

The mutual elimination of dualism in Vygotsky and Gibson*

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Editors' introduction

The last two chapters have been about the ecological approach to the 'higher thought processes'. Reed makes it clear that although Gibson's theory does not appeal to internal cognitive processes to explain perception, it certainly does not neglect cognition. Meaning is perceived directly in an act that includes perception and cognition as inseparable parts. In addition, representational systems make possible the indirect knowledge of the world conveyed in the processes of human communication. William Noble argues that Gibson's theory needs supplementation by a more adequate account of the role of language. In the present chapter we try to extend ecological theory in these directions by incorporating the work of Vygotsky.

Gibson recognized that it was in relation to the 'social' that his theory needed to be developed. He emphasized the importance of the social in his chapter on affordances (Gibson, 1979), and it was an issue that concerned him throughout his career (see Reed, 1988). But it is a preoccupation that appears in his notebooks rather than in publications, and there is no fully worked out theory of the relationship between individual knowledge and its social origins in development and through the mediation of representational systems. To develop the theory in this direction requires more than supplementation. The problem of the 'social' cannot be addressed while leaving the rest unchanged. Knowledge is social through and through, as Bartlett seems to recognize in his early work (see Chapter 4). In our interpretation of Vygotsky's theory, intellectual development is a social matter from the beginning of an infant's life, and 'the higher mental functions constitutive of human consciousness are . . . embodied in the child's community' (Bakhurst,

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1990, p. 209). Thus knowledge remains social even when it becomes 'internalized'. This is the basis of our proposed extension to ecological theory, though we are aware that the proper interpretation of Vygotsky is still a matter of lively debate (see Bakhurst, 1990; Brushlinskii, 1979; and the references cited at the end of the following chapter).

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When William James wrote his *Principles of Psychology* over a hundred years ago, he unwittingly traced the subsequent history of psychology. He started off by accepting the language of mind–body dualism, because it was convenient and widely understood, and then spent a thousand pages trying to escape from it. If he seems to have been unsuccessful, perhaps it was because his gift for memorable phrases was most evident in his dualist moods – the famous 'blooming, buzzing confusion' experienced by the infant, for instance, has imposed on his successors a very dualist way of thinking about mental development. J.J. Gibson and Vygotsky are a part of this history of the struggle against dualism, but neither quite broke free. In this chapter we argue that together they, or their successors, have the means to succeed.

The ultimate aim is to rid psychological language of dualism. Nowadays mind–body dualism does not go as far as Descartes, who believed that there were two distinct substances, material and mental, which he defined in terms of their essential properties – extension and thinking respectively. All that is necessary for the modern version, cognitivism, is that the language of the mental is independent from that used to refer to the material world, and this does not entail two substances. This subtle linguistic dualism provides a justification for the study of mental structures in the laboratory, abstracted from their normal settings (Fodor, 1980). But the advantages of such dualism, if any exist, are far outweighed by the need to develop a psychology within a biological

framework. This framework is not the biology of neo-Darwinism or physiological mechanisms, but an evolutionary biology which recognizes that organisms and environments evolve together. The psychological language appropriate to this biology (sometimes called 'mutualism' – Still and Costall, 1987) will incorporate in its terms their inherent interdependence.

We are motivated in this chapter by two beliefs. The first is that Cartesian dualism, especially in its modern, linguistic version, takes on many disguises, and can appear where we least expect it. And other dualisms (e.g. between sensation and perception, or organism and environment) are linked, logically and historically, to mind–body dualism.

The second belief is that although there are plenty of anti-dualist psychologies, few are radical enough to pose a serious threat to dualism. An exception is J.J. Gibson's ecological psychology, because it undermines dualist psychology at its point of origin in the traditional scheme for thinking about perception; it replaces Descartes' passive and bodiless observer (Descartes, 1985; originally published 1637) with an active creature, busily picking up information in the furtherance of its projects. From this ecological viewpoint, Cartesian perception is a kind of frozen cross-section of activity. For some purposes it may be useful to examine such cross-sections in the laboratory, by forcing the observer to suspend normal activities and report on what is seen or heard under controlled conditions. But this should not be taken as typical of the everyday interchange between an organism and its environment. This is because, according to Gibson, the structured ambient arrays contain a wealth of information that specifies their sources. This information is picked up by a suitably equipped animal in the course of its everyday activities, but is not available to a static observer. Since the information *specifies* its sources, there is no need to suppose cognitive mechanisms acting upon the sparse physical inputs available to the Cartesian observer – no need, therefore, to suppose internal representations to account for our experience and our activities.

But what about thinking? The claim has been made in a recent paper that 'the ecological approach cannot, by *definition*, offer a solution to the problem of what have traditionally been called the "higher thought processes"' (Sinha, 1984, p. 349). This is a common, and seemingly reasonable, complaint against Gibson. After all, he does not offer a solution, though he clearly believed that one can be found without going outside the framework of ecological psychology. Such faith has not convinced everybody, and even some sympathizers have concluded that thought must begin where ecological perception leaves off (Ben-Zeev, 1984; Bruce and Green, 1985).

The problem with accepting Gibson's theory of perception and then adding cognition to explain meaning and higher thought processes is that his theory of perception, in its final form (Gibson, 1979) is already also one of cognition (Reed, 1987). It is a theory of knowing which rejects the traditional separation between sensory processes and high-level, cognitive processes. The world is perceived as meaningful from the start, and there is no place at which it is possible to say the cognitive begins *here* – no modern equivalent of the Cartesian pineal gland, where the ecological language gives way to the mental.

So what account can be given of the 'higher thought processes' in ecological psychology? Gibson himself stopped short, in his published writings, at a theory of higher thought processes, which were unsystematically classified as processes of indirect perception. He also stopped short, in his published writings, of an ecological social psychology. We believe that these two stopping points are related, and that this hesitancy on Gibson's part was not merely a matter of scientific caution (Gibson was not a timid thinker) but reflects an unresolved and unacknowledged conflict in his thinking, which made him reluctant to incorporate the social, despite his repeated assertion of its overriding importance for human beings. Once the dilemma posed by this conflict is resolved (by grasping one of its horns and ignoring the other), then the way is open to an adequate theory of thinking. This, we believe, will follow from taking full account of the social in ecological psychology. Vygotsky is to be our support here, not because his theories offer neat solutions but because he asked the right questions and was faced with similar (or complementary) problems – so that his successes and possible shortcomings provide a useful map of the terrain, its pathways and its pitfalls.

This conflict in Gibson's theory is given fuller treatment elsewhere (Costall and Still, 1989) and will be summarized briefly here. It has to do with two distinctions: between direct and indirect, and social and asocial perception. In his early work Gibson equates these distinctions, so that asocial perception is also direct, social is indirect. Later they diverge, but he does not acknowledge this, or its implications for certain cherished distinctions. The following three versions of the theory correspond to Gibson's three books.

1. First version of the theory, 1950: Direct or literal perception is asocial, in contrast with indirect or schematic perception. This contrast, and the use of the terms literal and schematic perception, date from around the time of Gibson's first book (1950). They were not important to Gibson just as a means of expressing his discoveries and ideas in perception. Like many young Americans faced with the miseries of the

Depression and the rise of Fascism, Gibson was attracted by Marxism and political activism. He was therefore unhappy with the cynical implications of the moral relativism implied by the social perceptionism of the time. Direct or literal perception, open to all people independent of cultural conditioning, seemed to offer a way of avoiding these implications.

2. Second version, 1966: The social and the cultural are mediated by language, and language and perception co-operate closely, yet there is a direct perception that remains undistorted by the social. This becomes apparent when Gibson writes about language. Thus, while it is true that 'Perceiving helps talking, and talking fixes the gains of perceiving', it does not follow that 'the verbal fixing of information distorts the perception of the world . . . [for] . . . the curious observer can always observe more properties of the world than he can describe' (Gibson 1966, p. 282). It is as though there always remains an inexhaustible background of blooming, buzzing confusion waiting for classification.

3. Final version, 1979: Direct perception is of what activities the environment supports, or of what Gibson called 'affordances'; and it is clear from the examples he takes that affordances may be socially and culturally conditioned. The physical world supports activity, and activities – what we do – are culturally and socially determined. But activities are inseparable from the affordances that support them – if one is culturally determined, then so is the other. Hence affordances as well as activities must be cultural through and through. Thus affordances are both directly perceived and culturally conditioned, and direct perception can no longer be a part of experience whose importance lies in its essential freedom from social or cultural contamination. Therefore it can no longer be appealed to as a defence against social relativism.

We would go further than Gibson in socializing the human world, and fill it, as Mead did, with physical objects that have not only their special affordances (as chairs, for instance, afford sitting in) but also more general affordances shared with other objects – as detached objects, they afford being possessed, moved around, placed in position, etc. According to Mead, this world of individualized physical objects is a product of *social* development (Joas, 1985, Ch. 7), which would add another social dimension to affordances.

But even without such an extension, Gibson's final theory of direct perception is very significantly different from earlier versions. Yet he nowhere points this out, nor does he build upon the change. We surmise that this is because he is reluctant to accept the final failure of the earlier

argument against relativism, and that this leads him to hold back when he writes about the social, and to ignore the problems it poses for his theory. He fails, therefore, to draw out the full implications of his theory of affordances. The concept is explained halfway through the 1979 book, but Gibson does not develop it into a new ecological theory of social psychology and thought. In fact affordances are not mentioned again, and the book returns to a language used thirty years earlier, that of direct perception of surfaces, with no explicit reference to what they afford or mean to the active observer.

There seem to be two ways forward:

1. To return to a dualism, this time of surfaces and affordances, where both may be directly perceived, but affordances are 'meaningful' and socially conditioned, surfaces 'physical' and asocial, a source of experience that is independent of culture and therefore subverts moral relativism. We do not think this would have been acceptable to Gibson. It is too reminiscent of the dualist distinction between sense-data and objects, and it conflicts with our aims laid out above.

2. To accept that human experience is social through and through, and that there is no separate pre-social realm of experience existing alongside the social. Babies live in a world that is social from the beginning; they are further socialized, but (and here we begin to draw on Vygotsky) 'Higher psychological functions are not superimposed as a second storey over the elementary processes; they represent new psychological systems' (Vygotsky, 1978, p. 124; quoted in the Afterword by John-Steiner and Souberman). It follows that experience does not contain in any form a level that remains from the phylogenetic or ontogenetic past. The biogenetic approach, with its covert dualisms contained in the continuing existence of more primitive levels, must be given up. And moral relativism must be accepted, rendered palatable, perhaps, with a more sophisticated philosophy than Gibson found in American Marxism during the 1930s.

Accepting (2) as the way forward, the higher thought processes are naturally to be thought of as arising out of social activities, rather than vice versa. Such a reversal of the traditional individualist priorities is familiar in Mead's pragmatist psychology (Mead, 1964; Joas, 1985; see this volume, Chapter 11, by Noble) and popular recently as the basis of social constructionism (Gergen, 1985; see this volume, Chapter 5, by Shotter). There are now many demonstrations of the social nature of memory and perception (Middleton and Edwards, 1990; see this volume, Chapter 10, by Reed). Also there has been a reaction against the

individualism of Piaget's theories of intellectual development, and the importance of social factors in child development is now generally stressed (e.g. Olson, 1980; Wertsch, 1985a). Part of this reaction has been a revival of research into what Vygotsky called the Zone of Proximal Development (Rogoff and Wertsch, 1984; Wertsch, 1985b), since this illustrates nicely the social origins of the higher thought processes – the child's intellectual abilities are best revealed in their *normal* social setting, not in the bizarre and cramped (yet still social) setting of the psychological test.

In spite of this new interest in the social basis of cognition, we believe that it has not yet been grounded in an adequate theory of perception – Gibson's theory of affordances provides an opportunity for this. Edward Reed, in work based on a study of Gibson's unpublished notebooks, has made a start with the concept of 'representation systems' (see Chapter 10). Representation systems are systems of physical tokens, marks, etc., around which shared human activity is organized:

In contrast to perceptual systems . . . representation or symbol systems involve *cultural* and *historical* as well as individual psychological processes. . . . As the child grows and develops in her use of language, numbers, pictures and other representations, she is more and more enabled to take advantage of explicit, socially gathered knowledge, as well as of socially developed customs. (Chapter 10, p. 189–90)

As objects become symbols in this way, so, correspondingly, their affordances (the direct perception of the activities they support) change. So also will the affordances in the world to which the developing representation systems apply – if only because applying a representation system is itself an activity.

As an illustration, Reed refers to Goody's anthropological work on 'tools of intellect' and the impact of writing. Other clear examples might have been taken from Vygotsky's work, much of which could be described as 'studies in the development of representation systems'. For instance, his investigations of the use of symbolism in play shows how the interrelatedness necessary for a representation system is revealed in social activity. Especially impressive, for our argument, is his emphasis upon gestural coherence rather than perceptual similarity. For it makes clear that what evolves during development is not a set of passive, internal perceptual structures but a system of affordances, of connected activities and the information structures that support them. Thus:

We conducted play experiments in which, in a joking manner, we began to designate things and people involved in the play by familiar objects. For example, a book off to one side designated a house, keys meant children, a pencil meant a nursemaid, a pocket watch a drugstore, a knife a doctor, an

inkwell cover a horse-drawn carriage, and so forth. Then the children were given a simple story through figurative gestures involving these objects. They could read it with great ease. For example, a doctor arrives at a house in a carriage, knocks at the door, the nursemaid opens, he examines the children, he writes a prescription and leaves, the nursemaid goes to the drugstore, comes back, and administers medicine to the children. Most three-year-olds can read this symbolic notation with great ease . . . perceptual similarity of objects plays no part in the understanding of the symbolic notation. All that matters is that the objects admit the appropriate gesture and can function as a point of application for it. Hence, things with which this gestural structure cannot be performed are absolutely rejected by children. For example, in this game, which is conducted at a table and which involves small items on the table, children will absolutely refuse to play if we take their fingers, put them on a book, and say, 'Now, as a joke, these will be children'. They object that there is no such game. (Vygotsky, 1978, p. 109)

With time, children can become skilled in the use of these symbols, 'internalise' them (according to Vygotsky) and use them to tell stories. More conventional gestures develop in a similar way, as the child's movements are assimilated to a system of social communication. Thus Vygotsky describes the development of pointing in a child:

. . . from an object-oriented movement it becomes a movement aimed at another person, a means of establishing relations. *The grasping movement changes to the act of pointing*. As a result of this change, the movement itself is then physically simplified, and what results is the form of pointing that we call a true gesture. It becomes a true gesture only after it objectively manifests all the functions of pointing for others and is understood by others as such a gesture. Its meaning and functions are created at first by an objective situation and then by people who surround the child. (Vygotsky, 1978, p.56)

This is a fine account of what we believe happens – an interpersonal process is transformed into another interpersonal process, not into the asocial intrapersonal process characteristic of dualism. Such examples, we believe, illustrate perfectly the genesis of representation systems – not least because they do not, as *descriptions*, leave behind an elementary realm of experience untouched by the development – the system is not like a second storey. Reed's account, with its suggestion of a hierarchy of systems, does not so clearly avoid this danger. He makes representation systems the basis of 'modes of indirect cognition', which leaves, by implication, a mode of direct cognition untouched by their development – a line of thought which leads back to the asocial level of experience hankered after by Gibson.

In Chapter 10 Reed does not refer to Vygotsky, but in an earlier version (1987) he likened the ecological theory of indirect cognition of the 'socialised self's use of historically developed cultural resources' to

'Vygotsky's (1978) account of how the child becomes socialised through cognitive means' (Reed, 1987, p. 164). However,

Vygotsky did not have the concept of ecological information, and did not believe direct perception of the environment was possible. Like most cognitivists, he believed that the child's apprehension of the meaningful world required a process of 'internalisation' of speech, and of ideas and rules encoded in speech. (*ibid.*)

Reed went on to refer to Gibson's scepticism about the notion of internalization. Gibson wrote:

The child who has learned to talk about things and events can, metaphorically, talk to himself silently about things and events, so it is supposed. He is said to have 'internalized' his speech, whatever that might mean. By analogy with this theory, a child who has learned to draw might be supposed to picture to himself things and events without movements of his hands, to have 'internalized' his picturemaking. A theory of internal language and internal images might be based on this theory. But it seems to me very dubious. (Gibson, 1979, p. 262)

Internalization certainly suggests the kind of dualism we, like Gibson, are trying to avoid, but how can we arrive at the higher thought processes without it? Surprisingly, in view of these strictures, Vygotsky himself shows us the way in the examples quoted above – that is, he shows how thinking could emerge out of ecologically based social activities. Like Piaget, he describes it elsewhere as a process of internalization, but does this mean for Vygotsky that thought becomes shut off in the mind and ceases to be social? Sometimes he (or his translators) writes as though this were so – for instance in his description of one of the transformations involved when internalization takes place as 'an interpersonal process . . . transformed into an intrapersonal one' (Vygotsky, 1978, p. 57). This is elaborated in the afterword to *Mind in Society* by John-Steiner and Souberman, who begin by quoting Vygotsky:

Every function in the child's cultural development appears twice, on two levels. First, on the social, and later on the psychological level; first, *between* people as an *interpsychological* category, and then inside the child, as an *intrapersonal* category. This applies equally to voluntary attention, to logical memory and to the formation of concepts. The actual relations between human individuals underlie all the higher functions' (Chapter 4). In the buzzing confusion [Jamesian dualism again!] that surrounds the infant during the first few months of her life, parents assist her by pointing and carrying the child close to objects and places of adaptive significance (toys, refrigerator, cupboard, playpen), thus helping the child to ignore other irrelevant features of the environment (such adult objects as books, tools, and so on). This socially mediated attention develops into the child's more

independent and voluntary attention, which she will come to use to classify her surroundings. (Vygotsky, 1978, p. 128)

The fault, as we see it, lies in supposing (or at least implying) that once transformed, the process ceases to be interpersonal. But it is becoming clear that this was not Vygotsky's opinion. As more of his works become available in adequate translations, and as what Sinha (1989) calls the 'second cycle' of Vygotsky studies in the West becomes established, so it is becoming clear that for Vygotsky the higher thought processes are social through and through. The passage quoted by John-Steiner and Souberman is completed by a more recent commentator:

All higher psychological functions are internalised relationships of the social kind, and constitute the social structure of personality. Their composition, genetic structure, ways of functioning, in one word all their nature is social. Even when they have become psychological processes, their nature remains quasi-social. The human being who is alone retains the function of interaction. (quoted in Valsiner, 1988, p. 142)

And this seems to capture well Vygotsky's mature thought on the importance of the social (Lee, 1985). Vygotsky, after all, worked within a Marxist tradition; he attempted to develop a psychology based on the theoretical structure of *Kapital* (Lee, 1987), and he remained faithful to Marx's declaration in *German Ideology* that 'Consciousness is . . . from the very beginning a social product, and remains so as long as men exist at all' (Marx, 1963, p. 86).

Thus, in learning chess, tennis or a new language, one is guided at first by a teacher into a particular set of interpersonal practices. By learning, and dispensing with further need for the teacher, one becomes a fully fledged participant – an expert, alive to the affordances provided by and shared with other experts. As Wittgenstein (1953) demonstrated in the case of private languages, nothing is gained by appealing to internal psychological processes, since they have no independent reality over and above the social interactions from which they derive their meaning. For ecological psychology, the changes that take place lie in the acquisition of representation systems and in what, as a consequence, situations afford to the participants.

This concludes our argument that the thought of Vygotsky and Gibson, each fruitful in its own right, can become even more so if they are allowed to coalesce through mutual correction. Thus Vygotsky shows the way ecological psychology might progress once it has digested its own belated discovery of the all-pervasiveness of the social. But, as Reed points out, he lacked a radical perceptual theory that would secure the inseparability of organism and environment, and guard against a drift into dualist talk. This is provided by Gibson's ecological psychology,

with its concept of affordances which point 'both ways, to the environment and to the observer' (Gibson, 1979, p. 129). Each guards against the dualist backslidings of the other, and between the two, perhaps, we could arrive at an adequate mutualist account of the genesis of higher thought processes.

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