APPROACHES TO THE UNDERSTANDING OF MIND

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Introduction

I wish to suggest that a revision is underway in our approaches to the understanding of mind, in our intuitions about the basic nature of mind. In particular, I contend: 1) that the basic intuitions that have dominated our models of mind for some two thousand years are untenable, 2) that partial realizations of these untenabilities, and of corresponding movements away from them, have been occurring for close to two centuries, and 3) that there is an alternative approach to mind, toward which these movements have been pointing. The following is a schematic outline of some of the relevant arguments.*

Picture and Transmission Models

Conceptualizations of mind have always been dominated by conceptualizations of knowledge and of language. Knowledge is the core of mind, and language is both its most advanced and its most revealing manifestation. Thus, I will consider approaches to mind in terms of their approaches to knowledge and language.

The classic intuitions which I wish to examine might well be labeled the picture model of knowledge and the transmission model of communication. Put most simply, most intuitively, picture models of knowledge conceive of knowledge as some kind of picture of that which is known, and transmission models of communication conceive of communication as the transmission of such pictures. That is, communication is viewed as the transmission of some signal from which the recipient can construct his own copy of the underyling picture. Thus, knowledge is the pictorial encoding of the world, and communication is the signal encoding of a picture. Such encodings, of course, can become quite sophisticated, leaving the underlying intuitions far behind.

These basic intuitions seem to have been first explicitly formulated by the Stoics of ancient Greece (Copleston, 1962, Graeser, 1978), and have dominated Western conceptualizations of knowledge, language, and mind in general since that time. The actual models constructed within and upon this intuitive framework have varied widely in content, emphasis, and sophistication, but the underlying intuitions have remained essentially untouched.

Among the purest developments of these intuitions were the British empiricists, who conceived of knowledge as composed of associations among mental images. Among the most sophisticated development is the early Wittgenstein, who conceived of a sentence as being a logical 'picture' of the structure of facts in the world which that sentence was supposed to represent. Both the British empiricists and the early Wittgenstein have had major influences on contemporary psychology and philosophy. They constitute the proximate historical traditions through which the picture and transmission model intuitions still dominate the current scene.

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* More developed arguments, and contributions toward a relevant model, are contained in Bickhard (in press, and forthcoming).

Interactive and Transforming Models

The alternatives which will be contrasted with these classic models will be called the interactive model of knowledge and the transforming model of communication. The basic intuition of interactive models of knowledge is that knowledge consists of the ability to successfully interact with the world. Knowledge is the ability to accomplish tasks. Correspondingly, communication is viewed by transforming models as the accomplishment of a very special kind of task. Communication is viewed as the transforming of the social understandings of the individuals involved in the communication. Language, in turn, is a highly powerful conventional tool for such tasks of communication.

A major step away from picture models of knowledge toward interactive models was taken by Kant who realized that knowledge was not simply something impressed on the mind like a wax impression or a picture, but that people have to actively bring concepts to the world in order to organize their understandings of it. This sense of the necessary activity of mind in the nature of knowledge initiated the basic move away from picture models that has been progressing ever since. But the concepts that Kant viewed as the necessary contribution of mind were themselves static and structural -- picture-like -- and much more work remained to be done.

A great many individuals and schools of thought (e.g., pragmatism) have contributed to the movement toward interactive conceptualizations of knowledge since Kant. I will focus for illustration, however, on one example, Jean Piaget. At the core of Piaget's theory is a conceptualization of knowledge as being organized in accordance with certain abstract mathematic structures (Piaget & Inhelder, 1969). These structures have a kind of hybrid character in Piaget's thinking: on the one hand, they constitute the Kantian picture-like structures with which people organize their understandings, and, on the other hand, they constitute the foundations for an individual's interactions with and task accomplishments in the world. This dual picture-and-interactive nature of Piaget's structures constitutes the major unresolved tension in his theory. In effect, Piaget constitutes a kind of half way point in the movement from picture models to interactive models, yet there are no current alternative models of comparable scope that have made greater use of interactive insights.

Although the shift from picture models of knowledge toward interactive models began with Kant in late 1700's, the corresponding shift from transmission models of communication toward transforming models has begun much more recently, and is, correspondingly, even less well developed. One of the major initiators of this shift, for example, was J.L. Austin (1968) whose influence began in the late 1940's. Austin's basic insight was to realize that a great many properties of communication derive from the fact that speech is an activity, not just the transmission of a signal. Austin pointed out, for example, that the act of saying something to someone was quite differentiable from the act of advising someone, and that both in turn were differentiable from the act of persuading someone, even though all three kinds of acts might involve speech, and, indeed, might well all be accomplished by the same utterance. Confusions among such different kinds of acts had long plagued studies of language and communication.

Austin's acts of speech, however, were still acts that transmitted an encoded signal. Searle (1968), for example, renders this explicitly as an action with propositional content, where proposition is used in its classical knowledge-encoding sense. Thus, as with Piaget constituting a hybrid of picture and interactive models of knowledge, Austin constructed a hybrid of transmission and transforming models of communication. This hybrid act-that-transmits conceptualization of communication now pervades the study of language and communication ranging from linguistics to the child's development of language. The form and the basic elements of the structure to be encoded range from semantic features (Katz & Fodor, 1971) to natural logic (Lakoff, 1972) to possible world models (Cresswell, 1973) to procedures (Miller & Johnson-Laird, 1976, Winograd, 1972), but the basic encoding conceptualization remains constant. What has been realized is that additional actions occur with respect to the encodings, e.g., assertions, questions, commands, but the basic picture-encoding model of the underlying proposition is unchanged, and, thus, so also is the basic transmission model of the communication.

Compared to the two thousand year dominance of picture and transmission models, then, both interactive and transforming models are very recent. The critical move away from picture models of knowledge and the corresponding constructive move toward interactive models of knowledge is only a couple of centuries old, and the move away from transmission models toward transforming models of communication is only a few decades old. Interactive and transforming models, correspondingly, tend to be relatively underdeveloped and unsophisticated, tending toward some sort of awkward hybrid

with the classical perspectives, with those classic perspectives 'filling in' for whatever incompletenesses or deficiencies exist in the particular interactive- or transforming-inspired model under consideration. Nevertheless, I want to suggest that there is sufficient reason currently available to conclude that both the picture and transmission approaches are fundamentally untenable, and, therefore, that further efforts are best focused on explicit explorations of interactive and transforming approaches.

Examination of Picture and Transmission Models

There are two fundamental and ultimately fatal problems with each of the picture and transmission model approaches. I will discuss these problems in turn.

The first basic problem for picture models is that they require some set of elements and some principles of construction out of which the pictures can be constructed. No one has ever succeeded in giving an even close to adequate account of these. Things work relatively well for visual scenes, for which the picture metaphor can be taken in its most literal sense, but encounter increasing difficulties with other kinds of knowledge. The difficulty is that rather little of what we wish to call knowledge can be captured by the structural relationships within a picture, no matter how abstractly and sophisticatedly conceived, so the burden of accounting for new non-visual kinds of knowledge falls on the purported elements of such 'pictures.' Thus, for example, the concept 'triangle' cannot structurally look like any particular triangle at all without being false for most other triangles. The value orientation of a concept like 'democracy', on the other hand, cannot be captured structurally at all, and must be approached in terms of some special kind of a picture-element that is itself supposed to have a value orientation. In general, this difficulty with picture models leads to an *ad hoc* proliferation of special elements to handle each new kind of knowledge, and, with such a proliferation, the elements themselves require as much explanation as that which the whole theory is supposed to explain. The picture elements, in other words, become names for ignorance, rather than explanations.

The second and most resoundingly fatal problem for picture models is that any picture-like static knowledge requires an interactive system to interpret it. No picture or structure constitutes knowledge, in and of itself, but only insofar as some interactive rule governed system relates it to the world. But, once rule governed interactive systems are admitted, the pictures become logically superfluous, for any structural information they contain could as well be built into the rules of the interactive system. This is not to preclude the fact that structural information might be, and, in many cases has been, differentiated out into its own static picture for reasons of efficiency or simplicity, either by evolution or by a human designer. The point, rather, is that if pictures are not necessary to knowledge, then they assuredly do not constitute its essence. Structurally encoded information, when it does occur, <u>must</u> occur relative to, and subordinate to, an interactive system. Once the necessity of an interactive system is admitted, then we are precisely into an interactive approach.

Picture models, then, suffer from an inadmissable *ad hoc* proliferation of basic picture elements, and from a necessary interactive agent to interpret whatever picture structures do exist. The first problem presents an insurmountable barrier to picture models. The second problem opens up a direct avenue to the alternative interactive perspective.

The first fundamental problem with transmission models of communication is that they require underlying picture structures to be transmitted, and they, correspondingly, make the same knowledge-as-structurally-encodable assumptions as picture models. Thus, the problems of picture models are equally as much problems of transmission models. (See, for example, Bolinger, 1967, for a related argument.)

The second problem with transmission models is one all its own. The problem focuses on the rules by which underlying knowledge pictures are encoded into signals to be transmitted. Such rules are totally arbitrary, so much so that no finite amount of experience could suffice to specify them, and, thus, they could not possibly be learned by children during the acquisition of language. The standard move in the face of this is the *ad hoc* claim that the rules, or the rules for learning the rules, must therefore be innate (Chomsky, 1965), But such a claim, in addition to its *ad hoc* nature, runs into serious logical difficulties concerning the potential evolutionary origin of such rules (Bickhard, 1979). The argument, roughly, is that the relevant evolutionary selection pressures would derive from the survival value of learning a language, but no language could exist to exert such pressures until the ability to learn a language was already present. Transmission models, then,

require encoding rules, and there is no satisfactory way to account for the origins of such *encoding* rules.

Picture and transmission models suffer from an *ad hoc* proliferation of elements, a necessity for an interactive interpreter, and an equally *ad hoc* set of encoding rules. *Their tenability is correspondingly destroyed.* It is *time*, therefore, to turn to the alternatives.

Examination of Interactive and Transforming Models

Interactive and transforming models, however, are subject to challenges of their own, some of them quite serious. The difference is that instead of being destroyed by those challenges, as have been picture and transmission approaches, interactive and transforming approaches have shown an ability to respond creatively and resourcefully to them. The most serious challenges, in fact, often yield the most far reaching reconceptualizations. I will illustrate with a few examples.

One challenge to interactive models of knowing is to ask how they could possibly account for any kind of abstract knowledge. If knowledge is conceptualized as some sort of interactive capability, then it might possibly make sense to model knowledge *of rocks and trees and automobiles in those terms:* such objects of knowledge are all externally available for interaction. But what are the objects of interaction for abstract knowledge, such as in mathematics or logic? The interactive approach might seem, at best, to be limited to the external physical world.

What is required is a realm, or realms, of interaction that are more abstract than the physical world. The solution available within the interactive perspective is the essentially Piagetian point that the properties and characteristics of the interactions themselves are more abstract than the original physical objects of *interaction* (e.g., Piaget, 1971). Thus, we may have a first level interactive system capable of knowing things in the external world, together with a second level interactive system capable of knowing properties of the first level system. Such a second level system, of course, would have properties which could be known by a third level system, and so on. Such considerations lead to an unbounded hierarchy of potential levels of interacting knowing. Far from being embarrassed by the challenge of abstract knowledge, therefore, the interactive perspective instead generates an unboundedly rich approach to it.

Furthermore, this response to the challenge of abstraction generates its own interesting *additional consequence, as follows. If the potential* knowledge of an interactive system is organized in a hierarchy of levels of abstraction, with each level knowing properties at the next lower level, then it follows that knowledge at any particular level can be constructed or learned only insofar as the appropriate objects of interactive knowing have already been constructed at the *immediate lower level.* Therefore, a developing interactive knowing system, such as a child, must manifest knowledge at each new level successively, starting with the lowest. It cannot skip levels in its development, else there would be nothing to be known at the skipped level by the higher levels. Child development, then, must of necessity exhibit a stage organization of invariant sequence as the child moves up through the levels of abstraction. Such a stage structuring of child development is one of the dominant foci of investigation within current child psychology.

The challenge of abstract knowledge, thus, yields from the interactive approach a stage structuring of child development which is quite similar to stages actually observed in children (Bickhard, 1978). Far from being an *ad hoc* response, then, as is common within the picture model perspective, the interactive approach to abstract knowledge is corroborated by the contact with the independently derived data on stage structuring in child development. The answer to one question, concerning abstract *knowledge, turns out also to be an answer to a seemingly* quite different question, concerning child development. The power of the interactive approach is illustrated by its ability to make such nonobvious connections.

Another interesting challenge to the interactive approach is *one that was also* brought to the picture model approach: the challenge of accounting for value orientations, such as in concepts like 'democracy'. Actually, such a challenge raises the whole issue of motivational orientations in general, and it is at this level that the interactive approach yields a far reaching reconceptualization.

The problem of motivation appears quite different when viewed from an interactive perspective than when viewed from a picture perspective. From a picture perspective, with its static pictures and active interpreters, the fundamental question of

motivation is "what makes the active component work and under what conditions does it turn on?" That is, a picture perspective yields as the fundamental question the essentially causal one of what makes any activity occur at all, rather than none at all. The kinds of answers that are generated within a picture model to such a question of motivation generally have to do with some sort of forces or energies, drives or instincts, that 'motivate' the overall system to act rather than remain quiescent (e.g., Freud, 1915).

From an interactive perspective, however, things look quite different. An interactive system, insofar as it is functioning at all, insofar as it is alive and not in coma, is always interacting, always active. The question of motivation, correspondingly, is not one of why activity occurs rather than not, for activity is 'simply' a characteristic of being alive. The question of motivation is one of why this particular activity occurs rather than some other. The question of motivation concerns the selection and control of activity rather than its cause (e.g., Atkinson & Birch, 1970).

But the ability to appropriately select and control activity is precisely what constitutes knowledge in a task-accomplishing interactive system. In other words, knowledge is the ability to have task-successful selection of activity; that is, knowledge is the ability to have task-successful motivations. From an interactive perspective, then, knowledge and motivation are different aspects of the same thing: knowledge concerns the potential for the successful application of interactive ability, and motivation concerns the internal selection and control organization of that same interactive ability.

Again, a challenge to the interactive perspective has yielded a far reaching and not obvious connection. Furthermore, the sense in which knowledge and motivation are intrinsically related by the interactive perspective illustrates the sense in which the interactive approach is an approach to all of mind, not just to knowledge.

I turn now to an illustrative discussion concerning the transforming approach to communication. In accordance with the general interactive perspective, communication is viewed as an interaction, just like all other activities of mind. What differentiates communication from other forms of interaction is its special object of interaction, the special object of the transforming task that an interactive communication accomplishes. An immediate and obvious question, then, is "what is this special object of communication?"

A clear candidate for the object of communicative transformation is the mind(s) of the audience of the communication; the same as the recipient of the signal in the transmission model. There are reasons, however, why mind cannot be the proximate object of communicative transformation. A schematic of one such reason is that, if mind were the proximate object of communicative transformation, then we would succeed in performing a communication insofar as we succeeded in appropriately transforming that object in (appropriately transforming the mind of the audience) and we would fail in an attempt to perform a communication insofar as we failed to achieve the desired transformation. But this would mean that we could not succeed in uttering a statement unless we were believed, nor a command unless we were obeyed, nor a question unless answered. Clearly, this is not so. Mind, therefore, cannot be the proximate object of communication.

There are counters to this argument, and counters to the counter-arguments, all of which I do not wish to unravel at this point (Bickhard, forthcoming). The conclusion, however, is that the objects of communications must be a special kind of social entity: a kind of socially common understanding among the participants to a communication concerning the communication situation itself (Bickhard, forthcoming). The objects of communications, then, are like socially common definitions of the situation (Goffman, 1959). These social objects of communication, in turn, which are created, sustained, and transformed by communication, form the foundation for the elaboration of social structure and process (Berger & Luckman, 1966). That is, interactive communication is the process of creating, sustaining, and transforming social reality. In the transforming perspective, then, communication is not simply one available pragmatic means for affecting social reality, instead, communication is the creation and transformation of social reality. A challenge to the general interactive-transforming perspective has, thus, again yielded non-obvious connections and understandings.

An additional consequence of the transforming perspective on communication that I would like to mention derives directly from the conceptualization of communication as transforming. The object of transformation is the social definition of the situ-

ation. As such the object of communicative transformation is *about the situation*, is a <u>representation</u> of the situation, and, therefore, can be true or false concerning the situation. The communication itself, however, is a transformation of such a representation, it is not itself about anything, it is not itself a representation of anything, and, thus, is not itself true or false about anything. Within the transforming perspective, communications do not have truth values. Communications transform representations which have truth values, and in that manner can yield representations with truth values, but do not have truth values themselves. The situation is analogous to that of mathematical functions defined on the integers: integers are prime or nonprime, odd or even, but concepts such as primeness or oddness and evenness simply do not apply to functions such as $Y = X + 1$, however much $Y = X + 1$ may yield an odd or even or prime or nonprime result. Similarly, communications do not have truth values, the concepts don't apply, however much they may yield consequences which have truth values.

This result is counterintuitive, and, incidentally, scrambles the distinction between semantics and pragmatics in linguistics, because our intuitions and con*ceptualizations are so strongly based on the transmission perspective on communi*cation, and things look very different within that classic perspective. In particular, within a transmission model a communication is viewed as an encoding of *picture-like knowledge about the world. A communication is, in effect, simply a* transmittable picture, and, as such, is as much about the world, as any other knowledge structure. The very meaning of a communication, in fact, should be constituted of its representational encoding relationships to *the world. That is, the* meaning of a communication should be constituted of its representational conditions of truth and falsity. Within the picture perspective, then, communications 'obviously' have truth values.

The obviousness of this contention, however, has always been somewhat strained, especially when attention has shifted to nondeclarative sentences like questions or commands or exclamations. This truth value approach to understanding the meanings of sentences, in fact, has undergone notable contortions even for its paradigmatic case of declaratives (e.g., Evans & McDowell, 1976). Within a transforming perspective, however, issues of truth and falsity are relevant to communications only via the social definitions of the situation, and differences among sentence types, such as questions and commands, are rather naturally accommodated in terms of differences in the kinds of transformations, and differences in the purposes of transformations, of the underlying social object of communication.

Conclusion

The picture and transmission intuitions have been dominant for most of recorded Western history. Attempts to construct models based on these intuitions have been uni*versally unsuccessful. A primary legacy of these attempts, in fact, would seem to be* that we now have a sufficient understanding of the deficiencies of these intuitions to be able to recognize that they are fundamentally untenable. An additional legacy is the fact that these very deficiencies *point to alternative approaches:* interactive and transforming perspectives. These alternatives are historically very young, especially the transforming perspective, and correspondingly very poorly developed and explored. They can yield startling and counter-intuitive *results, especially to* our picture and transmission dominated intuitions. The consequences of the interactive and transforming perspectives, in fact, are vastly and complexly ramified throughout all areas of the study of mind. It would seem to be no small task, *but, nevertheless* a rewarding task, to explore those ramifications.

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