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IMAGINATION IS WHERE THE ACTION IS*

Two forms of pretending, if properly understood, put a strain on prevalent views about human imagination in philosophy and cognitive science. If we recast our image of imagination, we can accommodate them. The two phenomena I wish to introduce are *semi-pretense* and *pretense layering*.

(For clarity, I always use "pretend" and cognates to refer to bodily behavior; "imagine" and cognates refer to mental activity and structures.)

Semi-pretense: Jennifer and Leroy are at a pool on a summer day, watching other children jump off the high-dive. One clumsy child almost trips off the end of the board and falls into the water at an awkward angle with arms waving. "Two," says Leroy, holding up two fingers with a frown. "I give him a one," says Jennifer, holding up a finger. Next a young woman springs off the board, glides in a swan dive, and enters the water with hardly a splash. "Ten," they both shout, holding up ten fingers each.

Are Jennifer and Leroy *pretending* to be judges at a diving competition, or are they *acting plainly*, simply evaluating the dives for themselves?

The question excludes a middle answer. There is a continuum of cases. At one end (full pretense) Jennifer and Leroy wear polo shirts, speak in officious tones, and hold up placards with numbers. At the other end (plain action), the two just say things like, "that dive was pretty good," with no trappings of a diving judge. The example described is in between, so it is semi-pretense. (If it seems like plain action to you, just move one step over on the continuum.)

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Pretense layering: In the film "Rebel Without a Cause," James Dean and Natalie Wood play (pretend to be) high school students, Jim and Judy, who begin dating. One scene is in a deserted mansion, where their two characters pretend to be married adults who consider buying a house. "Should we rent or are we in a buying mood, dear?" "You decide, darling. Remember our budget." Thus, there was more than one layer: Dean and Wood pretended to be high school students who pretend to be adults. In principle, such *pretense layering* can go on for arbitrarily many layers; in practice, there are rarely more than two or three.[1]

These phenomena give theorists a clear directive: identify the imaginative structures responsible for them and other forms of pretense. I take up that directive. To advance our understanding of imagination and pretense, I defend this thesis:

> *Active Imagination Thesis*: There exists a form of imagining that is a continuously updated *forward model* of action in the world, in which action possibilities are constructed in relation to a manifold of largely perceptual representations that can be veridical, nonveridical, or mixed—where *mixed* is a usual and important case.

A "forward model" is an internal representation of motor commands that anticipates the consequences of those commands on bodily motion. The "nonveridical" perceptual representations are basically *mental imagery*. I specify "nonveridical" because some mental imagery is veridical, for example, an accurate visual memory.[2] What is radical about this view, in relation to other views I consider, is the idea that (nonveridical) mental imagery can be *integrated* into the perceptual field and that *this* form of imagining delivers the objects we relate to in constructing pretense action, such as make-believe.[3] My defense of this thesis has three sides.

(1) Competing theories fail to account for important mental and behavioral phenomena, such as semi-pretense and layering. They have other problems, as well.
(2) The theory of imagination I offer accounts for the behavioral phenomena of semi-pretense and layering, as well as other phenomena.
(3) The theory of imagination I offer coheres with empirical findings in cognitive neuroscience.

[1] Herb Clark introduces the term "layering" in chapter 12 of *Using Language* (New York: Cambridge, 1996) pp. 353–86. Clark is inspired by Erving Goffman, as am I; see Goffman, *Frame Analysis: An Essay on the Organization of Experience* (Boston: Northeastern, 1986). For philosophical discussion of layering, see Kendall Walton's *Mimesis as Make-Believe: On the Foundations of the Representational Arts* (Cambridge: Harvard, 1990).

[2] "Veridical" basically means *treated as accurate by the agent's cognitive system*. How to flesh out that idea further is an issue I take up in my (unpublished) "What Is a Judgment?"

[3] My theory is radical in relation to some academic views. But the phenomena were at some level familiar all along. I focus here on pretense for play, but my theory extends also to pretense for deception.

My view of imagination—if it is correct—has implications beyond pretense. In the course of this paper, I suggest various ways in which imagination is central to producing action generally.[4]

Sections I and II are critical, displaying the inadequacy of two current theories: (i) the Nichols and Stich theory, which I call *the conditional belief account*, and (ii) what I call *the replacement account*, advocated in somewhat different forms by Velleman, Currie and Ravenscroft, and Doggett and Egan.[5] But the critiques of these competitors lead to constructive suggestions. And section III presents my positive theory: the *integrated imagination theory*. I call it this to emphasize that the structure of representations that leads to pretense (and other) action integrates imagining and veridical representation in a variety of ways. Section IV summarizes the implications of my theory for mind and action.

I. THE CONDITIONAL BELIEF ACCOUNT

Shaun Nichols and Stephen Stich augment the standard desire-belief explanation of action with the "Possible World Box" (PWB), which is meant to house imaginings. The desire-belief explanation of action is that desires and beliefs jointly cause and rationalize actions that will make the contents of the desires true, if the contents of the beliefs are true.[6] (For example: desiring to find a cup of coffee, I go to where I believe the coffee shop is.) How, for Nichols and Stich, does the PWB augment the standard desire-belief explanation of action?

> …as a possible world description is unfolding in the PWB, the pretender comes to have beliefs of the form:
>
> > If it were the case that p, then it would (or might) be the case that q_1 & q_2 & … & q_n
>
> where p is the pretence premiss and q_1 & q_2 & … & q_n are the representations in the PWB. These beliefs, along with the desire to behave in a way

[4] Some of what I say may seem to depend on the assumption that Andy Clark criticizes, namely, the assumption of "experience-based control" (in "Visual Experience and Motor Action: Are the Bonds Too Tight?" *Philosophical Review*, CX, 4 (October 2001): 495–519. So I wish to caution the reader that not all forms of imagining I posit are necessarily part of *conscious* experience, although surely some are. Sorting out which are conscious must be postponed until after the theory is stated in representationalist terms.

[5] All references to these authors refer to: Shaun Nichols and Stephen Stich, *Mindreading: An Integrated Account of Pretence, Self-Awareness, and Understanding Other Minds* (New York: Oxford, 2003); J. David Velleman, "On the Aim of Belief," in *The Possibility of Practical Reason* (New York: Oxford, 2000), pp. 244–81; Gregory Currie and Ian Ravenscroft, *Recreative Minds: Imagination in Philosophy and Psychology* (New York: Oxford, 2002); and Tyler Doggett and Andy Egan, "Wanting Things You Don't Want: The Case for an Imaginative Analogue of Desires," *Philosopher's Imprint*, VII, 9 (December 2007): 1–17.

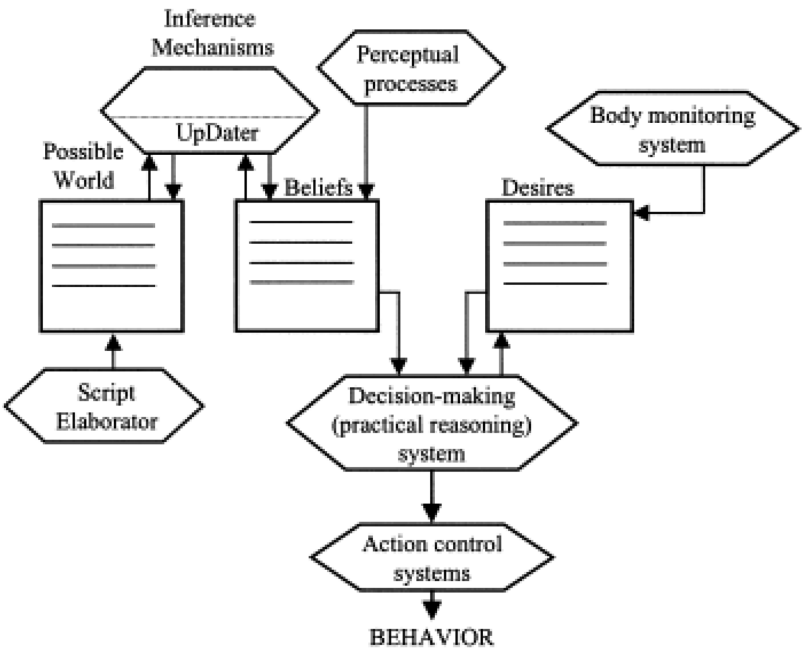
[6] Donald Davidson revived this explanation form in his "Actions, Reasons, and Causes," this JOURNAL, LV, 23 (November 7, 1963): 685–700.

> that is similar to the way one would behave if *p* were the case, lead to the pretence behaviour….[7]

In short, what one imagines generates conditional beliefs, and pretense occurs when one desires to behave as if the antecedent of the conditional belief were true.

Here is how their theory would explain pretending to be a thief. The pretense premise represented in my PWB is *I am a thief.* That premise is elaborated upon in the PWB by various processes, which results in representations with contents such as *I carry a gun into a bank and point it at the teller.* What goes on in the PWB then causes me, the imaginer, to have a conditional belief of the form *if I were a thief, I would carry a gun into a bank and point it at the teller.* Then the bodily pretense, such as making a gun shape with my hand and saying "Stick 'em up!" is caused by the conditional belief and a desire to behave as if the antecedent of the conditional were true. The desire's content would be *that I behave as if I were a thief.*

Importantly, what one imagines on this theory does not have a direct role in causing action. Rather, the effect of imagining on action is mediated by beliefs. The diagram, or "boxology," that Nichols and Stich offer exhibits this mediation:[8]



[7] Nichols and Stich, *op. cit.*, pp. 37–38.
[8] *Ibid.*, p. 36.

There is no direct arrow from the PWB (on the left) to the Decision-making system (center). Rather one's imaginings only influence action when mediated by conditional beliefs. That is why I call this the *conditional belief account*. Let me put the point about mediation as starkly as I can: on the Nichols and Stich theory, the pretender's bodily actions would be exactly the same, even if she had no imaginings, as long as the relevant conditional beliefs were still in place.

There are three major shortcomings of this theory. First, it cannot without absurd consequences explain pretense of outlandish behaviors. Second, the claims of the theory devolve into incoherence if one tries to use it to explain *pretense layering*. Third, the theory cannot make sense of the fact that people can *choose* pretense behaviors from a variety of options they think up. These points are not merely negative, however, since understanding them gives rise to constructive suggestions for a better theory of imagining.

Criticism 1 (outlandish pretense): I once saw a comedic improvisation in which two actors, supposed to be in a duel, spontaneously pretended to mount pterodactyls and begin jousting with one another.[9] According to the conditional belief account, explaining this pretense requires positing the following in the Belief Box of either improviser: *if I were in a duel, I would mount a pterodactyl and joust*. But this posit is absurd. No one believes such a thing. So the conditional belief account falters at explaining pretense of outlandish behavior. Nor is this an isolated example. A student who gets a bad grade on her test may, in private, pretend she is shooting the professor with a gun: "Bang, take that!" What would her conditional belief be? Presumably: *if I had a gun, I would shoot my professor*. But surely it is not a requirement that she believe this in order to engage in such pretending. In fact, it is perfectly common for people to pretend to do things that they do *not* believe they would do under any circumstances. Sometimes that is the point.[10]

Criticism 2 (layering): Often in pretense layering, the assumption about who or what one is in one layer is inconsistent (or at least incoherent) with the assumption about who or what one is in the second layer. This can be seen to some extent in the example of James Dean, who is a high school student in one layer and a married adult in another layer. But examples can be starker. Suppose I pretend to be a child who pretends to be a dinosaur on the hunt. What would the

[9] The group was Stanford Improvisers, otherwise known as SImps.

[10] Criticism of the Nichols and Stich view along these lines also appears in Doggett and Egan, *op. cit.*

conditional belief be in such pretense? Presumably something like: *if I were a child, then (if I were a dinosaur, I would hunt)*. But there is no way to make sense of this belief, since the two antecedents do not cohere at all. If someone claimed to believe that, I would not even understand the claim. Thus, the conditional belief account makes incoherent posits when applied to pretense layering.[11]

Criticism 3 (choice): Sometimes pretend play is utterly spontaneous, but sometimes we choose to pretend and, while pretending, choose between a number of different actions we can perform. In pretending to be a doctor, for example, I can choose between pretending to refuse to perform a surgery and pretending to perform the surgery. How is the conditional belief account to explain the possibility of this sort of choice? Presumably, the pretense premise in the PWB is *I am a doctor*. Then both further contents in the PWB must be represented: *I perform the surgery* and *I refuse to perform the surgery*. At this point, Nichols and Stich must say that I come to have a conditional belief with one of these contents represented in the consequent (whichever it is I actually do). If I end up choosing to pretend to perform the surgery, it must have been because I had the conditional belief *if I were a doctor, I would perform the surgery*; if I end up choosing to pretend not to, it must have been because I had the belief *if I were a doctor, I would refuse to perform the surgery*. But that gets it wrong. When I choose among pretense actions, I do not thereby force one or the other of two conditional beliefs on myself. First, that contradicts the very persuasive idea that coming to have beliefs is *not* a matter of choice.[12] Second, it involves a superfluous and unlikely posit: a belief in something without any evidence whatsoever, the contrary of which could just as well have (by choice!) been believed.

* * *

All three criticisms show that the conditional belief account is forced to posit bizarre, incoherent, or simply unlikely *beliefs* in order to explain ordinary pretense. The account was forced into this position

[11] It is tempting to say that Nichols and Stich can appeal here to the *concept* of PRETEND (*if I were a child, I would PRETEND to be a hunting dinosaur*). But Nichols and Stich disavow appeal to the concept of PRETEND shortly after the quoted passage, since they oppose the way that Alan Leslie invokes that concept. For a snapshot of the debate, see Ori Friedman and Leslie, "The Conceptual Underpinnings of Pretense: Pretending Is Not 'Behaving-As-If'," *Cognition*, cv, 1 (October 2007): 103–24. Also, Stich (personal communication) holds that the passage I quote is meant as a general account of pretense.

[12] The *locus classicus* of this view is Bernard Williams, "Deciding to Believe," in *Problems of the Self* (New York: Cambridge, 2007), pp. 136–51.

because it posits the Belief Box in between the PWB and the systems that produce behavior. Thus, it is probably a mistake to posit an architecture in which beliefs causally mediate the influence of imagining on pretense action, where this means that imaginings influence behavior only by influencing beliefs. The constructive suggestion, therefore, is that imagining produces pretense directly, without needing the mediation of belief.

It is, of course, undeniable that beliefs in some way influence how and what we pretend. My belief that doctors perform surgery, for example, in part caused me to imagine doing or refusing surgery when I pretended to be a doctor. This shows that beliefs do have a role in imagining and pretense, but Nichols and Stich got it the wrong way around. They said that the contents of imagining bring about conditional beliefs, which then cause pretense behavior. I invert that: beliefs have influence on what one imagines; then imagining primarily influences what one pretends. Furthermore, I think one's beliefs and other cognitive attitudes (as well as conative attitudes) *comment on* and *constrain* what one actively imagines.[13] Beliefs may even have veto power over imagination's ability to yield pretense or other behaviors, but beliefs do not stand between imagining and action.

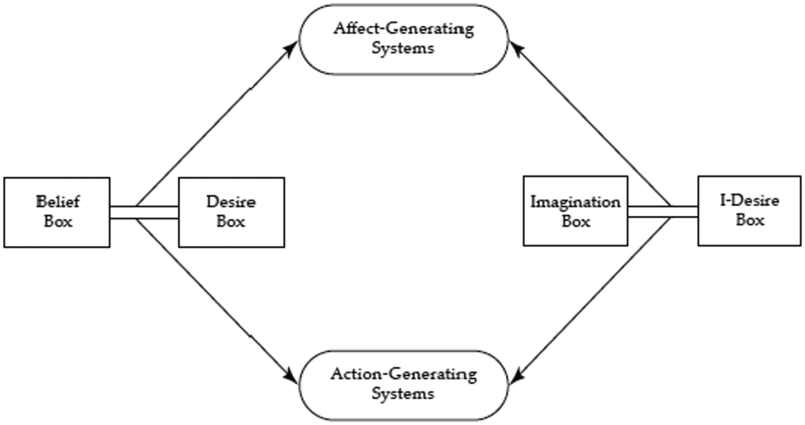
II. THE REPLACEMENT ACCOUNT

What I call the *replacement account* does hold that imagining has an unmediated role in generating pretend play. This account modifies the standard belief-desire explanation of action in a different way from the conditional belief account, which made imagining a *source* of (conditional) beliefs. On the replacement account, imaginings take two forms—one form corresponding to beliefs and one to desires—and they effectively replace beliefs and desires in producing action. Serious action, then, is the action motivated by beliefs and desires; pretense is motivated by *replacement beliefs* and *replacement desires*. To talk about these theoretical posits concisely, I extend the Doggett and Egan terminology by calling imaginative replacement beliefs "i-beliefs" and replacement desires "i-desires." (Doggett and Egan only write of "i-desires" and simply use "imagination" for the posit I call "i-belief."[14])

[13] I use "cognitive attitude" and "conative attitude" in their usual senses. A cognitive attitude is an attitude that represents the world or some portion of it as *being* a certain way; beliefs, hypotheses, assumptions for the sake of argument, and the like are all cognitive attitudes. Conative attitudes, such as desires and wishes, represent the world as *to be made* a certain way. (This formulation borrows from Nishi Shah and Velleman, "Doxastic Deliberation," *Philosophical Review*, CXIV, 4 (October 2005): 495–519.)

[14] Amy Kind independently hit upon using "i-belief" in discussing this family of views.

Doggett's and Egan's diagram clarifies the replacement account's structure.[15]



The Imagination Box (i-beliefs) and I-Desire Box do what the Belief and Desire Boxes do, except when the former boxes do it it counts as pretense, whereas when the latter boxes do it it counts as serious action. If Sally asks Grammy for ice cream while wanting ice cream and believing she can get it by asking Grammy, that is serious action. If Sally says a "magic" spell, i-desiring to fly to a magic kingdom and i-believing she can get there through the spell, that is pretense. (This characterization raises the question of what the *difference* is supposed to be between imagining and belief, a question which I think no replacement theorist answers satisfactorily. But since that is not what is at issue in this paper, I will not pursue that criticism here.[16])

In addition to Doggett's and Egan's paper, the replacement account can be found in Velleman and in Currie and Ravenscroft. What are their motivations?

Velleman is motivated to understand what distinguishes belief from imagining, and finds by considering examples that this is a difficult problem. The reason is that "imaginings" seem to him to motivate behavior in relation to "wishes" in the same way that beliefs motivate in relation to desires. To give one of Velleman's examples, imagining she is an elephant and wishing to take a drink, a child is motivated to pretend to drink from a "pail" (where a chair is the prop for the pail)

[15] Doggett and Egan, *op. cit.*, p. 4.

[16] I take up that issue in "The Motivational Role of Belief," *Philosophical Papers*, XXXVIII, 2 (July 2009): 219–46.

with her "trunk" (arm). Thus, for Velleman, examples show that imaginings (i-beliefs) and wishes (i-desires) can replace beliefs and desires in motivating action.

Currie and Ravenscroft use the terms "belief-like imagining" and "desire-like imagining." Their motivation is simulation theory, which is a theory about how people understand decisions and predict the behavior of others. In short, simulation theory says we understand the minds of others by running our own belief, desire, and other mental machinery "offline." So for Currie and Ravenscroft, the theoretical posits of belief-like imagining and desire-like imagining originated as concepts of "offline" states that people use in understanding the minds of others. Their thought about pretense seems to be that, since they are positing such states already, it would be nice to use them for something else as well, such as explaining pretense.[17]

Doggett and Egan are motivated by two things. First, they see the Nichols and Stich architecture as insufficient (for many of the same reasons that I do). Second, they think positing i-desires is parsimonious insofar as they can do double duty: explain pretend behavior and explain the emotions people have in response to imagining, especially in relation to fictional drama. If desires can explain emotion, so can i-desires. On this second point, Currie and Ravenscroft and Velleman seem to be in agreement.

There are, in sum, three points common to the replacement accounts of pretense:

(1) i-beliefs and i-desires are propositional attitudes.
(2) i-beliefs and i-desires influence action generation in the manner of beliefs and desires.
(3) i-beliefs and i-desires influence emotion in the manner of beliefs and desires.

The motivations for the replacement view amount to examples, a preexisting theory (simulation theory), and apparent parsimony.

This account seems even more intuitively compelling than the conditional belief account. But it fails just as badly. First, as with the conditional belief account, the replacement account cannot explain *layering*. Second, due to the binary nature of the architecture posited, the replacement account cannot account for the continuity we see in forms of pretense; that is, it cannot account for *semi-pretense*. Third, the theoretical commitments that replacement theorists put on their

[17] To be fair, Currie and Ravenscroft discuss four different ways pretense could be motivated. All of them, however, are modifications of desire-belief psychology, so they do not incorporate the points about pretense I develop in section III.

posits, i-beliefs and i-desires, conflict in an important class of cases. But, as before, understanding how this account fails leads to constructive suggestions about how to structure a better theory of imagining and pretense.

Criticism 1 (layering): Let us return to "Rebel Without a Cause," in which Dean's and Wood's high school student characters pretend to be adults who consider buying a house. The replacement account posits in Dean an i-desire to escape (as Jim) with Judy and an i-belief that by entering a deserted mansion he can do this. That explains the first layer of pretending to be Jim in the mansion. But what i-belief/i-desire pair causes the behavior of saying, "Should we rent or are we in a buying mood, dear?" Dean performs that action in the character of an adult, not as high school Jim. The problem with the replacement account is that it has no resource to explain the second-layer pretense actions, since the i-beliefs and i-desires are dedicated to the first-layer actions. Furthermore, the i-beliefs and i-desires cannot represent both layers, since that would result in incoherent i-beliefs, which will not explain anything.

We can put this criticism as a dilemma. Either (i) i-beliefs and i-desires explain the first "Jim" layer of pretense, or (ii) they explain the second "adult" layer. If (i), then the second layer is mysterious. If (ii), then this is no longer a case of pretense layering, but a case of pretense changing; under (ii), there will no longer be any sense in which Dean *keeps* pretending to be the high school student while pretending to be the adult.[18] There is no layering.

Criticism 2 (binarity versus semi-pretense): If beliefs and desires explain plain action, and if i-beliefs and i-desires explain pretense, what explains semi-pretense? As noted, there is a continuum between full pretense and plain action. But the replacement account is binary; there are only two pairs of boxes, which suggests that the plain action/pretense distinction should also be binary. But it is not. Jennifer holds up ten fingers in response to the swan dive. Do we say that she desired to indicate her approval and believed that holding up ten fingers would indicate approval? Or do we say that she i-desired (*qua* judge) to give the highest score and i-believed that ten was the highest score? The first option leaves the similarity of Jennifer's action to judging behavior unexplained. The second leaves unexplained the difference between what she does and what she would do in *full* pretense, where she pretends to hold up a placard and speaks in more officious tones.

[18] The replacement theorists could posit i-i-beliefs and i-i-desires, but this would only add another pair of boxes that looks just like the other pairs, with only the theorist's labels to distinguish them; there would be no sense in which the idea of *layering* is preserved.

The replacement account has to treat plain action and pretense as binary. Its only resort, then, is to say that semi-pretense is not a truly distinct phenomenon. It is an illusion that stems from the fact that plain action can be playful and pretense can be done more or less seriously. Whether that claim is true depends ultimately on the underlying architecture of imagination. Is it binary or not, and if so, in what ways? But even if the response is true—I think it is not—the replacement account leaves *manner* unexplained. Why is some plain or "serious" action playful, having pretend-like qualities? Does imagination have nothing to do with this?

Criticism 3 (conflicting theoretical demands): Doggett and Egan and Currie and Ravenscroft explicitly state that i-desires explain emotional reaction to what is imagined (i-believed), where what is imagined can have fiction, such as novels and films, as its source. Why do I feel angry at Iago? The replacement theorist says it is because I i-believe his deceit will cause catastrophe and i-desire Desdemona and Othello to have a happy life. The general principle seems to be that i-desiring that p yields negative emotions in conjunction with i-beliefs that $\sim p$ (or that $\sim p$ is likely) and positive emotions in conjunction with i-beliefs that p (or that p is likely).

The problem of conflicting theoretical demands comes when people pretend to do things that run *contrary* to the emotions that a given imagining engenders. Limburger cheese, for example, may be so repulsive to me that *imagining* eating it engenders disgust. Nevertheless, I can pretend to eat an imaginary plate of Limburger, even as I feel disgust about what I am pretending. For such a case, the replacement theorist has to posit an i-desire *to eat the Limburger* (to explain the pretense behavior) and an i-desire *not to eat Limburger ever* (to explain the disgust). The general problem is this: whenever someone pretends an action contrary to her emotional inclinations about what she is pretending, the replacement account has to posit conflicting i-desires—an i-desire to explain the pretense and a conflicting i-desire to explain the emotion. This raises a puzzling question. Why doesn't the i-desire *to* eat Limburger generate the emotion and the i-desire never to eat Limburger generate the pretense action? In that case, I would feel excitement about the imaginary Limburger in front of me but pretend *not* to eat it, which is the opposite of what I did. More generally, when there are two conflicting i-desires, which one gets to generate the pretense action, and which one gets to generate the emotion? The replacement account as it stands has no answer to this question, so it needs elaboration. Thus, replacement theorists cannot claim parsimony in positing i-desires as quickly as they thought. Worse yet, the replacement account says that i-desires generate pretense action and

emotion, but we have seen that for some cases it will have to say (without explanation so far) that sometimes they do not generate action and sometimes they do not generate emotion. That seems to conflict.[19]

* * *

What constructive suggestions can we glean from these criticisms? The replacement account falters because it *separates* the veridical boxes sharply from the nonveridical boxes. We can remedy this by saying that imaginative representations can *integrate* with veridical representations. If integration were to happen at the higher cognitive level, the level of belief, the subject would become confused, like a schizophrenic. But it may be that integrating veridical and imaginary representations is possible at the level of perceptual and motor representation. We know from Stephen Kosslyn's long research program—not to mention just doing phenomenology—that there are indeed perceptually formatted imaginary representations, or mental images. The integration of those imaginings with veridical perceptions—allowing imagery seamlessly to take the roles of percepts—may alleviate the problems caused by the binary replacement picture. This view would require moving the imaginings most immediate to the causation of pretense away from the category of propositional attitude and into the category of perceptual imagery (and, I argue, motor imagery). But that is for the best, if we are to explain the *emotions* generated in response to imagining, which are a further problem for the replacement account in any case. There is reason to think that imagining in, say, *visual* or *auditory* detail has far greater emotional impact than bare, propositional imagining. But that does not mean we should write propositional attitudes out of the story. Rather, as suggested, cognitive and conative (propositional) attitudes help cause perceptually formatted (or other spatially rich) imaginings, but *those* imaginings are most immediate to the production of both pretense action and emotion. At the same time, cognitive and conative attitudes that comment on the rich imaginings keep track of which *layer* of pretense a rich imagining represents. And, to preview further, semi-pretense could be what happens when spatially rich imaginings influence behavior *without* the sustaining, reflective involvement from higher cognitive and conative attitudes.

I turn now to clarifying what forms of *integration* are relevant to these claims; that is, I now give my positive theory.

[19] For similar criticisms, see Eric Funkhouser and Shannon Spaulding, "Imagination and Other Scripts," *Philosophical Studies*, CXLIII, 3 (March 2009): 291–314.

III. THE INTEGRATED IMAGINATION THEORY

Let us turn the constructive suggestions into formal claims and apply them to reveal how imagination is involved in producing action.

Claim 1: Imagining influences pretense behavior without the mediation of belief.
Claim 2: Cognitive and conative attitudes, like beliefs and desires, help cause what one imagines.
Claim 3: Cognitive and conative attitudes comment on and constrain imaginings and how they influence pretense.
Claim 4: The imaginings that are most immediate to the production of pretense are spatially rich; they are perceptually formatted or structured as representations of bodily movement.
Claim 5: Perceptually formatted imaginings can be integrated with veridical perception, especially visual or auditory perception.[20]
Claim 6: Imagining arouses emotions largely in the same way that perception does, as imaginings play out on perceptual cortices that feed into the brain's emotional centers.[21]

Let me clarify some points.

Claim 1 does not entail that beliefs have no role in causing imaginings or in generating pretense; rather, when it comes to generating pretense actions (and other actions), imaginings of the type I posit are closer to the generation of action insofar as they are causally downstream from beliefs. That is the point Claim 2 emphasizes.

Claim 3 attributes more roles to beliefs and desires (or other attitudes) in the production of pretense than simply causing imaginings. Beliefs and desires can be *about* what one imagines and can comment on the *value* to the agent of a particular imagined action. This is important to explaining how choice among multiple imagined possibilities happens. One can imagine doing an action and then believe that doing *that* would be good, where the imagining gives content to the belief.[22] The comments on imaginings by beliefs and desires about

[20] Most of my examples are visual, but the claim holds for audition, like imagining a voice in the wind.

[21] Tamar Gendler discusses emotional response to imagining under the heading "contagion" in "Imaginary Contagion," *Metaphilosophy*, XXXVII, 2 (April 2006): 1–21. The term is "contagion" because imagining seems to infiltrate the role normally occupied by belief. But I object to the term "contagion" because I think emotive responses to imagining are a feature, not a bug. They may be problematic sometimes, but they do more good than harm, since they give orientation with respect to the imagined future.

[22] John Perry gives an interpretation of David Kaplan according to which demonstrative constituents of representations (for example, *that*) have their contents partly determined by a "directing intention," which in turn connects to the world in many cases via perception. See Perry, "Directing Intentions," in Joseph Almog and Paolo Leonardi, eds., *The Philosophy of David Kaplan* (New York: Oxford, 2009), pp. 187–201.

the value of an imagined action then constrain what further actions and events one imagines.

A helpful analogy comes from the history of geometry. Prior to Descartes' invention of the Cartesian plane, geometric proofs required diagrams. Yet proofs were accompanied by comments in the margins that indicated which properties of the diagram were relevant to the proof. The imagining I posit in this paper is analogous to the spatial diagrams—and the drawing of them—while beliefs, desires, and propositional imaginings are analogous to the comments. Furthermore, consider what went on in the geometer's *mind* when reading such proofs. There was spatial perception of the diagram, but there were also beliefs about the diagram, caused by the marginal comments. But the beliefs had their contents tied to the diagram *through* relating to the percepts; there is no other way for beliefs about the diagram to be had. Now consider the mind of the geometer who, with eyes closed, *remembers* a proof from before and knows what theorem it proves. This is a clear case of perceptual imagining with higher beliefs commenting on the perceptual imagining. I take this example to be an independent existence proof of the sort of mental structures to which I appeal in explaining pretense: spatially rich imagining with comment and constraint by higher attitudes.

Claim 4 appeals to the traditional idea of mental imagery but also emphasizes that anticipatory motor plans, or *forward models*, can be imaginative.[23] That means one can construct an action in one's mind as an imagining without committing to its ever happening; this is a motor plan in potential. A basketball player who imagines her free-throw motion from a first-person perspective prior to taking the shot is imaginatively constructing such a forward model.[24]

Claim 5 is the most radical departure from the two theories just considered, which had imagining separated off in distinct boxes.[25] Claim 5 allows for mental images to be integrated with the perceptual field. Try an experiment. Is there an empty chair near you? If so, look

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Perry's focus is language, but the point can be extended to mental representation. I say here that a visual (or other sensori-form) imagining can take the place of perception in giving content to a demonstrative constituent of belief or propositional imagining.

[23] This idea of motor imagining is present in Currie and Ravenscroft, *op. cit.*, as is mental imagery. But they do not incorporate these notions into what they say about the production of pretense.

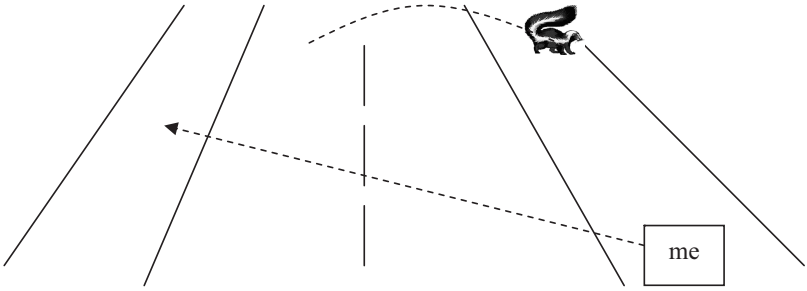
[24] Thanks to Juli Huddleston for this example. She also gave me the example of the pole-vaulter who visualizes her vault from start to finish from the first-person perspective before competing.

[25] Boxologists may respond that the "boxes" are just metaphors. But the metaphor is misleading.

at it, and imagine Santa Claus sitting in *that* chair. Is your mental image of Santa Claus in a separate box from your other perceptions? Or is it integrated with the perceptual manifold before you? If you think the latter, you tend toward my view. The projected geometry of the imaginary Santa Claus is in the same represented space as the perceived chair and is represented as bearing rich spatial relations to it—much richer than the simple <*on the chair*> of which propositional imagining is capable. Such integrated imaginings are central to the production of pretense.[26]

Claim 6 is fairly clear: whatever the pathways are by which perception excites emotion, those are the pathways by which imagining excites emotion. But again, that does not mean that higher cognitive and conative attitudes are otiose. If you visually imagine a cousin of yours, part of what makes it possible for this to be an imagining *about your cousin* are beliefs you have about your cousin: what he looks like, what his manners are, and so on. Thus, insofar as the identity of individuals in your imaginings makes a difference to how those imaginings make you feel, higher cognitive attitudes make a difference as well. Still, the road from belief to emotion goes through imagination—at least in imaginative fiction and pretense.[27]

Now I turn to an illustration.



I was jogging down the street in Medford one day, when I suddenly saw a skunk in front of me. Naturally, I did not want to get sprayed. So I visualized the skunk spraying, imagined myself running across the

[26] Of course, not all images are so integrated, since one can close one's eyes and imagine. But many are.

[27] My view here pushes against Kendall Walton's view of fear. He holds that genuine fear requires *belief*. But see Robert Zajonc, "On the Primacy of Affect," *American Psychologist*, XXXIX, 2 (1984): 117–23. Also, consider this: someone watches a Bigfoot film, not believing any of it, and then is scared later by a friend in a Bigfoot suit who jumps out from behind a tree. Is that not fear? It is possible (and I think actual) that fear formation is faster than belief formation. Walton's view excludes this possibility.

street to a distance beyond where I imagined the skunk spray going, and then ran across along the route I had imagined. I felt a sense of relief once I had passed, having felt nervous before.

The skunk representation was a veridical perception that made me feel nervous in the way that perceptions of animals can. The skunk-spray representation, however, was an imagining. Crucially, this imagining was visual and was integrated into my visual field (Claims 4 and 5). Furthermore, I constructed my motor imagining—the path that I would take—*in relation to* the visually imagined spray; I used the imagined visualization of the spray to choose a path across the perceived street. (Had the visualization not been integrated into the perceptual manifold, I would not have known how much of the street to cross.) Of course, I would not have imagined the skunk spraying in the first place if I did not *believe* that skunks spray (Claims 2 and 3), so belief in fact was involved in the imagining and ultimately in the action, but it was causally upstream from the imagining in relation to the action (Claim 1).

So far this is an example of how imagining is involved in plain action. What about pretending? Suppose I had been jogging along and decided to *pretend* there was a skunk in my path, even though I had not seen one. My bodily motions would have been the same; I just would have been pretending to avoid a skunk instead of seriously avoiding a skunk.

The crucial point from the cases is this: *the structure of representations that enables me to pretend to avoid the spray of an imaginary skunk is almost entirely the same as the structure of representations that enables me seriously to avoid the potential spray of a real skunk.* That being said, there are two mental differences between the pretense and serious skunk avoidances. First, the veridical perception of the skunk comes with anticipation of further recalcitrant experience, or experience beyond voluntary control, such as catching my foot if I ran into what the percept is of; the imaginary skunk image does not involve anticipation of recalcitrance.[28]

[28] This point could be expanded greatly. The question is: what constitutes the *valence* that differentiates imagery from perception, given that the representational format is the same? In an earlier draft, I said that perception was more "solid" and that it "obscured" what was behind it. But Dagfinn Føllesdal pointed out (personal communication) that it is in principle possible to *imagine* something that obscures what is behind it. So *lacking solidity* and *not obscuring* are contingent features of the imaginary image. "Anticipation of further recalcitrant experience" gets closer to defining the valence of veridical perception (see Føllesdal, "Existence, Inexpressibility, and Philosophical Knowledge," *Grazer Philosophische Studien*, LXXIV, 1 (2007): 273–90, who is interpreting Husserl). But I argue in "What Is a Judgment?" that we need to identify *asymmetric* relations between attitude valences to define them; on my view, veridical representations *govern* and *ground* representations with other valences.

Second, the higher cognitive attitudes that comment on the perceptual manifold include, in the serious case, a belief that *that is a skunk*, where the <*that*> constituent has its content given by the skunk percept. The higher cognitive attitudes include, in the pretense case, a belief that *that is an imaginary skunk*, where the <*that*> constituent this time has its content given by the skunk mental image. (Alternately, we may say that a propositional imagining comments on the visualization of the skunk, where "propositional imagining" refers to what the other theorists were attempting to talk about with their imagination boxes. Although I reject the other theories, I do believe there are propositional imaginings; a good example would be the long-standing imaginative attitude that J. R. R. Tolkein had that *elves are immortal*, which guided how he wrote many of the episodes in *Lord of the Rings*. The propositional imagining in my pretense would then have the content *that is a skunk*.)

Claims 1 through 5 apply to the pretense case as to the serious case. We may add that, insofar as I feel emotional excitement in the pretense, it is because of connections that visually formatted representations have to the brain's emotional centers, as maintained in Claim 6.

Let us explicate the main thesis of this paper in relation to these six claims. The Active Imagination Thesis posits a type of imagining that is a forward model of action in the world. The imagination constructs this model in relation to objects of perception and in doing so seeks to satisfy the goals set by higher attitudes, such as beliefs and desires. In pretend play, two shifts can happen. First, some of the objects in the perceptual field, in relation to which motor commands are constructed, can be imaginary mental images. The sword I duck in make-believe is the one I visualize in your (actually empty) hand as you make a slicing motion aimed at my head. Second, the higher attitudes can comment on the actor/subject, whose motions the forward model represents, in a way that makes that actor/subject out to be someone or something else. If I am pretending to be a prince who ducks the sword, I have a higher imaginative attitude commenting on the subject of the ducking with the content *I [the subject] am a prince*. In some pretense, one of these shifts happens without the other, as when I pretend *in my own character* to give a speech to an audience in a room of actually empty chairs (visualization of new entities without change of acting subject), or when one is at a fancy high-table lunch and imagines oneself to be an actor in a Gilbert and Sullivan musical[29] (change of subject without additional visualizations).

[29] Thanks to Daniel Dennett for this example.

Let me add one elaboration to extend the theory to pretense involving *imitation*.

Suppose you see a bird flying through the air and decide to imitate it. You then produce a flapping motion with your arms to mirror the perceived motion of the bird's wings and a chirp of your voice to mirror the bird's heard chirp. This is imitation, or *mimesis*, and humans are uniquely good at it.[30] In pretense, what is imitated need not be directly before one in the external world. One can imitate a mental image or other imagined content. What happens, for example, in a game of charades? You read a card that says "flying bird." A mental image of a bird flapping its wings pops into your mind. So, playing the game, you imitate the motion of the bird that is represented in your visual imagination by flapping your arms. If it pops into your auditory imagination that the bird chirps, you chirp. In sum, the visual and auditory mental images in the charades play the role that the perceptions did when you *saw* the bird; they give you something to imitate. It should be no surprise that there is a parallelism, since imagery plays out on the same cortices as perception. What is needed to motivate such pretense is the desire to act out—copy the motions of—whatever is going on in imagination. Let us call this *mimesis-based pretense*.

The way mimesis-based pretense meshes with the Active Imagination Thesis is as follows: in addition to providing objects in relation to which forward-model imagining constructs actions, mental imagery can set the structure of motion that the forward model models. There are thus two different roles for mental imagery in action and pretense; let us call the first the *object-acted-upon* role and the second the *object-imitated* role. Our two paradigm examples of these roles are the swinging sword and the flying bird. The visualized swinging sword gives, via perceptual imagining, a spatially represented object for the forward model to make my body avoid; the visualized flying bird gives a motion for the forward model to imitate.

The Evidence for Neuropsychological Plausibility

My account is built out of a number of components, many of which are supported by research programs in cognitive neuroscience. What follows is a small sample of important results.

[30] The capacity for (precise) imitation is distinctive of our species. See Joseph Henrich's and Richard McElreath's "The Evolution of Cultural Evolution," *Evolutionary Anthropology*, XII, 3 (2003): 123–35, and Michael Tomasello's *The Cultural Origins of Human Cognition* (Cambridge: Harvard, 1999), but also see chapter four of Aristotle's *Poetics*.

Fact 1: Mental imagery exists.
Fact 2: Mental imagery is processed largely in the same regions of the brain as perception.
Fact 3: Forward models are implicated in the planning and performance of motor actions.
Fact 4: The brain's perceptual regions have a fairly direct role in activating emotional centers and processes.

Kosslyn's research program establishes Fact 1.[31] The way to interpret Fact 1 is to say that imaginatively generated mental representations exist that (1) are structured like perception and (2) depict spatial properties in analogue fashion. This is not a "pictures in the mind" view; rather, *however* the brain encodes percepts, it can encode imaginary representations in like manner.

The evidence for Fact 2 is intertwined with the evidence for Fact 1. Kosslyn et al. show how visual area 17 is activated both in perception and in imaginative imagery. The same sorts of contents, whether perceived or imagined, yield similar activation patterns. Other results point in the same direction. Kathleen O'Craven and Nancy Kanwisher show how the fusiform face area (FFA) is activated both by seeing faces and by imagining them. Jonathan Winawer, Alexander Huk, and Lera Boroditsky showed subjects pictures that had *implied* motion (for example, a runner in mid-stride) and found that these images activate the same direction-selective circuits that process real motion; I take this to show that *imagining* motion on seeing the photograph is processed similarly to *seeing* motion. These few studies are the tip of an iceberg supporting Fact 2.[32]

Fact 3 follows primarily from studies that assume the existence of a forward model in the central nervous system and use that assumption to derive accurate predictions about motion. For example, the assumption that the brain uses forward models to plan action can yield accurate estimates about the extent to which a subject will over- or underestimate an arm motion toward an object, when resistance or help is applied to the arm.[33]

[31] Summarized in Kosslyn, William Thompson, and Giorgio Ganis, *The Case for Mental Imagery* (New York: Oxford, 2006).

[32] References: Kosslyn et al., "The Role of Area 17 in Visual Imagery: Convergent Evidence from PET and rTMS," *Science*, CCLXXXIV, 5411 (April 1999): 167–70; J. Winawer, A. Huk, and L. Boroditsky, "A Motion Aftereffect from Still Photographs Depicting Motion," *Psychological Science*, XIX, 3 (March 2008): 276–83; K. O'Craven and N. Kanwisher, "Mental Imagery of Faces and Places Activates Corresponding Stimulus-Specific Brain Regions," *Journal of Cognitive Neuroscience*, XII, 6 (November 2000): 1013–23.

[33] See D. M. Wolpert, Z. Ghahramani, and M. I. Jordan, "An Internal Model of Sensorimotor Integration," *Science*, CCLXIX, 5232 (September 1995): 1880–82; Wolpert,

Fact 4 also has extensive evidence. A representative research program is that of Joseph LeDoux, who finds there is a "low" and a "high" road from sensory cortices to the amygdalae, the brain's fear centers. The low road is fast and sloppy and is responsible for fear responses to things that only loosely *resemble* dangerous objects; LeDoux posits sub-doxastic appraisals along the low road—representations of particular dangerous types, like snakes—that trigger fear responses. The "high" road is slower but has more precision and nuance. The high road can extinguish fear responses to stimuli that are not actually dangerous. In a way, Fact 4 should be obvious prior to any evidence from neuroscience; we have always known that sights and sounds stimulate emotion. But we are becoming much clearer on *how* that happens.[34]

Facts 1, 2, and 4 yield my view of imagining and emotion: the perceptual aspect of imagining is central to emotional stimulation, activating emotional responses by the same pathways as perception itself.[35] We need no i-desires to explain the emotions that fiction incites.

Finally, there are two empirical claims to which my account commits me that, as far as I know, have not been rigorously tested. First, I hold that, in pretense, perceptual imagining is integrated with perception. That may seem obvious to phenomenological reflection, but we should demand corroboration. This claim, however, will be hard to test by the usual means; much evidence for the brain activation of imagery comes from fMRI studies, but the sort of pretend play I discuss, which incorporates both perceived and imagined objects integrated in the same manifold, can hardly be done *well* in the scanner.[36] Second, I say that a mental image in the object-imitated role can

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R. C. Miall, and M. Kawato, "Internal Models in the Cerebellum," *Trends in Cognitive Sciences*, II, 9 (September 1998): 338–47; and (for a broad extension of the research program) R. Grush, "The Emulation Theory of Representation: Motor Control, Imagery, and Perception," *Behavioral and Brain Sciences*, XXVII, 3 (June 2004): 377–442.

[34] LeDoux summarizes this research in *The Emotional Brain* (New York: Simon & Schuster, 1996).

[35] This is essentially the view that Timothy Schroeder and Carl Matheson advocate in "Imagination and Emotion," in Nichols, ed., *The Architecture of Imagination* (New York: Oxford, 2006), pp. 19–40.

[36] One of the very first studies on mental imagery bears on this integration claim. C. W. Perky had subjects look at a screen with instructions telling them to imagine, say, a banana; then, unbeknownst to the subjects, a banana would be projected faintly on the screen. Perky found that subjects took the real banana image for a mental image. See "An Experimental Study of Imagination," *American Journal of Psychology*, XXI, 3 (July 1910): 422–52. This result, if legitimate, supports my view that mental images can integrate with the visual field; otherwise subjects would never confuse a percept with an image.

have influence on the construction of the forward model of bodily motion. Research into mirror neurons may support this view in some way, but as far as I can tell, it is still too early to say.[37] Nevertheless, we know that imitation of perceived actions happens somehow; my view is that pretense proceeds by replicating much the same process, whatever it is, with the difference being that a mental image of the object imitated substitutes for a perception.

Application to Semi-Pretense and Layering

As she sits next to Leroy at the pool, the mental image of a judge pops into Jennifer's mind, and this image takes the *object-imitated* role in the construction of action. Once the image has taken this role, it is implicated in forming the forward model of how she might behave. If that behavior is supported by her other attitudes—say, a desire to joke around with Leroy—she will act out the judge-imitating forward model, delivering verdicts like "Ten!"

Now, there can be various causes of the judge image that occurs to her. If an explicit desire or intention to *pretend* causes the image, the process that follows will be full pretense. Many actions occur in imagery, however, with *other* causal sources (besides desire or intention) and take the object-imitated role nonetheless. That is the crucial point. Images can occur due to habit, obsession, resemblance of a current situation to a past one, misunderstanding, and so on. When the source of the mental image in the object-imitated role is something other than a desire or intention to pretend, what results may be semi-pretense, in which the image still affects the forward model of action in subtle (unintended) ways. Thus, semi-pretense can be defined as follows:

Action *A* by subject *S* is *semi-pretense* if, and only if:
(i) *S* has a mental image *M* in the object-imitated role that influences the action recipe[38] or forward model that eventuates in *A*, and
(ii) *S* lacks the desire or intention to pretend to do the action represented in *M*.

On this view, semi-pretense is what happens when the images that swim in our minds infect our actions without our explicitly intending them to

[37] For the case for pervasive involvement of mirror neurons, see Alvin Goldman's *Simulating Minds: The Philosophy, Psychology and Neuroscience of Mindreading* (New York: Oxford, 2006).

[38] By "action recipe" I just mean a structure of behaviors that add up to a larger action, for example, <push ON, push OPEN, open DVD case, insert DVD>. Action recipes are a level more abstract than forward models, since forward models code specific bodily motions, while, for example, the action recipe just mentioned could be executed whether the ON button is on the right or left, that is, with different bodily motions.

do so. Such actions may even become habit. If they do, there may eventually cease to be any sense in calling them "pretense," since the mental images causing them have long since vanished. In that case, the forward model of action lives on through habit, despite the death of the image that gave it birth. The ghost of the object imitated pervades the bodily motions of the habitual actor long into the future, without any conscious knowledge on his part.

Let us turn to pretense layering. I have emphasized throughout that beliefs comment on the contents of perceptual imagining and motor imagining. Whenever a given action is constructed in spatially rich perceptual and motor imagining, beliefs (or propositional imaginings) comment on the story to which *that* pretense action belongs. To return to our analogy with geometry, marginal comments can track whether a given diagram belongs to the main proof or sub-proof. Thus, when James Dean says, "Should we rent or are we in a buying mood, dear?" the most immediate cause of this action is a forward-model imagining that is influenced by a mental image of an adult in the object-imitated role; what makes that action second-layer pretense, as opposed to first-layer, is the set of beliefs and higher imaginings that places the image and action in a larger story. Those attitudes then further cause and guide what spatially rich imaginings come next in Dean's mind, leading him up the stairs with Judy.

IV. CONCLUSION: A STRUCTURE TO GUIDE US

Imagination is, ultimately, the production of a structure that *can* guide action. That action must occur in the world we take in via a flood of information through the senses. Thus, there must be forms of imagining that integrate seamlessly with our perceptual representations, if imagination is to be of any use at all. That is why, I believe, imagining plays out on the sensory cortices of the brain; that is also why propositional imagining is not *sufficient* to explain the variation and complexity of pretense behavior—and other behavior. In the Nichols and Stich theory, there are three boxes between imaginings and the "Action Control systems" and two boxes between imaginings and perceptual processes, which (to judge from the arrows) do not interact with imagining much at all. My theory could not be more different. The forms of imagining I posit integrate with perception and guide action.

But let me emphasize once again: this does not mean that beliefs and desires have nothing to do with *choice* of either pretense or serious action. Rather the beliefs, desires, and other attitudes that comment on and constrain imaginative representations are crucial

to determining whether and when imagined actions are initiated. But the spatial resolution of imagination makes it suitable to producing structures that can dictate the geometric unfolding of bodily motion in the world. Imagination is where the action is.

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