Imagination and Action
Neil Van Leeuwen

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Abstract: This entry elucidates causal and constitutive roles that various forms of imagining play in human action. Imagination influences more kinds of action than just pretend play. I distinguish different senses of the terms "imagining" and "imagination": imagistic imagining, propositional imagining, and constructive imagining. Each variety of imagining makes its own characteristic contributions to action. Imagistic imagining can structure bodily movement. Propositional imagining interacts with desires to motivate pretend play and mimetic expressive action. And constructive imagination generates representations of possibilities and actions on the basis of which we choose what to do.

Introduction: Why Imagination Matters

Philosophy and commonsense both distinguish actions from mere happenings. Having an apple fall on your head is a mere happening. Jumping over a crack in the sidewalk is an action. We also distinguish actions—properly so-called—from *mere* behaviors, which are not mere happenings but also don't rise to the level of actions. Reflexively scrunching your face when you see a disgusting picture involves emotion and information processing, so it is is more than a mere happening. But it unfolds automatically and often without awareness, making it less than action. Actions form a proper subset of behaviors, which form a proper subset of happenings.

Philosophy of action, as one would expect, seeks to answer at least two questions. What *constitutes* action? What *causes* action?

To date, the most prevalent theory of action—both its constitution and its etiology—is belief-desire explanation, which emerges from works of David Hume and Donald Davidson; it is also the basic framework for decision theory. Beliefs and desires, on this theory, cause and rationalize actions that can be expected to satisfy the desires, if the beliefs are true. *Example.* Belief: *pushing COKE releases a soda from the machine.* Desire: *I drink soda.* Caused action: pushing COKE. Thus are actions caused. Furthermore, many think

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this is a constitutive theory of action as well. Actions are those events caused in this fashion. (Reflexively scrunching your face seems not to have a belief-desire explanation; nor does it seem to deserve the label "action;" so the belief-desire theory seems to classify it correctly. Conversely, pushing COKE is an action.)

The belief-desire theory looms so large that one is tempted to ignore or deny the possibility that *other* mental states are central to the etiology or constitution of action. Much literature scarcely mentions other mental states. And some papers even argue *against* positing other mental states as contributors to action. Neil Sinhababu (2013), for example, argues against positing *intention* over and above beliefs and desires. And Peter Langland-Hassan (2012) argues that actions involved in pretending, which would seem to *require* imagining, don't in fact employ a distinct cognitive attitude of imagining; he thinks one can make do with positing only conditional beliefs and desires.[1]

I think we shouldn't limit our ontology in this fashion. Mental states underlying human action are various and interesting. Thus, this entry discusses how different sorts of *imagining*—a term I'll clarify—play critical roles in causing and even (for some sorts of action) constituting actions.

I proceed as follows. Since Peter Carruthers and Elizabeth Picciuto (this volume) discuss pretending specifically, I won't focus on it, except to illustrate some relations between pretense and action generally. Imagination supports many forms of action, and my topic is this broader class. In section 1, I describe how imagistic imagining (mental imagery) helps structure actions. In section 2, I discuss propositional imagining (which I've also called *attitude imagining*) and present some still-controversial ideas about how it figures in action. In section 3, I explain how *constructive imagination* is necessary for actions in which the agent considers more than one option.

Section 1: Imagery-oriented Action

Let's start with an example.

Now that Frank has a yard, he goes to the shelter for a dog to rescue. "How big of a dog?" asks the keeper. Frank says, "About this_____ big." As he says "this_____" he gestures with his hand a certain height off the ground—about two feet—visualizing his future dog, who would be too big to lay comfortably on his lap but small enough to sit with him on the couch. As he answers the keeper's question, he imagines the fantasy dog in the space next to him and puts his hand on top of its imagined back.

This example highlights one of two important roles mental imagery, or *imagistic imagining*, can play in guiding action. Mental imagery is internal mental representation that is structured like percepts and is to some extent phenomenologically similar to perception (see Nanay, this volume; Gregory, this volume). Visual imagery resembles visual perception; auditory imagery resembles auditory perception; and so on.

Imagery is uniquely suited to guiding actions on *possible objects or properties* that are projected into the agent's surrounding environment.[2] Imaged content can take the *object acted-on role* in the causation and constitution of action.

Let's call the type of action we're discussing here *imagery-guided action*. (It's the first of two types of action that fall under the broader heading of *imagery-oriented action*.) *Petting an imagined cat*, *pinning the tail on the donkey*, *avoiding the armchair when you walk to the bathroom in the dark of the night*, *pantomiming turning a doorknob*, and *holding a shirt up in front of an imagined friend for whom you're buying a present*, etc. are all imagery-guided action, since mental imagery is used to represent the spatial structure of potential objects in one's surrounding environment in relation to which one acts.

Imagistic imagining contributes to imagery-guided action in four ways:

1. Imagistic imagining represents an object or property as having a location in space. In the visual case, it represents shape too.

2. The imaged object or property is not present to current perception.

3. The imagistic imagining integrates with perception insofar as the projected object or property is represented as being in the agent's perceived surrounding space.

4. The agent directs bodily movement toward the object projected by the imagery, using the imagery jointly with perception as a guide.[3]

Perceptual memory makes these features possible by encoding a rich body of information that can be retrieved and manipulated in imagistic imagining (Schachter and Addis 2007), which can then guide action in the actual space surrounding the agent.

The examples I gave include pretend actions (petting the imagined cat) and ordinary or "plain" actions (avoiding the armchair). But one might be tempted to think that, since it is a form of "imagining," imagery can only generate pretense. How is it possible that imagery-guided action can be of both types (pretend and ordinary action)? The answer is that mental imagery can figure in the constituent structure of many sorts of propositional attitudes, including both beliefs and propositional imaginings (see below). When we talk about propositional attitudes, we talk about the *attitude* in question, the *representation* in question, and the *content* of said representation. On the attitude dimension, we distinguish *belief* (taking a proposition to describe reality, roughly) from *fictional* or *propositional imagining* (taking a proposition to describe a fictional state of affairs, roughly). Importantly, since the representational dimension of a mental state is independent of the attitude dimension (you can believe r or hypothesize r or whatever-attitude r for any propositional representation r), and since mental imagery is a value on the representational dimension, mental imagery can figure as constituent(s) in both beliefs and in propositional imaginings, like beliefs about the location of an armchair in the bedroom and imaginings about the shape of an imagined cat (cf. Langland-Hassan forthcoming for more detail on this point). The ability of imagery to figure in attitudes of either type allows imagery-guided action to

include some ordinary actions (avoiding the armchair), where the imagery is encoded in *beliefs*, and some pretense actions (petting the imagined cat), where the imagery is encoded in propositional imaginings. Thus, *imagery-guided action* crosscuts the categories of pretend and ordinary action.

It should be clear how imagery helps *cause* imagery-guided actions: the spatially rich structure of imagery guides spatially rich action. But why say imagery can be *constitutive of* actions? There is more to be said on this topic than is appropriate for this entry, but an example, which can be multiplied, is worth mentioning. Say you are showing a friend the size of an animal you saw. "It's about this_____ big," you say with a gesture. You don't know the name of the animal, but you visually remember it and hence can imagistically imagine its dimensions. If the animal you visualize happens to be a groundhog, then your action *is* gesturing the size of a groundhog; if the animal you visualize happens to be a porcupine, then your action *is* gesturing the size of a porcupine. This will be so, even if the motions you make with your hands in either case are physically type identical to those in the other case. Furthermore, you may have no other representations in mind, aside from imagery, that track the difference between the animals. So since the action types in either case are different (*gesturing the size of a groundhog* vs. *gesturing the size of a porcupine*), and since the only mentalistic (or physical) difference is in the imagery, the difference in action type must be constituted by the difference in imagery.

Now that we've addressed imagery-guided action, let's turn to the second major way imagistic imagining can be used to control action. Say you're doing an impression of the characteristic hand gestures of Don Corleone, as played by Marlon Brando. You're likely to visualize Don Corleone's gestures, recalling visual memories formed watching *The Godfather*, and then *imitate* what you visualize. Further examples include gestures in playing charades, such as imitating—in forelimb posture and jumping motion—an

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imagistically imagined kangaroo. This category also includes many actions used to communicate with others when words are lacking. Say you want to refer to a woman from last night's party and have forgotten her name. "The woman who walked like this_____," you say, accompanying "this_____" with a walking motion that imitates that which you visualize (cf. Kaplan 1967). This action type doesn't just include imitation of visual imagery; it can include auditory imagery, as when you do an impression of someone's voice, and even tactile imagery, as when you demonstrate a massage technique you learned on a friend. Let's call this type *imagery-imitating action*.

We can, as mentioned, put imagery-guided action and imagery-imitating action under a broader type: imagery-*oriented* action. What explains the existence of imagery-oriented action? It is a cousin of perception-oriented action. When you grasp a cup or copy the motions of someone you're looking at in a game of "Simon Says," your perceptual states provide control structures for your action. As you reach for the cup, you do not form a series of abstract beliefs of the form *now the cup is 8 inches from my hand*, *now the cup is 7 inches from my hand*, *now the cup is 6* . . . Rather, your visual perception of the relation between cup and hand forms the input into your motor system that allows your muscles to contract such that you ultimately grasp the cup.[4] Granted, beliefs and desires—believing there's water in the cup and desiring water—may figure into the initiation of the action, but perceptual states are the cognitive input into its more immediate guidance. Likewise, in imitating what one sees, one lets visual percepts shape one's bodily movement, a process that sidesteps mediating beliefs and desires. Evidence that beliefs and desires are left out of the immediate structuring of perception-oriented imitative action is as follows: in playing "Simon Says," one is easily "tricked" into imitating an action one does *not* want to imitate and that goes contrary to what one believes the rules of the game to be, simply because the leader issues a command and performs in full view an action to be copied after the imitative process has

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been started. In such a case, percepts control the actions directly, for the most part

bypassing the mediating influence of beliefs and desires (otherwise put, the mistakes one

makes in Simon Says are evidence that such bypassing occurs).

Imagery-oriented action exists in virtue of the same action-structuring pathways

that account for perception-oriented action. Imagistic imagining can replace perception as

the structuring representation. Often enough, we find ourselves in need of the sorts of

action-structuring that percepts give in virtue of their spatial and temporal richness, even

though at that moment we lack the full complement of perceptual states that would

facilitate the action we wish to perform. So we rely on imagery instead, which employs the

same representational formats as perception and is processed largely in perceptual cortices

of the brain (Kosslyn, Thompson, and Ganis 2006).

This brings us to our first lesson.

> **LESSON 1: Imagistic imagining can structure actions in the same manners as percepts do, in absence of percepts that would otherwise structure the action.**

Insofar as imagery falls under the broad heading of *imagination*, Lesson 1 identifies an

important contribution imagination makes to the causation and constitution of action. It is a

form of action causation in which beliefs and desires are not the mental states most

immediate; rather, any influence that beliefs and desires have is mediated by imagery,

which structures the action more directly. And since the contents of the imagery can play a

role in determining what the actions even are, imagery has a constitutive role in some

actions as well.

Section 2: Imaginative Attitudes and Desires in Action

In addition to imagery, another mental state falls under the term "imagination,"

typically called *propositional imagining*. This is a cognitive attitude distinct from belief that

(according to most scholars; see below for the controversy) underlies abilities to pretend and to follow fiction. Mental imagery *can* be part of the constituent structure of propositional imagining. But many scholars think that there can be propositional imagining without imagery and imagery without propositional imagining.[5] In any case, it is fair to say that propositional imagining makes contributions to action of its own kind. (Note here that I am distinguishing propositional imagining, which figures in pretend play and cognition of fiction, from supposition, which is used more in inference, argument, and verbal behavior. Making that distinction rigorous is another project.)

We can start by contrasting the contribution of propositional imagining with the contribution of belief, or what I (2014b) call *factual belief*, to pretend action.

In guiding pretense, factual belief and propositional imagining combine to form a two-map cognitive structure, where each layer or "map" in the cognitive structure makes its own sort of contribution. In pretending a sofa is a spaceship, you might have the following cluster of factual beliefs.

FB: *the sofa is in the living room.*

FB: *the sofa is made of fabric, wood, and cushioning.*

FB: *the sofa is of normal dimensions, about 3' x 3' x 6'.*

Those factual beliefs and others constitute the first map. (Note that these beliefs can't just be identified as percepts, since you'd continue to hold them even with your eyes closed. If one wishes, however, one can include percepts in the first map; this won't change the present point.) You might then have the following propositional imaginings, which constitute the second map.

FI: *the sofa is a spaceship in outer space.*

FI: *the spaceship is made of light, durable metal and has controls for flying.*

FI: *the spaceship is about the size of a medium-sized airplane.*

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Kendall Walton (1990) would point out that we get *to* many of the elements in the second map *from* elements in the first map by way of "principles of generation": principles of a given game of make-believe that prescribe certain imaginings, given certain inputs or beliefs about the props in one's environment. But the present point is that both maps help guide your subsequent bodily movements. When you say, "Let's go to the control room" and then move to the other end of the sofa, your movement on the 'spaceship' will be guided by (1) factual beliefs you have about the shape and structure of the actual sofa, since that is where you have to move your body, and by (2) propositional imaginings, since they represent controls on part of the 'spaceship'.

That both maps are used in guiding pretense is an elementary point, but it's easy to miss. Some theorists write as if, in pretend play, *only* imaginings are implicated in guiding the actions.[6] Other theorists hold that beliefs are the only propositional attitudes that can be the direct cognitive input into choosing bodily movements, even in pretense. The first mistake, I think, is fueled by an intense focus on imagination—a good focus to have— coupled with the fact that the relevant factual beliefs are often mundane and unnoticeable. (One doesn't think about the fact that one believes the sofa is in the living room.) The second mistake is fueled, I think, by the prominence belief is given in explaining action. Shaun Nichols and Stephen Stich (2003), for example, hold that imaginings cause conditional beliefs, and that these conditional beliefs, combined with desires, produce action; so for them, imaginings guide action *only* indirectly, mediated by beliefs. Langland-Hassan (2012) goes further. He holds that there is *no* distinct cognitive attitude of imagining at all that figures in the etiology of pretense; rather, conditional beliefs do all the work. As an antidote to both mistakes, we can keep in mind that (for example) the pretender represents a 'cockpit' *at* some specific location on the actual sofa. That is, the pretender

propositionally imagines there is a cockpit at a place on the sofa, where the shape of the sofa is tracked by beliefs. Both layers in the two-map cognitive structure help guide the action.

> **LESSON 2: Actions that express propositional imaginings rely also on factual beliefs to guide them, since those actions take place within the confines of the real world and agents use factual beliefs to track reality.**

Some research in the developmental psychology of pretend play helps cement this point (cf. Weisberg, this volume). Claire Golomb and Regina Kuersten (1996) had children play with adults at making 'cookies' out of playdough. To test whether the children ever really lost track of the reality/fantasy distinction, the adult experimenters would take an *actual* bite out of the playdough 'cookie'. If the children had lost track of the fact that the playdough was not really a cookie, this would not have surprised them. But they typically were surprised, which shows that they were tracking the identity of the playdough all along (factual belief), while simultaneously labeling it as being a cookie (propositional imagining).

> On the basis of our findings it seems likely that the world of pretence and reality are not mutually exclusive. The playing child monitors events occurring in reality and maintains the duality between the two modes of thought. In this model of play, thoughts about reality run parallel to thoughts about pretence, although pretence would be the predominant mode of thinking during play. (215)

Furthermore, in order to interact with playdough with their hands, children have to rely on their ordinary factual beliefs about the shape, texture, and consistency of *actual* playdough.[7]

Having established Lesson 2, we can further inquire exactly *how* propositional imaginings generate actions. In particular, how do they interact with desires or motivation generally speaking?

One suggestion, which I (2009) think is partially correct, comes from David Velleman (2000). Velleman holds that propositional imaginings cause a wide variety of actions—not just pretense—in the same way that beliefs do. Just as we perform actions that would satisfy our desires if our beliefs are true, so too we perform actions that would satisfy our desires (or "wishes") if our imaginings were true. Velleman develops several examples,

but walking through his extension of an example from Hume will suffice to illustrate the idea. His treatment of this particular case can be debated (see footnote 11), but I think it is fair to say that at least some actions will have roughly the etiology Velleman describes. Hume (1740/1978: 148) describes a man suspended high above the ground in a cage, from which he knows (and hence believes) there is no chance he'll actually fall, who nevertheless feels a great amount of fear. Velleman extends this case to one in which the man also clings to the bars as if he's about to fall and parses the example as follows. The man *imagines* that if he let's go, he'll fall. This imagining (in conjunction with the desire not to fall) causes clinging behavior that is like the behavior he would have performed if he believed that if he let go, he'd fall. For Velleman, this illustrates how imagining (as a propositional attitude) makes the same contribution to action that belief does. Furthermore, Nishi Shah and David Velleman (2005) extend this view to *all* cognitive attitudes, a class of propositional attitudes that includes hypotheses, assumptions, imaginings, and any attitude that represents the world as being a certain way. Effectively, they replace the formula

> *agents perform <u>actions</u> that will satisfy their <u>desires</u> if the relevant <u>beliefs</u> are true (other things equal)*

with

> *agents perform <u>actions</u> that will satisfy their <u>desires</u> (or wishes) if the relevant <u>cognitive attitudes</u> are true (other things equal).*[8]

As mentioned, I think there is something right about this generalization of the Davidsonian view of action causation, even if it needs to be qualified. I'll start with the sorts of case for which it seems right and then proceed to the qualification.

The categories of action for which Velleman's picture seems most plausible are explicit pretense and some forms of expressive action.

Consider pretending to stab a monster with a make-believe sword. Let's say I'm imagining that a pillow is the monster and that the ruler I'm holding is a sword. The action

involves shoving one end of the ruler into the pillow. Now we ask: what *motivates* this action? Otherwise put, what do I *want* such that I perform the action I do? (If I had had *other* motivations than whatever ones I did have, I might have pretended to give the monster a haircut with the blade of the sword, as opposed to stabbing it.)

The Velleman picture seems to work for this action. Arguably, the following propositional attitudes are at work.

> IMAGINING: This{ruler} is a sword.
>
> IMAGINING: This{pillow} is a monster.
>
> IMGAGINING: Thrusting my sword into the monster will kill it.
>
> DESIRE: I kill the monster.

Velleman's view is compelling enough that others extend and defend it. Some, like Tyler Doggett and Andy Egan (2007, 2012) even posit a special *kind* of imaginative desire that interacts with imagining in this fashion, which typically gets called *i-desire*. There has been some controversy around whether it's a good idea to posit a separate kind of desire, with Amy Kind (2011) and Shannon Spaulding (2013), and I (2011, 2014a) holding that the posit is under-motivated and superfluous (see also Kind, this volume). Shen-yi Liao and Tyler Doggett (2014) would reply that reasons to posit propositional imagining as separate from belief are at least *prima facie* reasons for positing i-desires as separate from desires. So the debate is still unresolved. But even though the question of i-desires is unsettled, it's fair to say that even those who reject i-desires don't necessarily reject the idea that imaginings can interact with desires *of some sort* to produce pretense actions. And once we set the question of regular desires vs. i-desires aside, Velleman's initial account has gone largely unchallenged.

The other category of action in which imaginings seem to interact with desires in the way Velleman describes is *expressive action*. This is something of a vague category, but

the following example gives a sense of it. I was sitting on the A Train in New York one summer's day, when I noticed a woman reading a magazine. From where I was sitting, I could also see the pictures on the pages. At one point, she turned the page to reveal a two-page Louis Vuitton advertisement, featuring Sean Connery lying on his side on the beach. At once, on seeing this image, she exclaimed (under her breath), "Oh, Sean Connery!", and proceeded eagerly to kiss the face of Sean Connery in the picture, after which she stroked his cheek gently. (In expressive actions generally, certain desires or emotions take on a higher-than-usual salience in motivating action.)

Now, as Rosalind Hursthouse (1991) would point out, a belief-desire explanation of this expressive action (or *arational action*, as she would put it) looks implausible, no matter how we flesh it out. We could say that the woman was temporarily deluded and hence *believed* Sean Connery was in front of her, and that desiring to kiss Sean Connery she then planted the kiss on the picture. But the woman need not have been insane; nor need one be generally in expressive action. Alternately, we could try to posit a desire *that I feel good* and a belief *that by kissing this image of Sean Connery I will feel good*. But this seems to posit the wrong desire. If she really had an operative desire to feel good, why was she on the train instead of out buying ice cream?

A more plausible suggestion than the belief-desire explanation presents itself. Rather, we can say that the woman on the A Train had the following pair of mental states:

> IMAGINING: Sean Connery is before me.

> DESIRE: I kiss Sean Connery.

This pair then causes the action that is *similar to* the action she would have performed had she had the following pair.

> BELIEF: Sean Connery is before me.

> DESIRE: I kiss Sean Connery.

Imagining, then, can stand in for belief in the causation of this kind of expressive action.

We can now state our third lesson.

Lesson 3: propositional imaginings can, under certain conditions, take on a belief-like role in guiding actions that are motivated by desires, where that role is specified by the standard belief-desire explanation form.

Now we ask: under what conditions? In my view, there has not been enough of an attempt in the philosophical literature to date at answering this question. So what follows is still a preliminary sketch.

Humans are adept at setting up play situations. When parents adopt high-pitched voices and give knowing looks to their children before engaging in what would otherwise be a silly or confused action, like 'drinking' from an empty cup, they've set up one such situation, or *practical setting* as I call it. In this case, it's the practical setting of make-believe. The proposal then, is that being in the practical setting of make-believe allows imaginings to take on a belief-like role in relation to desires in guiding actions, where it is the agent's awareness of that setting that constitutes the actions as full pretense.[9]

The setting of make-believe is constituted by a cluster of three shared expectations that agents have, when they are pretending together. The first expectation is that episodes of make-believe will be of limited duration; whatever imaginary actions and events occur during the episode will not be regarded as having occurred once the episode is over (Harris 2000). The second expectation is that certain signals trigger the start and stop of any episode of make-believe (unless it is an instance of solo pretense). Some of the signals may be innate, since they arise early in childhood (Lillard and Witherington 2004), but the signals are many and various and, after a certain point, determined by culture. Signals include anything from higher-pitched, slower voices and knowing looks (in childhood pretense) to verbal cues ("Let's play X!") or physical events, like lights going down on the stage. The third expectation is that some objects, spaces, properties, and events will be

assigned identities other than what they are factually believed to be (Leslie 1987): a sofa

will be a spaceship; an empty space will be a lion; red will be hot; etc. This third expectation

is the most substantive in defining the practical setting of make-believe, since the other two

make reference to that setting itself (an episode of *the setting of make-believe* will be of

limited duration; there will be certain signals that trigger the start and stop of *the setting of*

make-believe), though they are still informative insofar as they put constraints on the nature

of the setting.

Our qualification of Lesson 3 then is this: imaginings have a belief-like role in

guiding action *in the setting of make-believe* and not otherwise.

Though I think this qualification is broadly right, a difficulty arises. In expressive

action, there seems to be no signal that sets up make-believe; nor is it clear what the

duration is. So it seems that the belief-like role that imagining can play in guiding action

spills over from the setting of make-believe into other moments in life. This realization may

be what led Velleman to think that the motivational role of imagining was the same as that

of belief *simpliciter*.

The problem is tricky because the extension of the term "expressive action" is fuzzy.

But I think we can say the following in favor of our qualification on Lesson 3: in cases where

expressive action clearly does involve propositional imagining in a belief-like role in

relation to desire, there does seem to be a practical setting of make-believe that gets briefly

set up by the agent, or at least something like one. Returning to the example of the woman

on the A Train, she seems to have set up a spontaneous, brief make-believe setting after all.

The fact that she knew perfectly well that the picture was a picture shows that she was

aware that she was assigning an object a value other than what it was in reality (the third

expectation), treating a portion of picture as a man. And the fact that she stopped after less

than two seconds shows that the episode *was* of limited duration (the first expectation). So

the only expectation lacking is the signal that initiates the make-believe, and presumably such a signal wasn't needed, since there were no other real people involved in her episode of expressive action. On this view, much (not all) expressive action is un-signaled pretense, though it is spontaneous and unreflective enough that it is not thought of as pretense and certainly differs from paradigmatic cases of pretense in that it is not as deliberate. Let's call this category of expressive actions *mimetic expressive actions*.[10, 11]

Insofar as such mimetic expressive actions are woven throughout daily life, a certain amount of pretending is woven throughout daily life. Most adults do not set up explicit, signaled episodes of pretense as often as children do. But the tendency to pretend often doesn't really go away. Herbert Clark and Richard Gerrig (1984) argue that ironic speech, such as "*He*'s a smart one" (said of someone thought to be unintelligent), is a form of pretense, where the speaker is *pretending* to be someone who thinks what is said and is speaking to an audience who will receive the message. If they're right, this is another form of low-level pretending in addition mimetic expressive action that pervades regular life without, often being noticed as such.

To sum up, humans often represent objects, spaces, properties, and events as other than what they believe them to be. Propositional imagining can function as a secondary map to represent these alternate identities. And in certain settings, propositional imagining guides action, often in a belief-like way in relation to desire. But throughout such actions, factual beliefs retain their usual role in representing the states of affairs in the physical world with which the agent must continue to interact in order to execute the many forms of pretense at all.[12]

Section 3: Constructive Imagination and Action Choice

Temple Grandin (2014) has recently criticized the designers of the Fukishima

nuclear power plants, which had a meltdown in the wake of the tsunami of 2011, along the

following lines:

> During the Japanese tsunami catastrophe of 2011, the Fukushima nuclear power
> plants melted down because the tidal wave that came over the seawall flooded not
> only the main generator but its backup. And where was the backup located? In the
> basement—the basement of a nuclear power plant that is located next to the sea. As
> I read many descriptions of the accident, I could *see* the water flowing into the plant,
> and I could *see* the emergency generators disappearing under the water. (169,
> Grandin's italics)

In short, the power plant where the meltdown occurred had a cooling system that ran on

electricity; both the power grid and the backup generators lost function due to the tsunami;

so the cooling system failed and there was a meltdown.

Grandin's point, as I interpret it, is that whoever designed the plant *failed to imagine*

the possibility that the basement, where the backup generators were, would flood, and her

implication is that this failure of imagination is in part responsible for the failure to act.

Grandin is very much talking about mental imagery, but there is another sense of

the term "imagination" that we have not canvassed so far that is critical to seeing a more

fundamental point. The term "imagination" can refer to the capacity to generate novel

representations that are not arrived at simply by remembering or by perception of the

nearby environment. To disambiguate, I call this capacity *constructive imagination*.

(Constructive imagination does not entail propositional imagining or mental imagery,

though it may involve either or both.[13])

Grandin's main point is that certain possibilities are more likely to be arrived at by

visual or (as she puts it) "artistic" minds than by mathematical minds, which is why

"different kinds of minds" are needed. This is a substantive thesis about the relationship

between imagistic imagining and constructive imagining. But for purposes of the present

entry, we should extract two more general morals about the relationship between constructive imagination and action. First, constructive imagination generates representations of possible states of the world—ways the world might be—on the basis of which we might choose actions. Second, constructive imagination generates representations of possible actions to take. If one's imagination fails to generate a possibility of either sort that it *should*, then we describe this failure as a failure of imagination.

Some basic decision theory will help make these two points precise. In the top row of a typical decision table, possible states of the world (relevant to the action choice) are listed, along with probabilities assigned to them (which sum to one). In the first column of the table, possible actions are listed. In the body of the decision table are the expected outcomes of each action, for any given possible state of the world (often called "state of nature"), along with the values of the outcomes. One then chooses actions by weighting those values according to the probabilities of each possible state of the world in a function that gives an *expected* value for each action. We have the following structure:

	Possible state of the world 1 (p_1)	...	Possible state of the world n (p_n)	*Expected value of Action*
Action 1	Outcome / value$_{1,1}$	...	Outcome / value$_{1,n}$	$f(p_1,..., p_n, \text{value}_{1,1},..., \text{value}_{1,n}) =$ expected value of Action 1
...	...	...	...	...
Action m	Outcome / value$_{m,1}$	...	Outcome / value$_{m,n}$	$f(p_1,..., p_n, \text{value}_{m,1},..., \text{value}_{m,n}) =$ expected value of Action m

Let us suppose that in the above table the probabilities have been carefully assigned and the expected values carefully calculated. Is this sufficient for making a good decision on how to act? No, a problem arises: what if we *failed to imagine* a possible way the world might be? That is, a better imaginer might have come up not with n possible ways the world might be, but rather *n+1*. Arguably, something like this is precisely what happened in Fukushima. No doubt the "mathematical minds" had carefully figured out the probability of each of the n

possible states of the world that they did imagine—and good for them—but they failed to imagine possibility *n+1*: the flooding of the basement. And since they never imagined it in the first place, they couldn't assign it a probability in their decisions about how to act.

Likewise for actions. If one doesn't imagine buying a watertight door, then one can't assign a value to the outcomes of this action, given the ways the world might be. Grandin's recent work emphasizes that, where one lacks a certain kind of constructive imagination, one should rely on another kind of mind, one that has the requisite form of constructive imagination, to be able to make good decisions and take appropriate actions. This brings us to Lesson 4, which generalizes Grandin's point.

> **Lesson 4: constructive imagination is a necessary precursor to choices that select among multiple possible actions, given multiple possible states of the world, since possibilities must be first *represented* before they can be assigned probabilities and values.**[14]

Conclusion: Acting in Relation to *Possibilia*

Let's take stock. We've seen that the terms "imagine" and "imagination" can be taken in three ways, with each kind of imagining making its own characteristic contributions to action.

Imagistic imagining (or *mental imagery*) involves percept-like representational structures that can integrate with the perceptual manifold and substitute for percepts in guiding bodily movements (Lesson 1). This is a causal contribution, but we saw also that the contents of the imagery can also constitute otherwise identical bodily movements as distinct action types, as in gesturing the size of a porcupine as opposed to a hedgehog. Mental imagery figures in *imagery-oriented action*, which divides (at least) into *imagery-guided action* and *imagery-imitating action*.

Propositional imagining is an attitude distinct from belief, where to imagine (in this sense) that *p* is to regard that content as fictional as opposed to real. We saw that people do

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act on their propositional imaginings in explicit make-believe and mimetic expressive action and that they do so in manners similar to how they would have, if they had believed the contents of those very imaginings (Lesson 3). But when people do act on propositional imaginings, they continue to track what their surrounding environment is actually like by using factual beliefs (Lesson 2).

Constructive imagining is the capacity (or, more likely, cluster of capacities) for coming up with representations that go beyond the deliveries of one's perceptions of the nearby environment. Constructive imagination figures in action choice as follows. When one chooses actions, one represents various ways the world might be for the sake of predicting and valuing likely outcomes of the actions. But one can't act on a possibility one has failed to imagine in the first place, and one can't assign values to the outcomes of actions that never occurred to one. A failure of either sort is a failure of imagination. Thus, not only is constructive imagination involved in the psychology of action choice, but it is also an underexplored dimension that can be normatively appraised.[15]

What these three notions of imagination all have in common is this: Humans perform actions not just on what we take to exist in our immediate environment. We also act in relation to objects, spaces, properties, and events that are remote in time, actual space, possibility space, or epistemic space. We gesture the size of creatures that are not before us and operate control panels that only exist in fictions. When we don't know which possibility is actual, we represent the ones that are relevant[16], if we imagine well, and then act. Thus, various forms of imagining surround humans with *possibilia*, representations of which guide action in the world.

References

Bach, T. (2010) "The Objects of Pretense," Conference Talk at *Southern Society of Philosophy and Psychology*.

Briscoe, R. (forthcoming) "On the Uses of Make-Perceive," in Fiona Macpherson & Fabian Dorsch (eds.), *Perceptual Memory and Perceptual Imagination*, Oxford, Oxford University Press.

Carruthers, P. and Picciuto, E. (this volume)

Clark, H. and Gerrig, R. (1984) "On the Pretense Theory of Irony," *Journal of Experimental Psychology* 113(1): 121-126.

Davidson, D. (1963) "Actions, reasons, and causes," *Journal of Philosophy* 60(23): 685-700.

Doggett, T., and A. Egan (2007) "Wanting Things You Don't Want: the Case for an Imaginative Analogue of Desires," *Philosopher's Imprint* 9:01/17/13

Doggett, T., and A. Egan (2012) "How we feel about Terrible, Non-Existent Mafiosi," *Philosophy and Phenomenological Research* 84 (2): 277-306.

Gendler, T. S. (2003) "On the Relation between Pretense and Belief," in D. M. Lopes and M. Kieran (eds.) *Imagination, Philosophy and the Arts*, Routledge, London: 125-141.

Gendler, T. S. (2008a) ''Alief and Belief,'' Journal of Philosophy 105: 634–663.

Gendler, T. S. (2008b) ''Alief in Action (and Reaction),'' Mind and Language 23: 552–585.

Golomb, C. and Kuersten, R. (1996) "On the transition from pretense play to reality: What are the rules of the game?" *British Journal of Developmental Psychology* 14: 203-217.

Grandin, T. (2014) *The Autistic Brain*, New York, Houghton Mifflin Harcourt.

Gregory, D. (this volume)

Harris, P. (2000) *The Work of the Imagination*, Oxford: Blackwell.

Hume, D. (1740/1978) *A Treatise of Human Nature*, L. A. Selby-Bigge and P. H. Nidditch (eds.), Oxford, Oxford Clarendon Press.

Hursthouse, R. (1991) "Arational Actions," *Journal of Philosophy* 88(2): 57-68.

Kaplan, D. (1968) "Quantifying In," Synthese 19: 178-214.

Kind, A. (this volume)

Kind, A. (2001) "Putting the Image back in Imagination," *Philosophy and Phenomenological Research* 62(1): 85-110.

Kind, A. (2011) "The Puzzle of Imaginative Desire," *Australasian Journal of Philosophy* 89(3): 421-439.

Kosslyn, S., Thompson, W., and Ganis, G. (2006) *The Case for Mental Imagery*, Oxford, Oxford University Press.

Liao, S. and Doggett, T. (2014) "The Imagination Box," *Journal of Philosophy* 111(5): 259-275.

Langland-Hassan, P. (2012) "Pretense, Imagination, and Belief: the Single Attitude Theory," *Philosophical Studies* 159: 155-179.

Langland-Hassan, P. (forthcoming) "Imaginative Attitudes," *Philosophy and Phenomenological Research*

Leslie, A. M. (1987) "Pretense and representation: The origins of 'theory of mind,'" *Psychological Review* 94: 412–426.

Lillard, A. S and Witherington, D. C. (2004) "Mothers' Behavior Modifications During Pretense and Their Possible Signal Value for Toddlers," *Developmental Psychology* 40(1): 95-113.

Matravers, D. (2010) "Why We Should Give Up on the Imagination," *Midwest Studies in Philosophy* 34(1): 190-199.

Milner, A. D. and Goodale, M. A. (1995) *The Visual Brain in Action*, Oxford, Oxford University Press.

Nanay, B. (this volume)

Nanay, B. (2013) *Between Perception and Action*, Oxford: Oxford University Press.

Nanay, B. (forthcoming) "The Role of Imagination in Decision-Making" *Mind & Language*

Nichols, S., and S. Stich (2003) *Mindreading*, Oxford, Oxford University Press.

Schacter, D. L., & Addis, D. R. (2007) "The cognitive neuroscience of constructive memory: Remembering the past and imagining the future," *Philosophical Transactions of the Royal Society B* 362: 773-786.

Shah, N., and Velleman, J. D. (2005) "Doxastic Deliberation," *Philosophical Review* 114(4): 497-534.

Sinhababu, N. (2013) "The Desire-Belief Account of Intention Explains Everything," *Nous* 47(4): 680-696.

Spaulding, S. (2013) "Rationality and Desire in Fiction," *American Society of Aesthetics 71ˢᵗ Annual Meeting.*

Velleman, J. D. (2000) "On the Aim of Belief," in *The Possibility of Practical Reason*, Oxford University Press, Oxford: 244-281.

Van Leeuwen, N. (2009) "The Motivational Role of Belief," *Philosophical Papers* 38(2): 219-246.

Van Leeuwen, N. (2011) "Imagination is where the Action is," *Journal of Philosophy* 108(2), 55-77.

Van Leeuwen, N. (2013) "The Meanings of 'Imagine' Part I: Constructive Imagination," *Philosophy Compass* 8(3), 220-230.

Van Leeuwen, N. (2014a) "The Meanings of 'Imagine' Part II: Attitude and Action," *Philosophy Compass* 9(11): 791-802.

Van Leeuwen, N. (2014b) "Religious credence is not factual belief," *Cognition* 133(3): 698-715

Walton, K. (1990) *Mimesis as Make-Believe*, Cambridge, Harvard University Press.

Weisberg, D. S. (this volume)

Further Reading

In addition to the pieces already cited here, I recommend the following as entrance points

into research relating to imagination and action:

Bratman, M. E. (1992) "Practical Reasoning and Acceptance in a Context," *Mind* 101, pp. 1 – 15. (Explores how acceptance in a context—a non-belief cognitive attitude—can be the cognitive input into action choice.)

Currie, G., and I. Ravenscroft (2002) *Recreative Minds: Imagination in Philosophy and Psychology*, Oxford: Oxford University Press. (A wide-ranging simulationist account of imagination that also explores links to action.)

Egan, A. (2009) "Imagination, Delusion, and Self-Deception," In *Delusions, Self-Deception, and Affective Influences on Belief-Formation,* Tim Bayne and Jordi Fernandez, eds., Psychology Press. (Discusses delusions as states in between believing and imagining and uses links to action to motivate this position.)

Funkhouser, E. and Spaulding, S. (2009) "Imagination and Other Scripts," *Philosophical Studies* 143(3): 291-314. (Explores various ways imagination can be a script for guiding action.)

Proust, J. (forthcoming) "Time and Action: Impulsivity, Habit, Strategy," *Review of Philosophy and Psychology* (Explores the question of what the immediate mental antecedents to action are.)

Notes

[1] Matravers (2010) is similar in spirit to Langland-Hassan, except Matravers has two differences: (1) He's dealing with cognition of fiction as opposed to pretend action; (2) instead of positing conditional beliefs, he posits beliefs with an in-the-story operator as a replacement for imagining. Nichols and Stich (2003), who are in many ways the inspiration for Langland-Hassan, also implicitly have a belief-desire psychology for pretending, since they see imaginings as causing conditional beliefs, which then cause pretense actions in conjunction with desires. See Nanay's (forthcoming) introduction for an overview of various critiques of the belief-desire theory of action not canvassed in this entry.

[2] As I argue in 2011.

[3] These features bring together ideas from my 2011, Nanay (2013), and Briscoe (forthcoming).

[4] Note that the percepts guiding the movement aren't necessarily the conscious ones (Milner and Goodale 1995; Nanay 2013).

[5] There is some disagreement here, though this particular issue is not hotly debated. Kind (2001), for example, argues that propositional imagining requires mental imagery. I know of no one, however, who thinks mental imagery requires propositional imagining.

[6] Bach (2010), for example, seems guilty of this.

[7] Gendler (2003) and Liao and Doggett (2014) make much the same point.

[8] My formulation, not theirs.

[9] This is the view I argue for in 2009.

[10] Mimetic expressive action overlaps with but doesn't have the same extension as semi-pretense, which I define in my 2011. In much mimetic expressive action, the agent is aware of the pretense-like character of her action, which is not true of semi-pretense. So not all mimetic expressive action is semi-pretense. Is all semi-pretense mimetic expressive action? This is trickier, but it appears it is not, since much semi-pretense isn't the expression of any desire or emotion at all; one may simply be "going through the motions" and be influenced by a mental image in so doing.

[11] The one case that appears truly problematic for the present qualification on Lesson 3 is the case of the man clinging to the bars of the cage, since it seems that he is in no sense in a setting of make-believe; yet he acts on his desires in conjunction with imagining he is going to fall anyway—at least this is how Velleman treats the case. But I think what we can say here, *contra* Velleman, is that it is most likely perception that is doing the work, rather than propositional imagining, in supplying the cognitive input into the clinging behavior: the mere sight of the ground so far below sparks fear and the clinging that is an expression thereof. So this is not a counterinstance to the qualification after all. See Gendler (2008a, 2008b) for a different treatment of this kind of case.

[12] Exercise for the reader: how do the notions of practical setting and belief-like role in action allow us to solve the problem of distinguishing propositional imagining from mere supposition?

[13] See my 2013 for further clarification.

[14] Nanay (forthcoming) presents a model of decision-making that also emphasizes the role of imagination; his paper makes much the same point about the need to supplement the traditional belief-desire model of action.

[15] Note that constructive imagining is not merely the capacity to generate imagistic imagining and propositional imagining, since constructive imagining can also figure in generating novel propositional beliefs as well.

[16] Joëlle Proust informs me (personal communication) that she regards *relevance* as a norm for imagining.