

THE INDETERMINIST INTUITION: SOURCE AND STATUS*

Evidence from experimental philosophy indicates that people think that their choices are not determined. What remains unclear is *why* people think this. Denying determinism is rather presumptuous given people's general ignorance about the nature of the universe. In this paper, I'll argue that the belief in indeterminism depends on a default presumption that we know the factors that influence our decision making. That presumption was reasonable at earlier points in intellectual history. But in light of work in cognitive science, we are no longer justified in sustaining the presupposition that we know what influences our choices. As a result, I'll suggest, our belief in indeterminist choice is unjustified.¹

I. THE INDETERMINIST INTUITION

A diverse body of evidence indicates that people have the intuition that choice isn't determined. The evidence comes from interviews with children, vignette tasks, and phenomenological studies. Let's start with the children. Young children are fluent with the idea that a person often *could have done otherwise* than she did. In one study, the child observed an experimenter reach into a box and touch the bottom; the experimenter then asked the child, "did I have to touch the bottom or could I have done something else instead?". Children overwhelmingly said that the person could have done something else (Nichols 2004; Kushnir et al. 2009). Children did not, however, say the same thing after observing a physical event like a ball rolling into the box. Rather, in that case, children denied that the ball could have done something else.

Of course, one might wonder whether the notion of *could have done otherwise* that the child is deploying is really inconsistent with determinism. In a subsequent experiment, children were presented with scenarios of physical events and moral choices. In one of the moral choice

scenarios, Mary chooses to steal a candy bar. After correctly answering some comprehension questions about the situation that immediately preceded Mary's choice, children were presented with a kind of roll-back question: "Okay, now imagine that all of that was exactly the same and that what Mary wanted was exactly the same. If everything in the world was the same right up until she chose to steal, did Mary have to choose to steal?" In a physical event scenario, a pot of water was put on a stove and boils. Again, after comprehension questions about the situation immediately prior to the boiling, the children were asked "Okay, now imagine that all of that was exactly the same. If everything in the world was the same right up until the water boiled, did the water have to boil?" In this study, children were more likely to say that the water *had to boil* than that Mary *had to choose* to steal (Nichols 2004).

It is hard to be sure that children really understand the roll-back set up here, so I conducted a similar study on adults. Adults were presented with the water-boiling scenario and asked to imagine the moment right before the water boiled. They were asked to indicate the extent to which they agreed with this statement: "If everything was exactly the same up until the moment the water boiled, then the water had to boil at that moment." Adults tended to give high ratings of agreement for this case. By contrast, they gave significantly lower ratings for a theft-scenario in which they were asked to indicate agreement with this statement: "If everything was exactly the same up until the moment the man chose to steal the CD, then the man had to choose to steal the CD at that moment."² In addition, many of the participants who gave different answers for the two cases explicitly invoked the nature of choice in explaining their responses. Here are a few examples:

"I think that it's most LIKELY that the people will not change what actions they take, but I think it's possible, whereas water doesn't choose to boil."

"For the water boiling scenario, all things the same, water will boil in the same amount of time, each and every time. The scenario's dealing with choices, decisions could be made

on a whim, with the outcome being random. So those answers could vary, even under the same exact circumstances.”

“Regardless of circumstances, a person has a choice about their actions and may choose differently at any point. The water has to boil - it has no choice.”³

Another method for investigating lay beliefs about determinism starts by presenting subjects with a description of a deterministic universe. In one such study, a deterministic universe characterized as follows:

everything that happens is completely caused by whatever happened before it. This is true from the very beginning of the universe, so what happened in the beginning of the universe caused what happened next, and so on right up until the present. For example one day John decided to have French fries at lunch. Like everything else, this decision was completely caused by what happened before it. So, if everything in this universe was exactly the same up until John made his decision, then it had to happen that John would decide to have French fries (Nichols & Knobe 2007, p. 669).

This was contrasted with a universe that is *not* deterministic with respect to choice. In this universe, “*almost* everything that happens is completely caused by whatever happened before it. The one exception is human decision making”. When given such an explicit description of determinism, most participants maintain that *our universe* is like the one in which decision making is not determined. This holds for populations studied in the U.S., China, Columbia, and India (Sarkissian et al. 2010).

Using yet another method, Deery and colleagues (forthcoming) asked people about the phenomenology of their choices. First, the notion of determinism (dubbed “causal completeness” in the experiments) was explained to participants. Following comprehension checks, participants were asked whether their experience of decision-making (e.g., of selecting between two charities) was compatible with determinism. Across several studies, the results were robust: participants reported an experience of an ability to do otherwise, and reported that their experience was incompatible with determinism. It didn’t matter whether they were merely imagining a decision or actually making a decision, whether the decision was morally salient or neutral, or whether the

decision was present-focused or retrospective. In all conditions, people tended to report their phenomenology as incompatible with determinism.

These results from experimental philosophy confirm what many incompatibilists have long maintained – that people’s experience of choice is indeterministic and they tend to believe that choices aren’t determined. But why do people believe this? Many, perhaps most of these participants have had no training on the notion of determinism. Yet people have decided – and converging – opinions on the matter, even across cultures.

II. EXTANT EXPLANATIONS FOR THE INDETERMINIST INTUITION

There is a long history of explanations for the belief in indeterminist free will. Libertarians and hard determinists, not surprisingly, offer rather different explanations. But none of the proposed accounts provides an adequate explanation for the acquisition of the belief in indeterminism.

Libertarians tend to explain the belief in indeterminism in terms of the character of our experience. Here is Campbell:

Let us ask, why do human beings so obstinately persist in believing that there is an indissoluble core of purely *self*-originated activity which even heredity and environment are powerless to affect? There can be little doubt, I think, of the answer in general terms. They do so, at bottom, because they feel certain of the existence of such activity from their immediate practical experience of themselves (Campbell 1967, p. 41).

So, according to Campbell, it is because of our *immediate practical experience* that we believe our choices aren’t determined.

In explaining the virtues of libertarianism, Timothy O’Connor also adverts to experience:

the agency theory is appealing because it captures the way we experience our own activity. It does not seem to me (at least ordinarily) that I am caused to act by the reasons which favor doing so; it seems to be the case, rather, that *I* produce my decision *in view of* those reasons, and could have, in

an unconditional sense, decided differently. Such experiences could, of course, be wholly illusory, but do we not properly assume, in the absence of strong countervailing reasons, that things are pretty much the way they appear to us? (1995, pp. 196-7)

While O'Connor is here pointing to experience as a reason to believe in indeterminism, it's natural to take this appeal to experience as simultaneously providing an explanation for why we in fact believe in indeterminism.⁴

The work in experimental philosophy suggests that the libertarians are right about the character of the experience. People's experience of choice is at odds with determinism. But as an explanation for the belief in indeterminism, the appeal to experience is too anemic to be convincing. Start with the (apparent) fact that we have experiences that conflict with determinism. One natural explanation for why we have such experiences is that we have a prior *belief* that is at odds with determinism and this belief shapes our experience. If that possibility is right, then appealing to the experience itself is no help since we would still need to explain why we have the prior belief in indeterminism. Or, to put the problem a bit differently, it's possible that our experience of indeterminism is *theory laden*. That is, we might have the experience of indeterminism because of a background theory that denies determinism.⁵ If such a background theory is what informs our indeterminist phenomenology, then the key question is how we ended up with such an indeterminist *theory*.

If experience is supposed to provide a noncircular explanation for our belief in indeterminism (or our theoretical resistance to determinism), then it has to be in virtue of experience that is *not* guided by an indeterminist belief or indeterminist background theory. It's plausible that some of our ideas do come directly from raw (i.e., non-theory-laden) experience. It doesn't take any conceptual sophistication or background theory to get the idea of pain from the raw experience of a toothache. The idea of indeterminism, however, is presumably much too complex to be directly given by raw experience. It is hard to see how such a sophisticated belief could be arrived at without some form of inference, whether explicit or (more likely) tacit.⁶ At a

minimum, the libertarians have not given a plausible explanation for how we could get the indeterminist belief from raw experience.

In characterizing the experience of agency, libertarians like Campbell and O'Connor emphasize the experience of the *self* as initiator. For instance, O'Connor writes, "it seems to be the case... that *I* produce my decision *in view of* those reasons, and could have, in an unconditional sense, decided differently." Perhaps then, the idea isn't that we have a raw experience of indeterminism, but we have an experience of the self as originator of decisions, and it is this experience that explains why people believe in indeterminism. For present purposes, I want to grant part of the claim here. Let's allow that when we make decisions, it seems as if the self is the originator of the decision. This claim is also promoted by nonlibertarians. For instance, Terry Horgan maintains that we don't experience our actions as determined by our mental states; rather, the phenomenology is that the *self* is the source of action. Here's Horgan:

How... should one characterize the actional phenomenal dimension of the act of raising one's hand and clenching one's fingers...? Well, it's the what-it's-like of *self as source* of the motion. You experience your arm, hand, and fingers as being moved *by you yourself*, rather than experiencing their motion either as fortuitously moving just as you want them to move or else as being transeuntly caused by your own mental states (Horgan 2011, p. 79)

This all sounds phenomenologically quite right. So I am happy to agree with O'Connor that there is a phenomenology of self-as-source. But it's unclear how to leverage this into an explanation of the belief in indeterminism. One option is to hold that we experience the self as "purely" originating action in a way that isn't determined, as suggested in the passage from Campbell. That option, though, brings us back to the problem of theory-ladenness – it's hard to see how raw experience could deliver the content *self-originated activity isn't determined*. Recent work on the phenomenology of agency suggests a second option. Raw experience does plausibly allow us to distinguish self-generated actions from involuntary bodily movements, like being pushed (see, e.g., Blakemore & Frith 2003). Thus there might be a kind of raw-experience of self-as-source. It remains controversial whether this actually includes an experience of a *self* (Prinz 2011).

Moreover, even if we have a raw experience that allows us to identify our self-generated actions, the libertarian would still need to explain how we move from that raw experience to the intuition that the self isn't determined. And this hasn't been done. Thus, while libertarians are right that we believe and feel that our decisions aren't determined, they have yet to provide a satisfying explanation for why we have the belief.

Hard determinists have their own explanation for the belief in indeterminist free will. The leading motif in their explanation is *ignorance*. The basic strategy was put forward by Spinoza in the 17th century:

Men believe themselves to be free, simply because they are conscious of their actions, and unconscious of the causes whereby those actions are determined (Spinoza 1887/1677, p. 134).
Men are mistaken in thinking themselves free; their opinion is made up of consciousness of their own actions, and ignorance of the causes by which they are conditioned. Their idea of freedom, therefore, is simply their ignorance of any cause for their actions (p. 108).

D'Holbach promotes a similar view a century later:

Because [man] cannot perceive the chain of operations in his soul, or the motive principle that acts within him, he supposes himself a free agent... when he rather ought to say, that he is ignorant how or for why he acts in the manner he does (D'Holbach 1970/1770, Part I, Chapter 11)

For both Spinoza and D'Holbach, it is because we are ignorant of the causes of our actions that we think our actions aren't determined.

The ignorance-based explanation has long been attractive to hard determinists. But it is manifestly incomplete. In typical cases of ignorance, we do not draw grand conclusions about determinism. I currently have a headache; I am conscious of my headache; and I have no good idea about what caused it. I "cannot perceive the chain of operations" that led to my headache. Still, I don't infer an indeterministic source for my headache. Something similar can be said when I have an allergic reaction, nausea, achy joints, itches and so on. Yet ignorance of the causes for these phenomena does not generally breed the belief that the phenomena aren't determined. So

even if Spinoza is right that we are ignorant of the causes of our actions, that doesn't yet explain why we believe that our actions aren't determined.

Richard Holton offers a contemporary variant of the Spinozist approach. Holton begins by suggesting that what is available in our phenomenology isn't sufficient to determine our choices: "Our experience tells us that our choice is not determined by our beliefs and desires, or by any other psychological states— intentions, emotions etc.—to which we have access. Those could be the same, and yet we could choose differently." (Holton 2006, p. 15). I think Holton is right that, at least often, the psychological states we identify through introspection are not sufficient to determine our behavior.⁷ Holton adverts to Buridan's ass style cases as one kind of example (p. 6). I choose between two coins (or two piles of hay), even though my experience does not present me with any determinative set of considerations for taking one over the other. One might complain that Buridan's ass style scenarios are rare. But such cases point to a much broader phenomenon. Frequently (always?) the information to which I have access doesn't uniquely predict my action. Consider the timing of action. I want to turn on the stereo, and I am quite sure that I will eventually get up and do it. But when I actually get up is not uniquely predicted by the information that is introspectively available.

After noting that our *phenomenology* is such that our psychological states could be the same and yet we could choose differently, Holton goes on to write: "From there it is easy to move to the thought that we could be just the same in our entirety, and yet we could choose differently: that the world is indeterministic." (Holton 2006, p. 15). Why is it easy to move? How do I go from the lack of an introspectively available set of factors that determine my action to the conclusion that there is no set of factors that determine my action? It would be a kind of scope fallacy to move from "I don't experience my actions as determined" to "I experience my actions as not determined". Now, people surely do commit fallacies. But notice we don't seem to commit the scope fallacy when it comes to headaches. That is, the phenomenology of headaches doesn't present us with a set of deterministic headache-causes, but we don't leap to indeterminist

conclusions there. Like Spinoza's account, Holton's is at least incomplete. For it remains unclear how we move from the fact that we don't perceive deterministic psychological causes to the conclusion that our choices aren't determined.

III. HOW TO MAKE INFERENCES ABOUT DETERMINISM

Setting aside the folk, scientists and philosophers obviously have views about determinism. It's hard to find compelling evidentiary arguments for the ambitious claim that the entire universe is deterministic. But there are perfectly legitimate ways to make inferences about whether a more restricted system is deterministic or not. The key is that one must be able to assess all of the inputs to the system.

If we know the boundaries of a system, and we can monitor all of the inputs, then we can be in a position to assess whether the system is deterministic. Neuroscientific research on the release of neurotransmitters provides a nice example. Neurotransmitters are released from the end of a neuron into the synaptic cleft. Researchers have explored the relation between neural activation and the release of neurotransmitters by activating a single neuron in a fixed way and monitoring the release of neurotransmitters. Apparently the release of neurotransmitters into the synaptic cleft can differ even given the same activation of the neuron. This has been used by some to argue that the behavior across the synapse is indeterminist (Glimcher 2005, p. 48). For it seems that given the same input the mechanism can produce different outputs. The empirical details here are vexed for it's not clear that all the factors were controlled for across conditions (Roskies forthcoming). But the argumentative strategy is perfectly sensible. If we have a closed system and we know all of the inputs, then if the system behaves in different ways given the same inputs, that constitutes evidence that the system is not deterministic.⁸

IV. BACK TO BURIDAN'S ASS

The neuroscientific argument for indeterminism in synaptic release provides a model for how to argue for indeterminism. And this kind of argument, I suggest, was deployed by Medieval libertarians. A number of Medieval philosophers, including Peter Olivi, Duns Scotus and William of Ockham, used Buridan's ass cases to argue for indeterminist free will (see Rescher 2005). Here is Olivi:

When there is some number of equal things that are equally useful, nothing explains the will's adoption of one or the other of them except the freedom by which one is equally able to do this or that....It often happens that we want to take one of two coins. We deliberate and ascertain that there is just as good reason to take the one as the other. In these circumstances, we rightly think that we would be able to take and keep the one coin just as well as the other. Then, when we take one of the two, we manifestly feel that we do this from freedom of the will alone and not from some greater satisfaction in the one as opposed to the other (quoted in Kaye 2004, p. 23).

The argument seems to be that (i) the factors that inform my decision are equilibrated between the two options, but (ii) I make a choice. Thus, the choice isn't determined.

Leibniz famously rejected the possibility of Buridan's ass, insisting that: "a perfect equality on two sides is never to be found" (see Rescher 2005, p. 27). And Leibniz availed himself of the unconscious states – *petites perceptions* – to maintain that there are unconscious tie-breakers in all such cases. He criticizes earlier philosophers of free will for "ignoring these insensible impressions which can suffice to tilt the balance" (1765/1981, II, i., 15). Now, Leibniz had no empirical evidence that there are always tie-breakers. However, his remarks draw out a tacit assumption of the Medieval argument for the indeterminism – the argument presumes that *we can tell* that there are no tie-breaking factors in Buridan's ass cases.

A similar kind of presumption seems to be implicit in a key discussion of free will in Ockham. Ockham first defines free will as "that power whereby I can do diverse things indifferently and contingently, such that I can cause, or not cause, the same effect, *when all conditions* other than this power *are the same*." He then goes on claim that we can know that we

have this free will through experience: “the thesis can be known evidently through experience since a human being experiences that, no matter how much reason dictates a given thing, the will is still able to will that thing or not to will it” (Ockham 1980, p. 88). But how do I know that I can engage in this kind of free action *when all conditions are the same*? At a minimum, I must be able to tell whether *all the conditions are the same*.

Ockham’s case here plausibly depends on the assumption that I have access to the factors that impinge on my decisions. The texts do suggest that Ockham presumes that all of the relevant factors are consciously available (see Brower-Toland, ms.). Given that assumption, we can piece together an argument for indeterminism:

1. The factors that are introspectively accessible do not determine my choice.
2. I have introspective access to all the (proximal) factors that influence my choice.
3. My choice is not determined.

The argument closely resembles the kind of argument we find in neuroscience. The first premise is quite plausible to this day. And, at least in Ockham’s time, the second premise was perfectly reasonable. It is a powerful argument for indeterminism.

V. PHILOSOPHY RECAPITULATES ONTOGENY

We have already granted that – at least often – the introspectively accessible features of our current states don’t uniquely fix a decision. Let’s assume that this is something that people are aware of on the slightest reflection. That is, assume that people know that what is introspectively accessible doesn’t fix a decision. If people also presume that they have access to the proximal influences on their decisions, then they would have the materials to draw a reasonable inference to indeterminism. So, do people assume that they have such access?

On some contemporary accounts, people presume that they have access to *everything* in their minds (e.g. Carruthers 2008). If people really presupposed such introspective transparency,

that would obviously suffice to mediate from the belief that *the factors available to introspection do not determine my choice* to the conclusion that *my choice is not determined*. There is, however, little evidence to support such a strong claim. At least at the explicit level, many people acknowledge the possibility that they might not be able to access various aspects of their current mental lives (Kozuch & Nichols forthcoming).

Although people don't assume complete mental transparency, such a strong assumption is not necessary to fund the inference to indeterminism. All that is required is a kind of default (but defeasible) assumption that the causal influences on decisions are introspectively available. And there is evidence that people do have such a default assumption. For instance, people report that they *usually* know what leads them to make the decisions they do. And people tend to expect that subjects in a psychology experiment would be aware of the influences on their decisions. Kozuch and I presented participants with the following description of an experiment by Nisbett & Schachter (1966):

Researchers asked subjects to take a series of shocks that increased in intensity. Before they were given the shocks, some subjects were administered a pill and told that the pill would lead to heart palpitations, irregular breathing, and butterflies in the stomach. In fact, the pill was phony, but these symptoms are also the most common symptoms experienced by people when undergoing electric shocks. The researchers predicted that the subjects who were told the pill would produce these symptoms (heart palpitations, irregular breathing, etc.) would take more intense shocks than other subjects. The researchers were right. Subjects who were told that the pill would produce heart palpitations, irregular breathing and butterflies in the stomach accepted far more intense shocks.

In the original Nisbett & Schachter experiment, the subjects clearly thought that the pill was causing heart palpitations and irregular breathing, and this affected how much shock the subjects took. As a matter of fact, the researchers report, subjects were unaware of the influence of their thoughts about the pill. Kozuch and I wanted to know whether our participants would anticipate this. We asked our participants whether the subjects in that experience would have been aware

that they attributed some of their physical symptoms (e.g. butterflies and heart palpitations) to the pill. Our participants maintained that the subjects would indeed have been aware of this.

Although participants were thus inclined to presume access about decision making, it turns out that participants do not treat all mental events alike in this respect. In another task, we presented participants with a description of a different experiment (Nisbett & Wilson 1977) in which subjects memorized a series of word pairs and then were given a word association task. The original experiment found that people who had memorized the word pair “ocean-moon” were more likely to name “Tide” when asked for the name of a laundry detergent. Again, what Kozuch and I wanted to know was whether our participants would expect the subjects to be aware that memorizing “ocean-moon” influenced their association to “Tide”. We found that our participants did *not* expect subjects to be aware of this influence. In another task, we asked participants about the extent to which one is typically aware of the factors that produce urges, and participants showed significantly less agreement with the claim that one is typically aware of the influences on urge-formation, as compared to decision-formation.

Our results do not support the idea that people have an unqualified presumption of introspective transparency. However, they do suggest that people have a kind of default presumption that the influences on decisions are introspectively available. Moreover, decisions seem to be special in this regard. The factors influencing associations and urges are regarded as less introspectively accessible than those influencing choice.

The data here are really quite limited, and so it’s hard to draw any very precise conclusions about the extent of the presumed access. But I think we can make a bit of headway by coming at this from another direction: *why* would we think that we have good access to the factors implicated in decision making?

There are prominent areas of our psychology in which we have an exaggerated sense of our ability for detection. Change blindness offers a striking example. In change blindness studies, participants take a very long time to notice large differences in flashing presentations of a

doctored photo. When asked to estimate how quickly they would (or did) notice the change, people vastly overestimate their performance (Levin et al. 2000; see also Scholl et al. 2004). Why do subjects presume that they would notice the changes? Levin and colleagues suggest that it is because of the salience of the successes we have in perception:

A large body of research shows that subjects attend to “hits” more than “misses” when considering their success at everyday tasks (see for example, Gilovich, 1991; Hearst, 1991), and that these highly available instances exert a powerful effect on reasoning and decision making (Tversky & Kahneman, 1973) (Levin et al. 2000, p. 408).

Our attention is drawn to factors that are *present*, rather than to the possibility that there are hidden factors (Hearst 1991). Of course, often this is quite appropriate. There are typically indefinitely many things that we don’t see when we make evaluations. It would be excessively demanding to try from the beginning to accommodate the possibility of hidden factors. Instead, in both science and life, we proceed in a more tractable fashion.

The role of salient successes in generating an exaggerated sense of one’s knowledge is elaborated in recent work by Rozenblit and Keil. They explored the factors that lead people to have a sense of “explanatory depth” for a system. What they find is that people take themselves to have a high level of understanding for mechanisms like locks, toilets, and zippers. When pressed to explain these devices fully, people tend to be flummoxed and subsequently downgrade their self-reported level of understanding. What, then, gives them the initial sense of a deep understanding? Rozenblit and Keil suggest that it is in part because there are discrete, visible parts to these devices (p. 538). The visible parts are also manifestly causally implicated in the workings of the device. Compare this to devices for which we typically *don’t* have access to any of the causal parts, like touch screens or flashdrives. Because we don’t have access to any of the causal factors, we have (I suggest) no sense of explanatory depth at all, and so we are quite prepared to acknowledge our ignorance of the causal factors. It’s only because we have seen the causal parts of locks and zippers that we have the sense of a fairly complete understanding.

With this background in place, we can start to piece together an explanation for why people tend to expect access to factors implicated in decision making (Kozuch & Nichols forthcoming). When we introspect, we do plausibly find discrete states (e.g. thoughts and intentions) that are causally implicated in our decisions. We succeed in explaining and understanding much of our behavior in terms of these introspectively available states. In addition, we virtually never get disconfirmation of these explanations of our own behavior (Nisbett and Wilson 1977, p. 256; see also Levin et al 2000). In light of this, it is not at all surprising that we have a sense of a deep understanding of the factors implicated in our decisions. The fact that there *might* be hidden factors that we aren't accommodating in our explanations is of no more significance in this domain than elsewhere. Until you show me the factors I'm neglecting, I'm unlikely to incorporate them into my explanations. Indeed, even after we acknowledge the theoretical possibility of hidden factors influencing choice, we rarely bring that fact to mind. It takes great vigilance to keep in mind that there are (right now!) introspectively unavailable factors influencing my decisions.

More empirical work is sorely needed on the extent of presumed access to decision making. But if foregoing sketch is right about the default presumption of introspective access, then we have what it takes to explain the inference to indeterminism. We are granting that people believe (1):

1. The factors that are introspectively accessible do not determine my choice.

I've proposed that people also have a default assumption that we have access to the proximal factors that influence our decisions. Given these assumptions, it would be natural, indeed appropriate, to conclude that choice is – at least often – not determined.

This account can explain why people believe that decisions aren't determined, and it can also accommodate the fact that people *don't* think that about other mental events. People have no idea about how semantic memory works. If asked "What is your mother's maiden name?", people have no trouble responding; at the same time, people have little to say when asked "How did you

retrieve that?" (Nisbett & Wilson 1977, p. 232). But this isn't very surprising to anyone. People don't presume to know the operations of semantic memory. Similarly, we have no good sense of discrete causal factors implicated in getting headaches. In these cases, we don't have a sufficiently powerful causal story to begin with, and so we have no sense of explanatory depth. So there is no presumption of broad-scale access to the causally relevant factors in the generation of headaches.⁹ As a result, there is no basis for drawing indeterminist conclusions about headaches from the fact that we can't detect a deterministic set of causes.

VI. DEBUNKING THE BELIEF IN INDETERMINIST FREE WILL

If this is the right story about the origin of the indeterminist intuition, how does it reflect on the epistemic status of the belief in indeterminist free will? The answer depends on the epistemic status of the default assumption that we have access to the causal factors that influence our decisions.

While we do plausibly have access to *some* causal factors in our own decision making, we are ignorant of many of the proximal factors that play a crucial role in generating our decisions. Social psychology has been chronicling the limitations of introspection for decades, and there is a large catalog of effects. Here's a small sampling. In one study, participants primed with words related to rudeness were more likely to interrupt an experimenter than were those primed with words related to politeness. But none of the participants showed any awareness of the effect of the prime (Bargh et al. 1996, p. 234). In a quite different paradigm, participants were asked to write down the last two digits of their social security number and subsequently given a chance to participate in an auction on fancy chocolates and fine wines. Those for whom the last digits were high made higher bids than those for whom the last two digits were low (Ariely et al. 2003). In yet another paradigm, subjects filled out a questionnaire in a room that either had or lacked a citrusy cleaning smell. They were subsequently moved to another room where they were

told to eat a biscuit. Those who had just been exposed to the citrus smell were more likely to clean up the crumbs (Holland et al. 2005). When then asked about whether the smell had affected their decision to clean up the crumbs, none of the subjects said that it had (p. 691). This just scratches the surface of such effects (see, e.g. Doris forthcoming). There are entire traditions of research, like cognitive dissonance, that focus on unconscious influences on thought and action (see Cooper 2007).

There is little dispute, at this point, that there are unconscious influences on our decisions. We do not have complete access to the causal influences on our decisions. How does this bear on the epistemic propriety of the belief in indeterminist free will? Let's return for a moment to Ockham's argument for indeterminism. Ockham seems to have inferred indeterminism from the fact that the introspectively available factors don't determine decisions. However, he only took into account the introspectively available influences on decision making. Was he also expected, on pain of epistemic impropriety, to anticipate introspectively unavailable factors in decision making? Presumably not. In general, until we have reason to think that there *are* hidden factors, it's plausible that we are justified in forming beliefs as if there aren't hidden factors. We now think that sunburn is caused by ultraviolet rays. In the 18th century, the prevailing view was that sunburn was caused by the sun's heat (Roelandts 2007). Eighteenth century heat theorists had neglected the possibility that invisible light caused sunburns. Does that mean that they weren't justified in believing in the heat-theory of sunburn? Light beyond the visible spectrum wasn't even discovered until 1800. It is a harsh epistemology that impugns the justification of 18th century heat theorists on the grounds that they failed to consider the effects of invisible light. Similarly, for Ockham, it seems epistemically harsh to charge him with being unjustified in believing in indeterminist free will on the grounds that he neglected introspectively invisible influences on decision.

Today we know that there are important limits on introspection. At least *some* of the factors that influence our choices are introspectively unavailable to us. This puts us in a much

different epistemic situation. Of course, the libertarian might maintain that there are cases of choice in which we do introspect all the causally relevant factors and that in these cases, our belief in indeterminism is true. The extant data don't obviously exclude that possibility.¹⁰ However, given the limits of introspection, we are not justified in trusting introspection on these matters. For we know that introspection misses out on causally important influences. Thus, even if there are deterministic factors that cause our decisions, we cannot expect introspection to tell us. So the fact that we don't introspect a set of deterministic factors doesn't provide grounds for believing that there are not deterministic factors.

Thus, we can mount a debunking argument against the common belief in indeterminist decision making. We believe in indeterminism, I've suggested, because we have a default assumption that we have access to the proximal causal influences on our decisions. But we now know that introspection fails to detect important proximal influences on decisions. As a result, we are unjustified in sustaining the default assumption concerning introspective access to decision making. Insofar as the belief in indeterminist free will depends on this default assumption, we are unjustified in sustaining that belief. Our intuition of indeterminism counts for nothing.

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NOTES

* I am grateful to James Beebee, Susan Brower-Toland, John Doris, Brian Fiala, Terry Horgan, Benji Kozuch, Michael McKenna, and Adina Roskies for comments and discussion on earlier drafts of this paper.

¹ The issue thus centrally concerns our intuitions about indeterminist choice. Whether free will is compatible with determinism is a further question that depends on contentious issues concerning concepts and reference (see, e.g., Nichols 2006).

² The study was conducted on mTurk. All subjects got both the theft scenario and the water scenario, counterbalanced for order. Their responses on a 1 (strongly disagree) to 6 (strongly agree) scale showed a significant difference between agreement to the water scenario ($M = 4.55$) and the theft scenario ($M = 3.2$) ($t(29) = -3.03$, $p < .01$).

³ There was, it should be noted, some variation in responses. One participant gave an explanation that seems to be explicitly determinist: "If everything was the same, then the result must be the same.... Otherwise, the circumstances surrounding the event must be different in some respect, possibly something to do with the time of the occurrence."

⁴ Indeed, a particularly attractive package is that we believe in indeterminism because of our experience, and this is in fact good grounds for believing in indeterminism.

⁵ Any internally represented body of information will count as a “theory” in the sense meant here. This leaves open whether the theory is revisable. It might turn out that the theory that feeds the phenomenology of indeterminism is incorrigible.

⁶ One might promote a nativist view about the belief that choice is indeterminist. But if this is aimed at avoiding a role for inference, it is a dauntingly rich nativist proposal. It would require an innate concept of choice, an innate concept of indeterminism, and an innate belief that connects these concepts.

⁷ Holton also writes: “If I am right that choice is not determined by one’s prior beliefs and desires, then there is an important sense in which, phenomenologically, it is not determined” (Holton 2006, p. 5). I’m less sure about this. Consider again my headache. My headache is not determined by my prior beliefs and desires, nor by the other factors that are introspectively available to me. I could have the same introspectively available features and not have a headache. Does that mean that there is an important sense in which phenomenologically my headache is not determined? If so, then it doesn’t seem so meaningful to say of an event that “phenomenologically it is not determined.” If not, then we need an explanation of the asymmetry between headaches and choices.

⁸ Of course, there is the complication that the system might have hidden variables that are deterministic but produce apparently indeterminist behavior. Such possibilities bedevil inferences about determinism even in physics. So these arguments are not foolproof. But they still provide perhaps the best approach we have for assessing whether a system is deterministic.

⁹ In this respect, headaches are like flashdrives and decisions are like zippers.

¹⁰ Determinists like Leibniz insist that there must be hidden factors that take up the slack. But this is driven by a prior commitment to determinism and begs the question against libertarians.