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IMAGINATION AND PRETENSE

Elizabeth Picciuto and Peter Carruthers

1 What is pretense?

Pretend play (sometimes called "symbolic play") is early to develop and universal among humans (Haight et al. 1999). Around the middle of the second year of life all typically developing children start to pretend that one thing is another. They pretend that a banana is a telephone, for example, and act accordingly; or they pretend that they themselves are Superman, and rush around the room wearing a cape – and so on. In Section 3 we will consider whether such behavior is not only *universal* to humans, but *unique* to humans. At the very least it can be said that human children are unique in the extent and variety of their pretend play. In the present section we attempt to characterize what pretense itself *is*.

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If one is to pretend that one thing is another, then of course one should not *believe* that it *is* the other. This is what distinguishes pretense from delusion. Someone who rushes around wearing a cape because he believes he *is* Superman is not pretending, but delusional. One might propose, then, that *pretense that P* is behavior *as if P*, or behavior that *resembles* the behavior of someone who believes *P*, but where the agent does *not* believe that *P*.

One thing this proposal gets right is that it characterizes pretense as embodied. In our view, you cannot pretend without overtly doing anything. Someone who is imagining hiking in the Smoky Mountains purely internally (without her bodily actions making any contribution to the imaginative episode) is indeed *imagining* hiking or *supposing* that she is in the Smoky Mountains; but she is not *pretending* to be there. However, it is not necessary that one actually moves one's body to pretend; it may suffice to adopt a certain bodily posture. Someone who is pretending may hold her body perfectly still, such as the child who pretends to be a dead cat (see Nichols and Stich 2003). Sometimes exhausted parents will initiate a game for their children by saying, "Let's pretend to be sleeping lions." Presumably the motionless children *are* pretending to be sleeping lions (until they actually – and mercifully – fall asleep).

Accounts of pretense as *behavior as if P in the absence of a belief that P* or *behavior that resembles P in the absence of a belief that P* are too simple, however (Friedman et al. 2010). The bodily actions and postures of a person pretending *X* do not need to *resemble* the bodily actions of someone doing *X*. A child who enacts a family dinner scene with dolls is not moving her body as she would if *she* were eating dinner. She is using her body to manipulate external

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symbols of her imaginings. Someone playing a game of Risk may (or may not) be imagining that she is directing battles so as to conquer the world. Her body movements are not similar to an actual general directing battles. Yet, while imagining directing a battle, she may use her body to pretend that one object (a game piece) is another (an army).

Moreover, consider two fencers who often spar with one another competitively. Although their behavior resembles that of two pirates fighting, and although they do not believe that they are pirates, they are not pretending to be pirates fighting. Nor, in our view, are they pretending to do or to be anything else. Rather, they are participating in a sport that has rules and constraints, as well as criteria for what constitutes winning. Each is trying to contact the other's torso with her foil, while attempting to avoid being similarly contacted by the other's foil. This point generalizes. There are many sports and games that resemble another activity, yet are not games of pretense. Someone playing a tennis videogame might be swiping the controller in a movement that roughly resembles forehands and backhands. However, she may or may not be pretending to play an actual game of tennis. Such a person may just be trying to win the videogame. Her focus is not on imagining a game of tennis, but on gaining points.

In fact, the very same behavior might constitute pretense on one occasion but not on another (in both cases in the absence of belief). For example, our two fencers might go through the very same sequence of motions while they *are* pretending to be pirates. Imagine them attending a child's birthday party and being begged by one of the children, "Please Aunt Joan and Aunt Jill, pretend to be pirates." When they pick up their foils and begin to spar, *then* they are (probably) pretending (unless they forget their intended roles in the heat of a familiar form of competition). They may be pretending even if an observer with no knowledge of the context would be unable to distinguish their behavior from that involved in one of their regular, unpretended, sparring sessions.

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What is distinctive of pretending that *P*, in contrast with merely acting as if *P*, we suggest, is that the agent *represents* what she is doing *as* an action or as symbolic of an action of the sort *P* (while not believing that *P* is true, of course). Someone who is sparring with a partner while pretending to be a pirate represents her movements *as* the actions of one pirate fighting another. Often this might result in forms of behavior that would distinguish it from a regular bout of fencing, as when she yells, "Take that you scurvy dog!" or, "I've got you now Captain Hook!" But it need not do so. It is enough that the person *supposes* herself to be a pirate while fighting, or *imagines* herself as a pirate while fighting.

Notice, however, that someone can pretend that *P* while representing only some aspects of her behavior as being of the kind *P*, and without attempting to replicate all aspects of the behavior appropriate for *P*. Aunt Jill's mental representation of herself as pirate, as well as her pretense behavior, might be very different from that of a real pirate: she might make overly dramatic flourishes, for example, and she might joshingly pretend to fight off a vicious goldfish that has leaped aboard her ship. Moreover, pretense can vary in richness and degree depending on the amount of detail present in the accompanying mental representations. At the birthday party, Aunt Jill and Aunt Joan may not devote as much of their working memory to representing themselves as pirates as do their nieces Mia and Madison when they pick up sticks and begin to spar. The aunts may be more occupied with the task of entertaining the children, and may fail to represent themselves as being on the deck of a sailing ship, for example.

In what sense is *imagination* involved in pretense, on this account? Imagination is a form of non-truth-directed thought. While one can, of course, imagine something in an attempt to get it right, this will be a distal use of imagination, not constitutive of the activity of

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imagining itself. Put differently: in imagining something, one is not thereby committed to the truth of what one imagines. (This distinguishes imagination from belief and episodic memory.) To imagine something, then, is to entertain a representation of an event or state of affairs without believing that it exists. Sometimes these representations are produced creatively, as when one notices a roll of duct tape and imagines a novel use for it: to replace the binding on one's favorite book. Sometimes the content of what one imagines is given by features of the context, as when one is asked whether one would rather go to the museum or go hiking, and imagines and responds affectively to each before reaching a decision. (Here we see one of the central uses of imagination, in so-called *prospection* of the future; see Damasio 1994; Gendler and Kovakovich 2005; Gilbert and Wilson 2007.) At yet other times one allows the content of what one imagines to be given to one by others, as when watching a movie or reading a novel.

We take a broad view of what constitutes imagination in this chapter. First, we will not distinguish between imagination and supposition (contra Gendler 2000 and Weinberg and Meskin 2006). On our view, imagination may involve the generation of mental imagery, or it may mean the entertaining of a proposition. Someone may create a mental image of a unicorn, or simply entertain the proposition (without believing it) that *there is a unicorn*: in both cases, the person imagines a unicorn. Similarly, we do not insist that imagination, as such, requires one to entertain imaginative representations of possible experiences. In some cases, of course, one's imaginings include representations of experience. One might imagine that one is listening to Beethoven's Ninth Symphony, that one is flying, or that one is a football player who is leaping to catch a long pass in the end zone. In these cases one represents sequences of auditory, visual, or proprioceptive experience respectively. However, the content of what one imagines need not be related to experiences at all. For example, one might merely imagine that Santa Claus exists, without also imagining that one perceives him or is interacting with him. (Currie and Ravenscroft [2002] call this *belief-like imagining*.)

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What distinguishes imagining from states such as intending, wanting, hoping, and dreading, however? For in these latter cases, too, one might generate and entertain a representation of a nonactual state of affairs while believing that it does not (yet) exist. If one wants to go hiking or decides to go hiking, then one has a representation of oneself as hiking without believing that one is. In fact standing-state – or stored – intentions, desires, and other such states are easy to distinguish from acts of imagination. For imaginings are *events* that occupy specific periods of time, whereas stored intentions and desires are *states*. It is only when these states are activated that they *become* events involving a representation of something nonexistent. One may have a nonoccurrent desire or intention, of course; it makes much less sense to say one has a nonoccurrent imagining.

Another difference between imaginings and states such as intention or desire is the role each plays in motivation. Intentions, desires, and hopes are intimately bound with motivation. They are apt to get one to do the things represented, or to bring about the states of affairs represented, or to avoid those states of affairs. Even if a given hope (say) does not actually motivate behavior, one likely considers and rejects doing things that bring about the hoped-for state of affairs. One might hope to be rolling in money but decide for other reasons not to buy a lottery ticket. In the case of dread, one may take steps to avoid the state of affairs that one fears. Such states are intrinsically motivating. Imaginings, however, can be motivationally neutral, or they may motivate attractively or repulsively depending on our emotional response to them. What starts as just an imagining of oneself on a Caribbean beach may swiftly turn into a desire to be there. And imaginings can *cause* novel desires, intentions, or beliefs, of course. When one prospectively imagines the alternatives of a museum visit or a

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hike, one's affective reactions to those representations may issue in both a desire and subsequent intention to go hiking.

Returning now to the question of the relationship between pretense and imagination, we suggest that to pretend that *P* is to act as if *P* (without believing it) *while imagining that P*. A child who pretends that the banana is a telephone needs to suppose that the banana is a telephone, or to imagine the banana *as* a telephone, and act accordingly. While acting (making dialing movements, saying things that would initiate a conversation with the person dialed) the child acts within the scope of the initial supposition. This means that she represents her actions *as* the actions of someone who dials a number and then starts a conversation when the call is answered. Similarly, someone pretending to be a pirate represents the actions in which she is engaged *as* those of a pirate.

Pretending, then, is a kind of embodied imagination. (Currie and Ravenscroft [2002], in contrast, regard imagining and pretending as excluding one another. We mention further alternatives below.) Indeed, when pretending one performs an action of one sort (holding a banana to one's ear, say) not only *while* imagining it as an action of a different sort (talking on a telephone), but *because* one does so. For this reason we think that pretending only lasts for as long as imagination actively guides one's movements. Thus a child might set out on Halloween night not only dressed as a witch but pretending to be a witch. Yet as she walks around the neighborhood chatting with her friends, she may no longer be imagining herself as a witch. In that case, although she is dressed as a witch she is not pretending to be a witch. She is just a child dressed as a witch who is talking with friends. And this remains true even if at some point she forms an image of a witch riding a broomstick, provided this does not guide her own behavior.

If to pretend that *P* is to act as if *P* while guided by one's imagining that *P*, then an important question to consider is what sets the *limits* of pretense? Someone pretending that *P* does not generally act *entirely* as if *P* were true. Children pretending to make (mud) pies do not normally eat them. And someone pretending to be Superman will not normally leap from the balcony of a third-floor apartment. So what is it that determines where pretending ends and reality begins? One possibility is that the limits of pretense are set by one's real countervailing motivations. Because children generally understand that mud does not taste nice, they stop short of actually eating the pies. And because one does not want to suffer severe injury one usually does not actually attempt to fly.

This account of the limits of pretense is entirely first order in character (Nichols and Stich 2003). That is, it does not require the mental states involved in pretense to be metarepresresentational ones. A child, on this account, might be motivated to act as Superman does (see our discussion in Section 2), but also be motivated to avoid injury. These two motivations battle it out between themselves, and the child behaves accordingly (generally by limiting the pretense; but note that children sometimes *do* eat their pretend creations and sometimes *do* jump from high places, occasionally with tragic consequences). An alternative account, however, is that children are aware *that* they are only pretending (Leslie 1987), and are thus aware of the difference between imagination and reality. This account is a metarepresentational one, requiring that pretense is not merely action as if *P* guided by imagination of *P*, but is also action guided by one's meta-awareness that one is imagining or pretending.

Which account should we prefer? Each is possible. In particular, children's third-person understanding of pretense emerges at about the same age as their own pretense behavior begins (Onishi et al. 2007); so they have the conceptual resources for the metarepresentational account to be true. Yet on the other hand, the metarepresentational view makes pretense unique among attitudes. Children and nonhuman animals can want things without

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representing themselves *as* wanting them, and they can believe things without representing themselves *as* believing them. So why should pretense be any different? Why should pretense, and only pretense, require metarepresentational awareness of the presence of that attitude? It might be replied that on our account a child pretending to be Superman must be aware that he is behaving *as* Superman, while of course believing that he is not. This comes quite close, at least, to saying that he must be aware of pretending to be Superman. Whatever might be true of the essence of pretense, what is surely true is that children are, as a matter of fact, often aware that they are pretending while they pretend. So a metarepresentational account of the limits of pretense is at least likely to be partly correct.

2 The proximal function of pretense

Why do people (primarily but by no means exclusively children) pretend? The question can be interpreted proximally (as one about motivations) or distally (as a question about adaptive or evolutionary function). We will address the distal version of the question in Section 4. Here we focus on the question of motives.

There are probably a multitude of ways in which pretense can be experienced as rewarding or enjoyable. Children often pretend to do or to be things they find intrinsically desirable or admirable. If one admires Superman and thinks it would be wonderful to fly through the air, then when one pretends to be Superman one will represent oneself as someone admirable doing something wonderful. But this is unlikely to constitute a full explanation. For example, we rather doubt that the child pretending to be a dead cat is doing it because she thinks dead cats are admirable or that it is desirable to be a dead cat. In this case the motivations might be social, however. The child pretends something with the goal that it should be found amusing by others. Moreover, when children engage in *joint* pretense, the rewards might derive in part from the mere fact of doing something jointly with another person. For children (and adults) appear to find joint attention and joint action intrinsically rewarding (Tomasello et al. 2005).

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Beyond all this, however, we think that the mere fact of imagining something is intrinsically rewarding. As one of us has argued elsewhere (Picciuto 2009), people don't only enjoy imagining things that would make them happy if true. They also enjoy imagining things that they wouldn't want to be actual: that they are being eaten by monsters, that they are vicious bad guys, that they are throwing up, that they are dangling by a rope above a pit full of snakes. Children's pretense is full of blood and guts and pain; it can be variously disgusting and scary and sad. The same is true of adult imagining in fiction and film. It seems that imagining provides rewards regardless of the representational content of the imagining.

These points about the rewards of imagination issue in a puzzle for the account of pretend play outlined in Section 1, however. For if the rewards of pretending derive from those of imagining, why do children bother to pretend at all? Why do they perform any overt pretend activities? Why not just imagine the same things in their heads, thereby deriving the same enjoyment? One might think that a partial solution to this puzzle would involve noting that *social* pretense is an intrinsically overt activity. It might be said that one cannot share an imaginative episode with someone unless that episode is externalized somehow, either in storytelling or in pretense. But on reflection this may merely beg the question at issue. For one can of course *imagine* that one is engaging in a shared activity with someone else. If the rewards derive from the imagining, then why should it matter whether one is *really* sharing an activity with someone?

Our answer to this puzzle is one that simultaneously explains why pretense tends only to be seen in children or among those who are interacting with children. Children's immature executive functions and limited working memory capacities mean that they are incapable of

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sustaining rich imaginative representations purely internally. The executive demands of covert imagination are generally much greater than those involved in pretense. For in the case of the latter, most of the representational burden can be offloaded onto perception of one's own actions. So the representations don't need to be endogenously generated and sustained, as they would have to be if they were created purely internally. Once a decision has been taken to imagine being Superman, if one's imagination takes the form of pretending then one merely has to impose the content *this is me being Superman* on one's perception of the actions that one undertakes as a result. If one were to imagine being Superman without pretending, in contrast, then one would also have to construct an extended sequence of images for oneself, roughly corresponding to the content of those perceptions. (Adults do still frequently offload the representational burdens of imagining by engaging in fictions, of course. It may be that adults, even with their greater capacity for working memory, still appreciate the representational assistance offered by fiction, while not requiring the more substantial representational work provided by the body when pretending.)

3 Do animals pretend?

We know that many animals not only *have* imagination, but make adaptive use of it. For example, both corvids (rooks, crows, jays, and the like) and chimpanzees can engage in prospective reasoning of a sort similar to that used by humans, imaginatively representing potential actions and formulating plans or reaching decisions as a result. (See Carruthers 2015 for review and discussion. See also Chapter 24 of this volume.) If humans are nevertheless unique in engaging in pretend play, then this would set up another puzzle. For pretending, as we have just seen, makes imagining easier, not harder. The question of the evolutionary function of pretense will be taken up in Section 4. Here we focus on the question whether nonhuman animals actually engage in pretense.

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Many animals engage in forms of rough-and-tumble play, or else play that seems designed to mimic adult mating or hunting behavior. Think here of lambs butting heads in the spring, of puppies play fighting, and of a kitten stalking and pouncing on a piece of string. The question is whether the lambs are pretending to be males competing for mates in the rutting season, whether the puppies are pretending to fight for dominance in the pack, and whether the kitten is pretending to hunt and kill prey.

One thing that can be said in light of our earlier discussion is that if animals are to pretend to do these things, then they must possess the corresponding concepts. (Indeed, if Leslie's metarepresentational account of pretense is true, then they must possess not just concepts, but the concept *pretense* itself.) In order to pretend to do or to be something, one must have the concept of that action or kind. One can't pretend to be Superman without having the concept *Superman*, and one can't pretend to be a pirate without having the concept *pirate*. This result provides an obvious opening for those wanting to deny pretend play to animals, since many philosophers deny that animals have concepts at all (Dummett 1991; Brandom 1994; McDowell 1994; Bermúdez 2003; Hurley 2006). Their grounds for doing so, however, are that the putative concepts of animals don't satisfy the so-called *generality constraint*, which is said to be a constraint on genuine concept possession (Evans 1982). The generality constraint states that any concept that one possesses should be capable of combining together with any other concept that one possesses (of appropriate adicity) to constitute a new thought. Since it is assumed (very plausibly) that animals are *not* capable of fully recombinatorial thought, it then follows that they lack concepts altogether. And if they lack concepts, then they must be incapable of pretend play. Or so it might be claimed.

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One of us has argued elsewhere, however, that the generality constraint is *not* an appropriate constraint on genuine concept possession (Carruthers 2009). What *is* essential to concepts is that they should be capable of recombining with *some* other concepts of appropriate adicity to constitute novel thoughts. For it is essential to concepts that they should be the building blocks of thought. But to insist that concepts must be capable of recombining with *all* other concepts is, in effect, to insist that genuine thinkers must be capable of *creative* thought. But this is not an appropriate constraint. Why should capacities for creative thought be made a necessary condition for capacities to think at all? Surely thinking is one thing, and creative thinking is quite another (while being much more demanding).

Moreover, even if we were to concede that animals don't possess genuine concepts, but only *proto*concepts (Dummett 1991), it is far from clear why seeing one's behavior in light of a protoconcept, and guiding it appropriately, should not be sufficient for pretense. Suppose we were to allow that cats have only a protoconcept of killing, not a real concept. Still, if a cat imagines itself as killing prey when leaping on and ripping apart a piece of string, why would this not qualify as a genuine instance of pretense? It would surely qualify as an instance of embodied imagination and that, we think, should be enough.

Since it appears to make no difference for our purposes whether animals have concepts or only protoconcepts, we propose to allow that they have the former. Whether they have the *right* concepts needed to turn instances of rough-and-tumble play into pretend play is another matter, however. For notice that lambs will butt their heads together although they have never seen adult males competing similarly. (Lambs are born in the spring, but the rut takes place in the fall.) And a kitten will pounce on a piece of string although it has been reared indoors and has never seen a hunt, and perhaps never even seen a mouse or a bird. It is possible, of course, that these animals have *innate* concepts of the relevant kinds. It may be that lambs are born with a concept of fighting for dominance. And it may be that kittens are born with the concepts *hunt* and *kill*.

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It seems equally possible, however – and perhaps rather more plausible – that affordances in the environment (the presence of another lamb; a small moving object) should activate an innate motor plan, doing so in the absence of any of the concepts required to transform the activity into one of pretense. We know that this sort of thing is possible, since we know that in humans motor plans are activated by affordances in the environment. Thus the mere sight of a hammer will initiate a motor plan to grasp it, which needs to be suppressed by top-down signals if the action is not to be executed (Frith et al. 2000; Negri et al. 2007).

Can an account of animal play in terms of environmentally triggered motor plans explain why a kitten leaping on his brother does not *really* kill him (which is presumably what the motor plan in question is designed to do), but only wrestles with him? It can easily be extended to do so, provided the kitten feels some sort of bond of affection toward his brother. For we can then suppose that there is a conflicting motivation that blocks the full execution of the motor plan in question. We can say that although the behavioral program for killing is triggered by the presence of the brother, and is partially carried through, the kitten doesn't kill his brother because he doesn't want to hurt him.

Even if these suggestions are plausible, it is hard to establish definitively that the rough-and-tumble play of animals does not qualify as a form of pretense. What we *can* say with confidence, however, is that animals do not pretend *very much*. Specifically, the young of each species at best engage in one or two species-specific forms of pretense. Pretense in animals, if it occurs at all, is very narrowly circumscribed, confined to one or two activities, and presumably results from a domain-specific innate predisposition. This is in marked contrast to human children, whose pretense knows no limits. Children can (and do) pretend to perform

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familiar adult activities. But they also pretend to be birds or animals, as well as pretending that an object of one kind (a block of wood, say) is an object of another sort (a fire truck, for example). Even if pretend play is not unique to humans, routine engagement in domain-general forms of pretense certainly is. This is sufficient to set up the puzzle of the next section: why (for what evolutionary purpose) do children do it? The puzzle is especially pressing since many animals have the imaginative capacities required for pretense, as we noted at the outset of this section.

4 The distal function of pretense: creativity

We have suggested elsewhere that pretense is an adaptation that serves to enhance adult forms of creativity (Picciuto and Carruthers 2014). This idea provides a solution to the puzzle just noted, since humans are uniquely creative, and since creativity of various sorts plays such a large role in human culture and in the explanation of human adaptability.

We allow, of course, that pretense may be *multi*functional. A feature that is initially selected for one purpose can thereafter be sustained and/or shaped, in part, because it happens to have other adaptive effects. So it may be that pretense is not *just* for creativity. It may also be for mindreading (Harris 2005), for counterfactual thinking (Harris 2000), and perhaps for much else besides. However, one mark of an adaptation is a high degree of "fit" between structure and function. Pretend play seems "fitted" to enhance creativity, we suggest, in a way that it isn't especially fitted to enhance any of the other properties that have been proposed. Specifically, pretend play is domain general whereas many of the alternatives aren't. And pretend play is itself often creative in nature, whereas the others aren't. If one just needed to practice mindreading, or counterfactual thinking, or whatever, then one wouldn't need to engage in anything creative to do so.

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Consider the suggestion that the function of pretense is to enhance mindreading (Harris 2005). While pretense *may* enhance mindreading, it seems unlikely that this is its primary function. First of all, while pretense behavior emerges in children when they are about 18 months old, there is increasing evidence that infants much younger than this, even those as young as 6 months old, can engage in mindreading (Baillargeon et al. 2010; Kovács et al. 2010; Carruthers 2013; Southgate and Vernetti 2014). Another reason to believe that the function of pretense is something other than enhanced mindreading is that the latter concerns just one domain. By contrast, as noted earlier, the pretend play of human children is very much a domain-general activity. One should expect that a domain-general activity would function to enhance a domain-general capacity rather than a domain-specific one.

Another alternative proposal is that pretense serves to rehearse children's social schemata, thus enhancing their understanding of social roles (Bogdan 2013). While pretense *can* be used in this way, there are several reasons why it is unlikely that this is pretense's primary function. Most importantly, much of children's pretense has nothing to do with social schemata. A child might pretend that a brick is a fire truck, that a lump of mud is a pie, that a stick is a sword, that she is a fairy sprinkling magic dust, or that she is a dead cat. None of these pretenses involve rehearsing a (useful) social schema. Moreover, children often entertain unlikely premises. And not only are the initial premises often unlikely, so are some of pretended consequences. Children might be fighting off snakes, then dragons, and are then forced to contend with an alien or a robot invasion. In addition, children's tendencies to adhere to social schemata in their pretense varies by culture. Children raised in Eastern cultures are more likely to pretend using social schemata while children raised in Western cultures are more likely to pretend fantastic events (Farver and Shin 1997; Haight et al. 1999). If the function of pretense were

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to enhance social schemata, then one might expect that children from all cultures would pretend social schemata for at least the majority of the time.

Our own proposal is that the function of pretense is to enhance domain-general forms of creativity. An initial puzzle for this idea, however, is to explain why *embodied* imagination (that is: pretense) should be needed. For imagination alone can be creative, and imagination alone could presumably serve to practice creative idea-generation. In reply, recall that pretense off-loads most of the representational demands of imagining, which explains why children should start out their imaginative lives by pretending. We speculate that this enables children to begin practicing creative idea generation at significantly earlier ages than would otherwise be possible.

Creativity is generally taken to mean the process of creating thoughts, actions, or objects that are both novel and valuable. (See Chapter 13 of this volume.) In our view, creativity is not restricted to those thoughts, actions, and objects that are novel to *all* humans and valuable to *all* humans. Rather, creativity can involve products that are novel and valuable to the creator. This is what Boden calls *psychological creativity* as opposed to *historical creativity* (Boden 2004). For example, someone looking at a roll of duct tape and realizing for the first time that it could be used as a book binding is certainly not historically creative. She may, however, be psychologically creative if the thought is new to her and yields an outcome she values.

The most widely adopted account of creativity in the scientific literature is the so-called "Geneplore" model (Finke et al. 1992; Ward et al. 1999). On this view, creativity is a two-factor process: one generative and one exploratory (hence the name). In the first phase novel and unobvious ideas or hypotheses are produced. In the second phase, these products are explored and evaluated. Then the best or most apt idea is selected or implemented. We assume that this account is broadly correct.

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Consistent with our view, pretend play – specifically imaginative pretend play at a given age – was found to correlate with creativity 4 years later (Russ et al. 1999). Moreover, when children are given play opportunities, as opposed to repetitive copying, this boosts their subsequent creativity in unrelated domains when tested a few minutes later (Howard-Jones et al. 2002). In addition, it turns out that people with autism, who show a marked absence of pretend play in infancy, are also less creative than typical people in adulthood (as well as having well-known mindreading deficits). People with autism are less generative overall, while also producing less novelty and showing less imagination (Craig and Baron-Cohen 1999). These findings are just what one might predict if the function of pretend play were (at least in part) to enhance the generative component of creativity. For pretense, as we have seen, involves producing imaginings and enacting them. The fact that it is specifically imaginative pretend play that correlates with creativity gives this idea some weight. But of course what are really needed, at this point, are longitudinal correlation studies and (perhaps unethical) longitudinal interventions to demonstrate the long-term impact of pretend play in childhood.

One problem with our proposal, however, is that not all pretense is particularly creative. Sometimes children return again and again to the same pretend scenarios. How would this enhance creativity? In reply it can be said that mundane forms of pretense are consistent with the proposed function, provided that children engage in them for other reasons: perhaps to achieve a sense of familiarity and security, or because their enjoyment of a specific imaginative episode is so great. Moreover, even if mundane pretense does not enhance the generative component of creativity, it may enhance other aspects of creativity, as we note below. For example, even mundane pretense requires the child to suppress routine, obvious, or reality-based responses.

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Another problem is that, while we have argued that pretense is a form of embodied imagination, not all creativity seems to involve imagination. For example, there are instances of spontaneous musical, athletic, and other sorts of improvisation that seem clearly creative, yet don't involve generating imaginings of what the products could be like before evaluating and enacting them. On the contrary, these improvisations happen online and "in the moment." One possibility is that pretense may function to develop and enhance cognitive forms of creativity specifically, rather than creativity more generally. But in fact we think that there is still a large degree of structure-function match even with online forms of creativity. Thus pretense may exercise and develop other mental capacities required for creativity besides the generative aspect of imagining.

What pretense has in common with creativity of all kinds, including musical and athletic improvisation, is that an obvious option or response is bypassed, and instead an unobvious option or response is selected. If a child looking at a banana is to pretend that the banana is a telephone, then she must bypass the obvious response: her sensory systems will all be informing her that what she is looking at is a banana. Instead, she must suppress the obvious tendency to see the object as a banana, and select the option of seeing it as a telephone instead. Likewise a jazz improviser needs to bypass the obvious – familiar or expected – continuation of a musical phrase while selecting something more surprising.

Consistent with these ideas, it seems that creative cognition is distinguished by a kind of defocused attention combined with cognitive control (Bristol and Viskontas 2006; Christoff et al. 2007), combining together aspects of focused problem-solving (cognitive control) with unguided thinking (or "mind-wandering"). To be creative one has to allow oneself to attend more widely, permitting alternative ideas or behaviors to "bubble up" and be selected, but at the same time one has to bypass more obvious ideas and behavior, maintaining focus while alternative possibilities are explored and evaluated. We suggest that part of the function of pretense is to foster the availability and selection of unobvious representations in adulthood, thereby supporting creativity. Consistent with this suggestion, it has been found that high levels of creative achievement among adults is linked with low levels of what psychologists call "latent inhibition" (Peterson et al. 2002; Carson et al. 2003), meaning that they tend to distribute their attention more widely, and maintain a range of activated representations that aren't obviously relevant to the task in hand.

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Moreover, pretense (even mundane pretense), like creativity, often involves a capacity for sustained focus while working within the scope of an initial supposition. Pretending generally takes time, as well as involving a number of intermediate stages. During that time the child needs to keep in mind the relevant pretend suppositions, and needs to maintain her focus while the pretense is acted out. In addition, she often needs to do so while new suppositions are introduced, thereby elaborating the pretend episode. It may thus be part of the function of pretense to enhance people's capacity to focus on a novel idea or activity while it is being explored, evaluated, or implemented.

5 Conclusion

We have suggested that pretend play is a form of embodied imagination. The embodied aspect helps children to maintain both their focus on, and the intensity of, their imaginings. Human children may be the only creatures to engage in pretend play, and they are certainly unique in the range and domain-generality of their pretense. And of course humans (both children and adults) are the only creatures to exhibit significant amounts of creativity across multiple domains. We have thus suggested that an intrinsic motivation to engage in pretense

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is an innately channeled disposition that is designed to enhance adult creativity. Pretense not only encourages the generation of new ideas, but also enhances other capacities that are necessary to creativity, such as suppressing obvious responses while selecting and developing unobvious ones.

Further reading

G. Currie and I. Ravenscroft, Recreative Minds: Imagination in Philosophy and Psychology (New York: Oxford University Press, 2002) is an insightful and wide-ranging discussion of imagination and its role in human cognition. P. Harris, The Work of the Imagination (New York: Blackwell, 2000) contains innovative research on pretense in children, and an argument for its function in developing rationality. The second chapter of S. Nichols and S. Stich, Mindreading (New York: Oxford University Press, 2003) outlines a theory of the cognitive architecture underlying pretense. K. Walton, Mimesis as Make-Believe: On the Foundations of the Representational Arts (Cambridge, MA: Harvard University Press, 1990) is a wide-ranging and influential discussion connecting children's pretend play and make-believe with representational art.

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