of view holds that properties ascribed to some “thing” need to be understood in relation to the frame of reference of the observer.

3 The boundary zone of the life space

It is when we turn our attention to non-psychological factors of the environment—that is, those not immediately experienced by the individual—that Lewin’s proposal for “psychological ecology” comes into focus. He explains that this proposal should be seen with respect to “three areas in which changes are or might be of interest to psychology” (emphasis added; all of the quoted passages below appear in [Lewin 1943a, 57]. These areas are (1) the life space at a particular time, which is “the person and the psychological environment as it exists for him”; (2) “a multitude of processes in the physical or social world, which do not affect the life space of the individual at that time”—what Lewin calls “non-psychological factors”; and (3) “a ‘boundary zone’ of the life space: certain parts of the physical and social world do affect the state of the life space at that time”. Lewin emphasizes that “the boundary conditions of a field are essential characteristics of [the psychological] field.” Notably, Lewin locates in the boundary zone perceptual processes and the execution of actions. In Lewin’s framework, then, access to non-psychological conditions (perception) and engagement with them transpire in the boundary region (also, see, [Henle 1986], [Lewin 1936, 68–75]).

With reference then to these areas just identified, what is the task of “psychological ecology”? “Psychological ecology” involves “discovering what part of the physical or social world [beyond the life space] will determine during a given period the ‘boundary zone’ of the life space” [Lewin 1943a, 59]. He clarifies the character of the boundary zone in the case of perceiving: it partly depends on “the state of the inner part of the psychological field; i.e., upon the character of the person, his motivation, his cognitive structure, his way of perceiving, etc., and partly on the ‘stimulus distribution’ on the retina or other receptors as enforced by physical processes outside of the organism” [1943a, 57]. In other words, the boundary zone of the life space is constituted by both non-psychological and psychological factors.

Taken in very general terms, recognition of a boundary zone between non-psychological processes and psychological processes (i.e., immediate ex-

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6. For an excellent applied example of the operation of adaptation-level, [see Wohlwill & Kohn 1973].
Lewin’s “Psychological Ecology” 195

experience), and yet considered part of the field of experience, appears to be a useful conceptual proposal because that is where environmental conditions and psychological processes come together in some fashion. Recognizing a boundary zone should compel the investigator to describe the enveloping circumstances present at the boundaries of experience at a particular time (but see comments on 4E cognition below).

Although this “ecological” step—describing the human “habitat” within which everyday actions are carried out—is an important one, it remains rather skimpy on details. As long as the “processes in the physical or social world”, on the one hand, and the life space, on the other, are envisioned as operating in different conceptual domains, when they “come together” in the boundary region how are we to conceptualize the nature of this interface? That is, in what ways can environment beyond the life space have an impact on the life space? It is here where Lewin’s proposals fall short; and it is this question that is the primary focus of the remainder of the paper.

4 Bridging the conceptual gap between the non-psychological and the psychological domains

The existence of a conceptual gap between the environment (as variously conceptualized by the physical and social sciences) and psychological experience is a recurring feature in much of Gestalt psychology, as it is for psychology at large. Indeed, the assumption of a dichotomy between a physical world and a mental domain is rooted in much of Enlightenment philosophy and science from Galileo and Descartes on. For the sake of clarification, it might be helpful to offer an example of this conceptual gap as it is famously described in the Gestalt literature. Koffka [1935] illustrated this disjunction between a physical world and a mental domain by way of the folktale whereby a rider travels to an inn on horseback, only to die of shock upon reaching his destination when he realizes after the fact that he had unknowingly ridden across the frozen Lake of Constance [see, Koffka 1935, 27–29]. In that folktale, there is the “geographical environment”, whose physical (nonpsychological) properties are outside of immediate experience (i.e., a deep body of water), and the “behavioral environment”, that is experienced by an individual (i.e., ground surface). Lewin expanded this distinction between the nonpsychological domain and the psychological domain by including among the former institutional and societal processes.

Limiting our attention here to Gestalt psychology, the physical and the psychological domains are typically treated by Wertheimer, Köhler, Koffka, et al. as operating in parallel, with the relationship between them described as a psychophysical isomorphism between structure in the environment, on
the one hand, and structure within a dynamic field of brain processes, on the other. The latter then gives rise to first-person, psychological experience [Köhler 1940]. This account preserves the conceptual gap between the physical and the psychological, while introducing yet a third conceptual domain of underlying (reductive) neurological processes.

From a theoretical standpoint, however, this conceptual gap between the environment as such and psychological experience of it, even if we add intervening processes in the brain, gives rise to several seemingly intractable epistemological problems. One of these problems is a perceptual one: stated somewhat loosely, how do “things out there” beyond the boundary of immediate experience have an effect on the individual domain of first-person experience and awareness? The difficulties that this question presents can be clarified by contrasting visual and tactile perception. In the latter, we can begin by considering the direct contact of the receptors, e.g., in the hand with the surfaces of a palpated object. But how are we even to begin to understand the visual perception of an object at a distance? For example, how is it possible to perceive that the chair across the room, much less than to perceive that it affords a place to sit? In broad terms, this question is analogous to the “action at a distance” problem in physics: how can entity A at some distance from entity B have a gravitational effect on B? This question has been the subject of speculation and analysis for centuries [see, Heft 2022]. Likewise, in the case of action relative to social processes, how do these latter processes rooted in the non-psychological domain (i.e., beyond immediate experience), operate to influence an individual’s choice of action? We will take up the perceptual question, albeit briefly, and then focus on the action question in more detail.

5  Thing and medium: The perceptual problem

A promising, if preliminary step in attempting to address the “perception at a distance” problem was offered by Fritz Heider (1896-1988), who was trained in the Austrian Gestalt tradition [see, Smith 1994]. Heider’s [1926, reprinted in 1959] insightful conceptual move was to reject the seemingly tacit assumption among perception theorists that the “space” between a distant object and the perceiver is merely a void. Instead, Heider proposed that air, owing to its relative density, could serve as a medium for carrying structure in the light from the object to the perceiver. The Gestalt emphasis on “stimulus” structure rather than discrete stimuli was retained in Heider’s proposal, and so was the notion of a “field” that was brought to theoretical prominence in relativity theory. But whereas the Berlin Gestalt psychologists mostly limited the idea of a field to that of brain dynamics, and Lewin employed it in his analysis of the life space, Heider employed a field theoretical conception to describe “what surrounds” the individual perceiver.
Lewin’s “Psychological Ecology”

This point seemed obvious to Heider when it comes to auditory perception, as waves of compression and rarefaction initiated by a vibrating object fill the adjacent medium (the air). Might not the same type of analysis be applied to visual perception? Heider proposed how this might be so; and decades later Gibson [1966], who was aware of Heider’s analysis, offered a richer alternative to Heider’s proposal with his analysis of “ecological optics” [Heft 2001]. Further details of these proposals need not concern us here; but what is most important for our discussion is the introduction of the idea of a medium. The medium, by virtue of the structure it can carry and hence make available to an individual perceiver at the boundary of the body, bridges the conceptual gap between the non-psychological and the psychological domains as specified by Lewin.

6 Nested ecological structures: The action problem

How might processes in the non-psychological domain initiate possibilities or constrain behavioral choice at the boundary of the individual and the environment? This question returns us to Lewin’s discussion of psychological ecology. How can conditions beyond immediate experience (i.e., non-psychological factors) affect individual action and choice at the boundary region of the life space? Although Lewin did not offer us any suggestions in this regard, Roger Barker [1968], who early in his career had been one of Lewin’s post-doctoral students, eventually did. Although his work was well-known in the 1960’s, Barker’s contributions are relatively unfamiliar to contemporary psychologists and philosophers. As we will see, Barker’s work points to the environment’s nested structure, which offers another way we might address the problem of bridging the conceptual gap between the nonpsychological and psychological domains.

After a successful early career as a laboratory-based experimental psychologist [e.g., Barker, Dembo, & Lewin 1941], Barker grew dissatisfied with psychology’s preferred methods. He realized that the domination of laboratory experimentation in the field had the result of deflecting attention away from the circumstances within which individuals live their everyday lives. As a consequence, Barker [1968] lamented that “psychologists knew little more than laymen about the distribution of their basic phenomena [in everyday environments]: of punishment, of hostility, of friendliness, of social pressure, of reward, of fear, of frustration” [Barker 1968, 2]. For this reason, Barker led an effort to establish a psychological field research station in a small US town in

7. He received the American Psychological Association Award for Distinguished Scientific Contributions in 1963. Gibson received this award in 1961, and Heider did in 1965.
order to discover “how the relevant [environmental] conditions are distributed among men” [Barker 1968, 3]. This effort bears much resemblance to the task of “psychological ecology” that Barker’s mentor Lewin had envisioned.

7 The discovery of “behavior settings”

With the research station as their base, Barker and his colleagues collected extensive and detailed records of children’s actions by observing their behavior in the everyday settings of their community [see, Barker & Wright 1955]. It was clear to the researchers, as it would be even from any informal observation, that such actions are not random, but rather that they are organized in some fashion. For example, children behave differently when they are in a classroom as compared to when they are playing some organized activity, such as a volleyball game. But what accounts for such different patterns of action across regions in the town?

Because Barker’s research was initiated during a time when S-R theories dominated psychological thinking (i.e., 1940’s & 1950’s), he examined his data to determine if these differences in action across dissimilar places even by the same child could be accounted for by some immediately antecedent “causal” occurrences. Those could include actions, verbal or otherwise, by other individuals in those settings. Was it antecedent “promptings” by others, or implied consequences for complying (rewards) or not (punishment) with a request, that caused a child to act in ways that were appropriate to a given place? If so, then the antecedent actions of others (environmental events) could serve as reliable predictors of what a child was doing at a particular time.

Barker’s data revealed that, by and large, this was not the case. Antecedent actions by others (“social inputs”) were relatively unreliable predictors of what a child was doing at a particular time. Barker reported feeling quite discouraged at this point in his investigations of children in their communities because on the face of things there was considerable regularity and order—children seemed, for the most part, to behave in ways that were appropriate to the places where they were—and yet, the source of this regularity in the environment was not apparent.

If the regularity and order in actions observed in community settings could not be explained by antecedent environmental occurrences, perhaps then the “controlling” factors reside “in” the person. This is the typical logic applied in most of psychology, particularly following the “cognitive revolution” beginning in the 1960’s. With this shift in perspective, these place-specific regularities in individual behavior could be attributed to executive control by “within-person” mental representations, commonly called “scripts” [Schank & Abelson
Lewin’s “Psychological Ecology”

Scripts were posited to be the basis for “procedural knowledge” stored in memory that prescribes, in an algorithmic fashion, what one should do in a step-wise fashion when in a particular setting. But such a hypothesis leaves much to be desired. Among its shortcomings, is its failure to handle the “degrees of freedom” issue: Individuals do not appear to follow a rigid sequence of actions in a setting as an algorithm would prescribe, but instead there is considerable variation (degrees of freedom), and even some improvisation, albeit within the constraints of the setting. A high degree of variability and improvisation defy explanation based on algorithms [Suchman 1987].

Even so, before the construct of cognitive scripts as a person-centered variable was developed, Barker & Wright [1955] had already shown that person-centered variables are inadequate for explaining the apparent order in the activities of children in the community settings that they studied. They found, to paraphrase them, that the actions of the same individual child considered across different settings in the community had greater variability than the actions of different children in the same setting. If person-centered factors play the determining role in directing the actions of an individual, one should expect to find less variability among the actions of an individual child across settings in comparison to the actions of different children in any single setting owing to individual (person-centered) differences among children. But this was not the case.

Reflecting on findings such as these, Barker realized that a person-centered approach, which of course is even what Lewin also had adopted with “the life space”, was not adequate. Barker recognized that he needed to adopt a level of analysis that encompasses the setting as a whole. That is, he needed to adopt a higher-order unit of analyses rather than one operating at the level of the individual. When he did so, he found that the best predictor of an individual child’s actions at a particular time was not “who” they were (person-centered variables), but “where” they were at a particular time—and not simply in a geographical sense, but with regard to their participation in some on-going social activity.

Reflecting on his data, Barker proposed the commonplace occurrence in communities of higher-order, extra-individual, dynamic structures that he called “behavior settings”. Behavior settings are eco-behavioral structures that stem from interdependent patterns of collective action among their participants with the support of affordances. Participants and supporting affordances are nested within the higher-order structure of a behavior setting that they give rise to; and the behavior setting itself operates over a particular

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8. Note, however, while this turn to mental representations may appear to resemble Lewin’s appeal to the life space, it is no such thing. The life space refers to what is experienced by the individual at a particular time, and scripts as such are not experienced. They are posited as being mental representations that control action.

9. Algorithmic is the appropriate term here because the goal in that work was to develop computer models of “procedural knowledge” presumed to be stored in memory.
time period and at a particular location. Examples include neighborhood grocery stores; class meetings (e.g., Monday, 10 a.m. French lessons); church and temple worship services; the workings of administrative offices in the town hall; community football matches; meetings of the book club; restaurants during hours of operation; the community library; and so on.

Behavior settings are rarely dependent on specific individuals being present, but instead that the participants who are present carry out requisite actions and, critically, establish particular functional relationships with one another. For example, an instance of a community football match does not necessarily depend on certain individuals participating, but instead that a sufficient number, whoever they are, conduct themselves in ways that give rise to the match. In that respect, behavior settings are extra-individual dynamic structures, or in Lewin’s terminology, they are non-psychological structures (i.e., they are not defined with reference to a single person’s awareness). In their operation as higher-order dynamic structures, behavior settings function, in effect, to exert “top-down influence” at the level of individual action. That is, they generate effects that cross the boundary between non-psychological and psychological domains.

8 Behavior settings as emergent, higher-order structures within a nested order

From a biological systems point of view [see, Weiss 1973], the natural world is usefully conceptualized as a nested hierarchy of units of varying spatial/temporal extents. The relations among the comparatively “smaller” units give rise (“bottom-up”) to higher-order structures, while reciprocally, the operations of those constituent “lower-order” units are partially constrained (“top-down”) in the course of their generating the higher-order units, see, [Pattee 1973], [Wimsatt 2007, chap. 9]. Both Gibson and Barker explicitly recognized this hierarchical structure in the natural order, whereas for Lewin it was at best implicit in his thinking.

Gibson [1979] described this nested order with respect to size in the following way:

There are forms within forms both up and down the scale of size. Units are nested within larger units. Things are components of other things. [Gibson 1979, 9]

While a hierarchy suggests rigid distinctions between levels, Gibson critically points out:

They would constitute a hierarchy except that this hierarchy is not categorical but full of transitions and overlaps. [Gibson 1979, 9, emphasis added]
It is these transitions and overlaps that is of particular interest here in our consideration of the boundary region between extra-individual (nonpsychological) factors and immediate individual experience (the life space). The actions of individuals are nested within the higher-order, extra-individual, dynamic structures that are behavior settings, which reciprocally, they have collectively generated with the support of affordances.

Let’s take a closer look at the nature of a behavior setting by way of a hypothetical example present in many communities: a store selling groceries and other commodities for the home. In broad outline, such a behavior setting comes into existence when a variety of goods are made available for sale by its manager, when its hours are established, and when there are sufficient workers present to carry out the necessary tasks to support its operation. Particular affordances (e.g., shelving, tables, counters) support actions; and a built structure may enclose the store. The number of workers that are needed will vary depending on a variety of factors, such as the scale of the store, the number of different services available, the typical number of customers within a period of time, etc.

Importantly, there is a normative character of the actions exhibited by the participants (both workers and customers) in a behavior setting. Let us consider only the customers here. What must a customer do in order to shop and to make a purchase? He moves in a quiet manner through the store, selects desired items, and eventually proceeds to a point of purchase where some form of payment is offered. Just as important, if not more so, is what the customer should not do. The customer should not run through the store, shout, throw the goods around, bump into other customers, exit the store without payment, etc. Indeed, the normative constraints on action are probably more numerous than normatively permissible ones.

Even with this rough sketch of the operational character of this example of a behavior setting, we can generalize from it in order to make sense of Barker’s findings that the behavior of different children in the same setting are less variable than the behavior of an individual child as she moves from setting to setting in the community. As a child enters a setting as a participant, she adheres broadly to its normative patterns of action owing to a prior history of situated learning, including both those actions that are publicly acceptable and those socially prohibited.¹⁰

To predict the actions of an individual based on knowing “where” she is in the community at a particular time would take the form of a predicting a range of possible actions rather than a micro-level prediction as to what a specific individual is doing at particular times. Thus, although one cannot predict precisely what a child in a store is doing at a particular time, one can enumerate

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¹⁰. Discussion of how those normative patterns may be acquired in the first place is beyond the bounds of this paper, see [Heft 2019], [Lave 2019], [Rogoff 2003].
likely possibilities, while also ruling out with considerable confidence a host of other possibilities.\textsuperscript{11}

I will refrain from enumerating all of the features of a behavior setting as Barker [1968, chap. 3] detailed them, but several features are worth noting for present purposes. First, in terms of standard scientific criteria, a behavior setting is an objective structure or feature of the environment. It is not dependent on any single person's experience of it. Based on Lewin's criteria, then it is a non-psychological structure. It is publicly observable and even measurable in various ways.

Second, behavior settings are dynamical systems in the sense that their components are interdependent, as made evident by the fact that the actions of any individual typically affect the actions of others in the setting. Returning to the above example, if the worker who is responsible for carrying out the transactions at the register is called to another location in the store to help a customer, a different worker will usually fill in at the transaction point. Or if a worker calls in sick on a given day, then each of the other workers may need to take on more responsibilities than usual. These indications of interdependence reflect a collective effort to sustain the operational integrity of the setting as a whole. In fact, interdependencies are the defining quality of a behavior setting. Notably, these examples indicate that the individuals have at least a partial understanding of the overall operations of this higher-order, extra-individual (non-psychological) unit. This point is relevant to considerations below.

Third, there is typically an optimal number of participants needed for the setting to operate well. In the case of the neighborhood grocery store, there is likely to be an optimal number of workers needed for the store to operate effectively. Barker refers to the numbers needed for the proper operation of the setting as its "optimal level of staffing". Sometimes a behavior setting may be understaffed for a period of time, and in those instances, an individual worker may be expected to take on more tasks beyond what is normally the case. That is, because of the demands of the setting as collectively understood, the individual may be pressed into more roles than is typically the case in the interest of preserving the functional integrity of the behavior setting.\textsuperscript{12}

\begin{footnotesize}
\begin{itemize}
\item [\textsuperscript{11}] Still, this degree of prediction is consistent with what we find in quantum physics: one cannot predict the position of particle at a particular time with certainty but only probabilistically.
\item [\textsuperscript{12}] We set aside the matter of over-staffing here.
\end{itemize}
\end{footnotesize}
9 Higher-order processes and individual action: Some “top-down” influences

This discussion of behavior settings points to three ways in which higher-order conditions within a nested hierarchy of social processes can affect individual action and experience.

First, an individual’s actions are constrained as a matter of course when entering a behavior setting as a participant. Owing to a prior history of situated learning, individuals are “knowledgeable” as to which actions are appropriate within a particular type of setting and which are “ruled out”. For this reason, when an individual participates in a behavior setting, a particular set of actions are “coerced”, to use Barker’s terminology, or rendered more likely. That is, “demands” stemming from the requisite operations of the setting as a whole, and understood collectively, affect the action choices of an individual as a participant in the setting.

Second, when the staffing level of a behavior setting is less than optimal (an extra-individual criterion), individuals in the setting will typically be “drawn” to take on more tasks than usual—owing to the interdependencies operating—in order to sustain the functioning of the setting.

Third, when the staffing level of a behavior setting is less than optimal, individuals not currently participating in its operations may be recruited to take part in them.

We have already provided some evidence for the first point; namely, that the best predictor of what a child is doing is knowing “where” they are at a particular time. As for the second possibility, Barker & Gump [1964] provide substantial evidence for it in their study of high school students’ participation in extra-curricular activities (e.g., teams, clubs, theatre and musical groups). They compared students in high schools with comparatively small student populations to those that had large student populations. The small schools tended to have more understaffed extra-curricular settings because there were comparatively fewer students overall to filled needed roles. The researchers found a higher percentage of students in the smaller schools participated in such settings, as well as more often held positions of responsibility in those settings than students in large high schools. Likewise, students in smaller schools described themselves as feeling “greater functional importance” within settings in which they were participants, as well as feeling greater responsibility and as having a stronger “functional identity” (i.e., the setting became part of their self-identity) as compared to their counterparts in large schools. They also reported experiencing twice as many pressures to participate in the settings, more satisfaction as participants in settings, and conversely, “greater insecurity”—the latter probably as a result of the responsibility they felt to their school mates. In other words, the conditions of staffing—an extra-
individual matter—had discernable consequences at the level of individual experience both with respect to action and affect.

Finally, as for recruiting individuals to participate, their data showed that a considerably higher percentage of students in the large high schools reported not having participated in any extra-curricular settings as compared to small schools where the percentage of non-participants were negligible. There are certainly many possible explanations for this finding, but one that comes up in their study is that students in the large schools who otherwise would not have chosen to participate were pressed into doing so for the sake of sustaining the operations of a behavior setting.

Along these same lines, Barker [1968] also provided an overview of a variety of studies that compared individuals who were involved in small institutional settings (e.g., workplaces) which were likely to have under-staffed settings to those in large institutions. Among these results were that individuals in small institutions were absent less often, quit their roles less often, demonstrated more leadership, and found their participation more meaningful than their counterparts [see, Barker 1968, 200–201]. Likewise, Barker’s student Wicker found that members of comparatively small churches attended more regularly and donated more money as compared to those who belonged to larger churches. These findings support those from the high school comparisons to show that extra-individual considerations operating at the level of the settings and institutions affect processes at the level of individual action and experience.

With his focus on social settings in everyday community life, Barker has shown some of the ways in which circumstances rooted in extra-individual processes have an impact on individual action and experience. Most critically, they—in combination with the previous discussion of the medium for perceiving—offer some ways to conceptualize how extra-individual structures can engage perceiving and action at the boundary between psychological functioning and environing conditions.

10 Conclusion

Lewin’s proposal for a “psychological ecology” importantly called on psychologists to broaden the scope of their work in order to take into account everyday contexts for individual experience and action. In doing so, he recognized the need to consider how social and environmental structures can affect the individual at the boundary of the “life space”. However, his analysis of nonpsychological and psychological processes, as well as his locating perceiving and action in the boundary region, failed to relinquish the kind of dualistic gap between the environment and the person that has long vexed psychological theory and philosophy of mind. How can we begin to close that
gap conceptually? In order to do so, we must reconsider the nature of processes at the putative boundary of individual experience.

Heider and Gibson with respect to perception, on the one hand, and Barker with respect to action in social settings, on the other, took a similar conceptual step for addressing these issues: namely, *to adopt a level of analysis appropriate to the phenomenon to be addressed*, and in doing so, to reconceptualize “boundary conditions”. As for the former, both Heider and Gibson framed perceiving as a process of, respectively, receiving or detecting *structure*—rather than the imposition of stimuli on receptors producing discrete sensations (see coda below)—with that structure being carried by a *medium*. With respect to action in social settings, Barker discovered that the most reliable predictors of an individual’s action in public settings are the higher-order, extra-individual structures whose “top-down” influences affect individuals’ actions nested as constituents of those structures.

Gibson and Barker, in particular, came to embrace the view that the most appropriate unit of analysis for psychological inquiry is the *dynamic organism-environment relation*, rather than the individual organism. In this respect, although Lewin’s field theoretical approach is exceptionally noteworthy—even pioneering—for having given far greater attention to the place of the environment in psychology than his contemporaries had, it took the next wave of ecologically-minded psychologists—Gibson, Barker, as well as Bronfenbrenner—to loosen the grip of a person-centered approach to psychological inquiry.

11 Coda: The boundary in 4E cognition

Since Lewin’s writings about psychological ecology and the boundary region of the life space, there has been relatively little attention in psychology to the question of a boundary between immediate experience and the environment. In part, this is due to psychology’s long-standing focus on person-centered processes.13

There are two exceptions, however. Given existing page length constraints, I can only touch on them fleetingly.

1. One arises in conjunction with the observation offered by several commentators (most markedly, [Merleau-Ponty 1962] that in the process of tool use, the body boundary is experienced as extending beyond the skin to the surface of the object being engaged with it. For example,
when using, e.g., a hammer, or probe, the environment is experienced at the end of the tool rather than where the hand grasps the tool. Such commonplace experiences have led to the view that the boundary of “the self” does not correspond with a material body boundary. This phenomenon has motivated proposals in recent decades that cognition extends beyond the body and into the surround. Especially noteworthy is [Hutchins 1995].

2. This line of thinking has coalesced somewhat recently into a loose domain of inquiry referred to by some as “4E cognition”, that reconceptualizes cognition as being extended, embedded, and embodied, as well as enactive [see, Newen, De Bruin, & Gallagher 2018]. I separate “enactive” from the others in this list because enaction approaches to cognition have their own distinctive, and comparatively recent theoretical lineage, e.g., [Maturana & Varela 1987], [Varela, Thompson, & Rosch 1991].

Whereas Gibsonian ecological psychology, e.g., [Gibson 1979], [Turvey 2019], has for decades embraced the claims that psychological processes are embodied (i.e., perceiving is a perception-action process, and perceived affordances are specified relative to bodily agency); that they are embedded/situated; and that perceptual experience is commonly extended, several tenets of enaction theory are arguably inconsistent with Gibsonian ecological psychology [see, Heft 2020]. One of the features of enaction theory that runs counter to Gibsonian ecology psychology, in my view, is that the former proposes a boundary that encloses a system of intra-organismic processes, thus in effect, preserving the conceptual gap between the environment ecologically considered and the individual organism.

Briefly, an enactive approach takes as its “root metaphor” the property of autopoiesis, which aptly characterizes the basic functions of living systems. Autopoietic systems are self-organizing due to the interdependencies among its components; and in turn, exhibit functional autonomy by maintaining a boundary that both encloses the system relative to “external” conditions and is selectively open to them. Being selectively open is essential because in order for the integrity of the system to be preserved, a flow of “resources” beyond its boundary is necessary for sustaining system processes to counter entropic tendencies toward disorder [see, e.g., Lamb & Chemero 2018]. A challenge is how to conceptualize these dual operations at the boundary. With the biological cell as the model for autopoiesis, processes that account for the semi-permeability of the cell membrane have been well worked out by biologists. But what can be said about the boundary of a psychological system? It is on this point (and a few others) where enactivists and ecological psychologists part company.

Psychological processes from an enactivist perspective seem to be rather insular, insufficiently open to environing circumstances. At the heart of this objection is the manner in which perceiving is conceptualized. According to
an influential enactivist account [e.g., Di Paolo, Buhrmann, & Barandiaran 2017], perception is assumed to be a *sensation-based* process, that then relies on a prior history of sensory-motor correspondences to overcome the inherent limitations of sensations. These sensorimotor correspondences are claimed to “enact or bring forth” an environment within the system. The resulting “sensorimotor environment” stems from “a relation between sensors and motors” and is “not to be confused with the environment for the agent” [Di Paolo, Buhrmann, & Barandiaran 2017, 53]. And yet this enactivist account critically omits any consideration of the surrounding environment from a psychological standpoint. Arguably, what results, as a consequence is a system that is largely “trapped” within its own boundaries. While this account is partially consistent with the autopoietic claim that living systems generate a boundary, it appears to fall short with regard to the accompanying claim as to the boundary’s selective openness to the surround [see, the discussion in Heft 2020].

From the perspective an ecological approach to perception—and also Lewin’s call for a psychological ecology—the environment is already structured owing to its own history, which includes the role of organisms that contribute to its character; and the development of species and organisms across different time scales and via different processes (e.g., natural selection, ontogenetic dynamics) *reciprocally* takes shape in relation to that changing environment. Enactivist approaches overlook both the concept of a medium that makes perceivable structure (not sensations) available to the individual, as well as the significance of the nested hierarchy of environmental structure for organismic functioning and development.

Paradoxically, by basing its account of perceiving on sensations (rather than on “molar” structure available in the medium for perceiving), that in turn must be amplified or enriched by sensory-motor correspondences *within the system’s boundaries*, enactivist theory appears to undercut an account of embedded and extended cognition. However, psychological systems do not stop at that putative boundary of a “sensorimotor system”, but encompass the *coupled features* of an extended organism and the environment unit of analysis.

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