Representation, Memory, and Development

Essays in Honor of Jean Mandler

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Pretense and Representation Revisited

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I was lucky enough throughout the 1980s and early 1990s to have Jean Mandler as my colleague for about half of each year. Everyone at the erstwhile Cognitive Development Unit in London looked forward annually to Jean, along with spring, resuming her residence among us. Jean has a way of deploying her intellectual commitment, erudition, creativity, and skill in debate so that even if she is skewering your latest proposal it is done constructively and with great charm. I had particular reason to anticipate Jean's return each year because I share with Jean a concern for the nature of early representation in infancy and the belief that infants are capable of representing *abstract* properties.

Although our numbers are growing a bit (or so I hope), there are still not many people in the world who share that belief. What most people believe is that infants can represent *sensory* properties and *only* sensory properties (for a contemporary expression of this dogma, see the entertaining article by Haith, 1998). According to this view, abstract properties have to be extracted from the statistics of how the world presents sensory properties to the individual infant during ontogenesis. Furthermore, the ontogenetic extraction from sensory properties requires numerous iterations over increasing levels of abstractness, and there-

fore concept acquisition proceeds by stages. The upshot is that abstract concepts, really abstract concepts, would not, should not, and perhaps cannot, be present early in life.

Like Jean, I have focused on a set of highly abstract concepts that are present early in life in the hope that one might be able to understand how such a thing is possible. Rather than start with a preconceived idea of what an abstract concept is, we should be prepared to learn from our studies what such a thing might be. Rather than take as our point of departure the rule that early abstract concepts are impossible, we should be prepared to discover whatever nature is prepared to reveal. Although Jean and I disagree on many things, on these points we agree and are kindred spirits. In 1987, I published a new theory of our ability to pretend (Leslie, 1987); this has come to be called the *metarepresentational theory* of pretense. I want to revisit some issues that article raised and ask the following: What does our ability to pretend tell us about the nature of early abstract concepts?

Why would anyone think that the *ability* to pretend should tell us *anything* about concepts? The answer is twofold. First, the heart of the metarepresentational theory is the claim that the emergence of pre-tense depends, not on the emergence of a new ability as such, but on a new concept, specifically, the concept PRETEND.[1] Second, the concept PRETEND makes an interesting case study because it is, *in fact,* a mental state concept. If these claims are correct, then children as young as 2 years old who pretend must possess at least one mental state concept. I stressed that PRETEND is *in fact* a mental state concept for a reason. I do not want to prejudge the question of whether 2-year-olds, in understanding pretense, understand that pretense is a mental state. Actually, I doubt whether 2-year-olds know that pretending really is a mental state; fortunately, they do not need to know this to possess the concept.

I learned from Jean that, when it comes to the existence of early abstract concepts, there are always two paths one can follow. One path is to decide without further ado that a child with minuscule encyclopedic knowledge of the world and with extremely limited general reasoning power could not possibly possess abstract concepts. The other path is to investigate early concepts with an open mind: If we find that a child with no encyclopedic knowledge and little general reasoning can nevertheless possess a mental state concept then we will no doubt learn from that child something we did not know about the nature of concepts.

[1] I write concepts in uppercase and italicize the property or relation to which the concept refers. I take concepts to be symbolic entities in a cognitive system, and assume that they represent or designate properties or relations "in the world."

A COMPARISON OF BELIEF AND PRETENSE

Here is the basic idea I argue: Although in accounts of behavior there are usually trade-offs between process and representation that make their effects hard to distinguish, sometimes it is possible to distinguish between the two. I argue that the case of *belief* versus *pretense* provides such an example. We find that the ability to *have* a *belief* rests on a mode of processing, whereas the ability to *have* a *belief about a belief* rests on a representation or concept of belief. By contrast, in the sense corresponding *to having a belief,* there is no such thing as *having a pretense,* nothing for the case of pretense that rests on a special mode of processing. Instead, the ability to pretend rests on a special representation.

Consider the case of *belief. I* start with an assumption that should be quite uncontroversial: there is a big difference between *having a belief* and *having a belief about a belief.* No one has yet developed a detailed cognitive model of exactly what it means for an organism to have a belief. However, "having a belief" is a state defined by how a representation is processed (or how an organism is disposed to process a representation). If a given representation is processed in one way, then the organism *believes* whatever the representation represents; processed another way, the organism *desires* it, and so on for different modes of processing for each distinct mental state. What we lack is de-tailed understanding of what differentiates these different modes. However, in each case, the content of the representation will express the content of the corresponding mental state. Thus, the commonsense notion of having a belief is shorthand for a particular kind of processing mode within a cognitive system; the details of the various processing modes that are possible determine the range of mental states in which the organism is capable of being. No doubt the reason this assumption is uncontroversial (extreme reductionism aside) is that it says so little; that's fine, however, because it says enough for these purposes.

By contrast with merely having a belief, the ability to have a belief about a belief requires something beyond a mode of processing: it requires a specific representational ability, namely, it requires possession of the concept BELIEF. At least, this is the case in the sense of "belief about a belief" that is intended in "theory of mind" research. In "theory of mind" research, we are concerned with the recursive ability of someone to have a belief that someone believes that *P.* The reason for this is straightforward. If I am to believe that someone believes that *P,* then the second occurrence of believe is part of the content of my belief, and therefore part of the representation that I am processing, *as* a belief. Because representations like this are conceptual, that is, composed of concepts, then, to represent a belief as a belief, I must

use the concept BELIEF This reasoning sounds more complex than it really is. This is because in "theory of mind" research we are concerned with the ability of A to attribute a belief to B. When A does this, A has a belief, namely the belief that B has a belief. The term *belief* occurs twice but in different guises, once as the *ability* of A to have beliefs, and once in As *representation* that B believes something. Let's make it simpler. If A attributes to B the property of *being a dog,* that is, A believes that B is a dog, then A possesses and uses the concept, DOG. As psychologists, we might, of course, have the usual worries about whether A *really* attributed to B the property of being a dog specifically, and thus whether A really has the concept DOG specifically, as opposed to some other concept whose extension overlaps dogs; or, if we believe that concepts depend on inference drawing, we might worry whether A is really able to draw some fancy dog-related inference about B, and so on. If we cannot satisfy ourselves on these worries, then we will not be satisfied that A really has the belief that *B is a dog* as opposed to some overlap-ping and similar, but not quite, *B is a dog* belief. Conversely, to the ex-tent we can satisfy ourselves, we will grant A the concept DOG. The case of BELIEF is not fundamentally different from the case of DOG. Similar reasoning, attended by similar worries, lies behind the familiar claim that when 4-year-olds pass the "Sally and Ann" false belief task, they attribute a belief to Sally, and that *therefore* they must possess and use the concept BELIEF.

Accepting the aforementioned assumptions, which I take to be uncontroversial, the following picture for *belief* emerges. Even young infants can *have* beliefs. However, they are not able to have beliefs *about* beliefs. Taking young infants as illustration for my argument is not at all critical. Some writers, for example, Haith, 1998, object to the idea that young infants can have beliefs, although Haith, given his beliefs, should at least grant that young infants have sensory beliefs. No matter; my idea can be illustrated just as well if we consider 1-year-old infants or adult monkeys. My point is that *the capacity to have beliefs should be developmentally and phylogenetically prior to the capacity to have beliefs about beliefs.* The capacity to have beliefs is just the capacity to have any kind of representational thought at all, to have any concepts whatsoever. Such a broad capacity can exist in many forms and to many different degrees and no doubt stretches far back in human ontogeny and far down in phylogeny. To have beliefs about beliefs, on the other hand, is a very specific capacity and demands that an organism possess a specific concept, namely, BELIEF. Which organisms possess this concept is an empirical question and we do not know the answer. However, it looks likely that there will be only one or two species other than our own who will turn out to possess this concept, or perhaps none at all other than our own. Likewise, the question of when in human ontogeny BELIEF becomes available is empirical and remains controversial. However, there would be wide agreement, based on research over the last 15 years, that it is not later than 4 years and not much earlier than 2. In either case, there is a long period in which the normally developing human enjoys a capacity to have beliefs but lacks the capacity to have beliefs about beliefs. And that period may be very prolonged in abnormal development, for example, in Kanner syndrome (autism).

Although there are similarities in the "logic" of the attitudes of pretending and believing (see Leslie, 1994, for discussion), there are striking dissimilarities in their natural histories. There seems to be no prolonged period in which a child is able to *"have a pretend'* before she is able to have beliefs *about* pretends. In fact, as I pointed out elsewhere (Leslie, 1987, 1994), the capacity to pretend seems to appear at the same time as the concept PRETEND, around 22 to 24 months. The principle piece of evidence for this is the "yoking" between the appearance of solitary pretending, in which the child plays all by herself, and the appearance of the ability to recognize pretense in other people, in which the child shares pretend play with another person. The ability to recognize pretense in others, and thus to share pretense, would be a truly remarkable ability at almost any age but it is intriguing to find it emerging as early as the 2nd birthday. At least it would be intriguing were we not inured by familiarity to the everyday miracle of early verbal and nonverbal communication. However, interesting although the ability for solitary pretense is, and interesting although the ability to recognize pretense in other people is, the fact that these abilities emerge together in development is the most intriguing fact of all. How odd then that students of early pretense prior to Leslie (1987), most prominently, Piaget (1955), apparently never noticed, or at least never commented on, the social nature of early pretense. Did Piaget, who spent much time on the carpet with his three children, making the most intricate and insightful observations while interacting with them, never join in their pretend play?

The yoking between solitary pretense and the recognition of pre-tense in others suggests that, in sharp contrast with the case of belief, *there is no developmental priority of the capacity to have pretends over the ability to have beliefs about pretends.* And the reason for this is straightforward. The human ability to have pretends actually consists in the employment of the concept, PRETEND. This striking claim lies at the heart of the metarepresentational theory of pretense.

Before discussing this claim more closely, let me say a word about phylogenetic priority. It is wholly an empirical question whether species other than our own can pretend and, if so, whether the same or similar mechanisms underlie their pretense. At this time, it seems to me

that the evidence for an ability to pretend in other species is not compelling, although not surprisingly the best anecdotes feature great apes (e.g., Whiten & Byrne, 1988). As far as I know, there is not even a hint that another species might recognize pretense in conspecifics. Of course, one might take a totally superficial, behavioral approach to the question and advance examples like kittens chasing balls of wool, "pretending" to hunt. But then one has to ask oneself whether the kitten is pretending that the ball is a mouse, a squirrel, or any definite thing at all? Does the cat ever pretend that the mouse gets away, perhaps with a broken leg? Or one should ask, given that cats care and know a lot about bowls of milk, do cats ever pretend that an empty bowl contains milk? How surprised would one be to return home one day to find one's cat pretending to lap milk from an empty bowl, perhaps stopping every so often to look up at one askance? Such a marvelous cat would surely be Puss-in-Boots. He might at any moment begin to talk to us. The point about chasing balls of wool, of course, is that cats have specialized mechanisms for hunting prey and these mechanisms are engaged by any right-sized object rushing past them. That cats should be so designed allows for the practice and honing of their survival-critical skills. Their ability for pretense is specialized around this topic. This specialization stands in marked contrast to the human capacity for pretense which is not at all limited to a few topics but is instead *productive:* the rule for human pretense, at any age, is that whatever we can think about, we can pretend about. The productivity of human pretense strongly suggests that a quite different cognitive mechanism underlies our ability, than the mechanisms underlying putative cases of specialized "pretending" that may be found in other species. Nevertheless, the question concerning the ability for pretense in other species and the nature of underlying mechanisms is, and remains, entirely open.

PRETEND AND THE ABILITY TO PRETEND

Why would we be so designed that our ability to pretend depends on a concept rather than on a processing mode? There are two points that I should clarify before I suggest an answer to this.

First, the claim that pretend play depends on the concept, PRETEND, is intended to be an empirical claim. It is not a claim that the nature of pretense makes it *logically* necessary that we be so designed. I see no reason to suppose that a pretending creature *must* be designed with PRETEND as one of its concepts rather than with a special mode of processing. However, I believe it is a fact that we are so "designed." We could conceivably be constructed so that every now and then one of our representations *R* enters a special processing mode such that we then

"have the pretend that *R*." Such an eventuality would be entirely analogous to occasions in which *R* enters the belief processing mode (for whatever reason) and we find ourselves "having the belief that *R*." It is conceivable that pretending might have worked that way. It is further conceivable that, for example, after a period in our lives in which we are thus able to "have pretends," that is, engage in solitary pretense, we somehow or other come to acquire the concept PRETEND, whereon we become able to recognize pretense in other people and to realize that we can share pretend play with them. Although this is conceivable, and in fact, is the way that we are designed with respect to *belief,* I don't think that, *as a matter of empirical fact,* it works that way for pretense. Recognizing this fact leads to a number of fruitful insights about our cognitive organization.

Of course, if it is a matter of fact that our ability to pretend depends on the concept PRETEND, then a number of things follow logically. These entailments can be used to help diagnose the presence of the concept, which brings me to the second point I want to clear out of the way. *Pretending* is a propositional attitude and, in common with other such attitudes, it takes a proposition as its object and this object becomes *opaque* in the attitude context.[2] In my 1987 article, I used this logical consequence to understand some of the representational phenomena underlying early pretend play. I coined the term *decoupling* to refer to these phenomena. I later developed some of these ideas (Leslie, 1994) to show how pretend play can be understood as an *inferencing* process in which the inferences "respect" the decoupling structure in pretend metarepresentations. Thus, one might reasonably ask, is such inferencing not a special process that is necessary for pretense? I think decoupling and its related processing are necessary for pretend play but that they are not special to pretense. Decoupling is required for a number of other abilities, including other "theory of mind" abilities such as false belief, and plausibly for various other kinds of hypothetical reasoning, and perhaps even other things—see Cosmides and Tooby's (2000) interesting discussion. Furthermore, as well as not being special to pretense, I don't think that decoupled processing is sufficient to give rise to *our* pretend ability (although it might be for some other creature's).

Now I need to introduce a key distinction that has only been partly explored. There are two divergent, although not unrelated, kinds of

[2] The details of the semantics of propositional attitudes don't really matter to my account, which is just as well because philosophers and others keep changing their minds about exactly what are the semantics. All that matters is that, whatever the semantics of propositional attitudes, that semantics apply to pretending, in the sense of "pretending that P" discussed later.

pretending. The first is *pretending to do X,* where X is an action. When I pretend to brush my teeth, what I do is produce a kind of tooth-brushing-like action but the action is fake, not the real thing. In this sense of pretend, the fake action is comparable to pretend candy, for example. The pretend candy is a kind of candy-like thing but, as candy, the thing is a fake. One thing that pretend candy cannot be is real candy. Likewise, I cannot pretend to cut down a tree and by the self-same action *really* cut down a tree.

The second kind of pretending is pretending that P, where P is a proposition. Interestingly, in the case *of* pretending that P, P does not have to be false in the way that in pretending to do X, X must be fake. For example, Leslie (1994) showed that 2-year-olds would readily pretend that an empty cup was empty (and for that reason pretend to fill it up again). This suggests that *pretending* that P is not equivalent to *pretending to believe that P.* If it was—if *pretending that P* is really a case of pretending to do X in which to do X is replaced by to *believe that P*—then the believing would have to be fake and you couldn't *really* believe that P at the same time that you pretend that P. This line of reasoning may underlie the intuition that some people have that if you pretend that P, then P must be false. (I have encountered this claim at regular intervals in conversation over the years; an example in print is Perner, 1995.) You should quickly be able to obtain empirical evidence against this idea if you get an empty cup, pretend to fill it with your favorite beverage, then pretend to pour all the contents over your head, then pretend to refill the cup and then pretend to have a drink. In pretending to empty the cup over your head, I am sure you will pretend that the cup becomes empty and requires refilling. You, of course, will believe throughout that the cup is in fact empty, but this does nothing to block your pretense.

Pretending has a complex relation to action. There are many possible sources that a fake X action might have and a pretense-related intention is only one of them (I might be demonstrating a golf swing to you, for instance). The relation between pretense and action has been little studied outside of the Piagetian framework in which the focus was on the increasing complexity of actions the child could string together (e.g., Fein, 1975; McCune-Nicolich, 1981). It would be interesting to see a revived interest in the relation between action and pretense studied within a more contemporary theoretical framework. Actions are movements performed in service of a goal. The goal is determined by the agent who undertakes the action, which means the agent must represent the goal of the action undertaken. The representation of the goal plays a causal role in generating the associated movements (Bernstein, 1967).

An obvious hypothesis about pretend actions is that the goal representation is decoupled. If so, this might explain why the movement undertaken typically does not carry through to the point in the real world that it would normally if it were generated by a regular "coupled" goal representation. For example, if I have a normal goal of drinking from a cup, I will lift the cup all the way to my lips ensuring close contact between cup and lip (for obvious reasons). If I pretend to drink from the cup, typically I will stop short of contact. I may even only outline the action of lifting and drinking in a highly truncated manner of gesturing the cup toward my lips. However, not all movements performed in service of pretend play are truncated or decoupled. For example, if you really did, as I asked previously, pretend to pour a cup of something over your head, then probably you did actually turn the cup upside down. Observations of children pretend playing suggest that full movements and truncated "gesturalized" movements are interspersed. Part of what is going on may have to do with communication if the pretense is shared, as Leslie and Happé (1989) suggested.

PRETENDING-THAT AS MENTAL ACTION

I noted previously that pretending and believing have quite different natural histories. Believing is a state that stems from a mode of processing representations. Eventually in human ontogenesis, the representations that can be belief-processed come to include representations of the *believing* relation itself, namely, metarepresentations that feature the concept BELIEVE. *Pretending,* by contrast, does not appear to have a stage in human development in which there is a pretend mode of processing but no concept PRETEND. The human ability to pretend seems to depend on availability of the concept PRETEND. The key evidence in this regard is that there does not seem to be a period in which the human is capable only of solitary pretense but not capable of recognizing pretense in others. There is, however, a clear and prolonged period in which the human is capable only of "solitary" *believing—that* is, is capable of having beliefs—but is incapable of *recognizing* belief—that is, having beliefs about beliefs.

The fact that solitary pretending and recognizing pretending in other people emerge together in development strongly suggests that the concept PRETEND is used in both cases. However, it is conceivable that there are two entirely distinct factors: a pretend processing mode and the concept PRETEND, and they just happen to develop at the same time. As a scientist, I find this quite underwhelming, especially when I can account for their yoking by not postulating a pretend processing mode.

However, there are more than just reasons of parsimony to prefer the unified over a dual factor account. There are further, even more striking, differences between *believing* and *pretending* that are accounted for by the unified, but not by the dual, factor account. Having a belief is not something one *does;* it is something that happens to one. It is an involuntary state, *not* something one *decides* to undertake. For that reason, it is commonly the case that one has beliefs that one is not aware of having. Pretending, on the other hand, falls in the class of *voluntary* action; one decides to pretend that P or decides not to pretend that P—it is under one's control and it is not something that happens to one involuntarily. The voluntariness of pretense is nothing more than the ordinary voluntariness with which one, for example, undertakes to lift a cup or to place a marble on the floor. Unlike believing that P, pretending that P is not something that simply happens to one, it is something that one undertakes *deliberately.* And for that reason, one is *always* aware when one is pretending. Young children, as Piaget (1955) noted, appear to be aware when they are pretending, judging by their "knowing looks and smiles."

The properties of voluntariness, deliberateness, and awareness that accompany *pretending-that* suggest strongly that *pretending-that* is a type of action. As we saw earlier, *pretending-that* should not be identified with either *pretending to do X* or with *pretending to believe-that.* It belongs to a distinct class of mental action in which an agent deliberately, voluntarily, and with awareness undertakes to hold a specific attitude toward the truth of a proposition. In the case of pretending, we undertake to hold the attitude of pretending that some proposition is true. Pretending is not the only mental action of this kind that we can undertake. We can also *suppose, consider,* imagine, *plot, memorize,* and so forth.

Deliberate—that is, goal directed—external, physical actions require the representation of their goal. Likewise, deliberate, *internal,* mental actions also require a representation of their goal. Deliberately undertaking the external action of *tying laces* requires representing the goal of that action as one of tying laces and therefore requires having the concept, TIE LACES. Likewise, deliberately undertaking the action of *pretending* that *P* requires representing the goal of that action as pretending that P And for this reason, the child who deliberately pretends uses the concept PRETEND-THAT in his goal representation. Naturally, this is also the concept required for representing the mental state of another person who is pretending-that.

Recent findings on the existence of "mirror neurons" (e.g., Rizzolatti et al., 1996) suggested that the brain uses the same representation for one's own action of grasping an object as for representing a similar grasping action performed by someone else. The same neurons are active in carrying out that action as in observing it being carried out by someone else. The simplest thing to assume is that the activity of the neurons in question in some way reflects the use of the concept GRASP. On this assumption, it is no surprise that GRASP refers to *grasping,* no matter who carries it out. A similar brain organization may underlie *pretending.* That is, we should expect that there will be mirror neurons for pretending-that. However, there is no particular reason that I can see for expecting that mirror neurons for pretending must be found in the motor cortex rather than somewhere else.

The central idea of the metarepresentational theory of pretense still seems to me to be a fruitful empirical hypothesis. The human ability to pretend depends on the availability of the concept PRETEND. This concept allows the child both to pretend by himself or herself and to recognize pretense in other people. In both cases, the brain is, in a sense, reporting on a mental state. That is what ties pretending to "theory of mind" and makes the study of pretense such an intriguing case study of an early appearing, yet highly abstract, concept. Understanding pretense still poses a deep challenge to past and current attempts to understand the nature of early developing abstract concepts.

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