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Intuitional Learning

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Recently, perceptual learning has become a focus of philosophical investigations. This is because the phenomenon of perceptual learning sheds light on the nature of perception. It tells us that the physical objects that are perceived are not the sole causes of perceptual states, it reveals that previous experiences shape the way we perceive, and it brings into focus an experience's phenomenal character. Hence, there is no doubt that perceptual learning has crucial implications for philosophy of mind. Only very recently, however, have researchers begun to investigate whether we can draw genuinely *epistemological* lessons from perceptual learning. In the first section, we shall see that such epistemological lessons do indeed exist. The rest of the paper is devoted to showing that there are analogous cases of *intuitional* learning. By discussing simple examples, it is argued that such cases of intuitional learning suggest that intuitions are sui generis mental states, namely experiences that have a distinctive phenomenal character, and that it is this distinctive phenomenal character that makes intuitions a source of immediate justification.

1 Epistemological Lessons from Perceptual Learning

1.1 *The Phenomenon of Perceptual Learning*

Let us begin with an example based on true events.

> Twins. At a party, Tanya meets Christopher and Alexander. Christopher and Alexander are identical twins, and Tanya is not able to visually distinguish between them. To her, they both look exactly the same. Tanya then is in a relationship with Christopher for about five years. Now she is able to visually distinguish between them. They look different to her.

Such examples of perceptual learning have become increasingly popular in current philosophy of mind. According to psychologist Eleanor Gibson, per-

ceptual learning, broadly speaking, "refers to an increase in the ability to extract information from the environment, as a result of experience and practice with stimulation coming from it" (1969, 3).[1] Susanna Siegel discusses the hypothetical example in which one has never seen a pine tree before and gets hired to cut down pine trees (cf. 2010, 100). After several weeks, one is able to identify pine trees on sight and distinguish them visually from other trees. As Siegel rightly points out, one's experiences of pine trees before and one's experiences of pine trees after perceptual learning has taken place differ *phenomenologically* (cf. 2010, 101). By an experience's phenomenological or phenomenal character, I understand "what it is like subjectively to undergo the experience" (Tye 2021, sec.1). Kevin Connolly discusses the example of an expert birdwatcher who is looking at a wren. Connolly is in agreement with Siegel when he states that "the perception of an expert birdwatcher is phenomenally different from the perception of a layperson, even when viewed under the exact same background conditions" (2014, 1408).[2] Perceptual learning is a philosophically significant phenomenon that has obvious implications for philosophy of mind as it tells us something about the nature of perception. For instance, "the fact that perceptual learning occurs means that the causes of perceptual states are not just the objects in our immediate environment, as it seems at first glance. Rather, given the reality of perceptual learning, there is a long causal history to our perceptions that involves prior perception" (Connolly 2017, sec.3). When the expert birdwatcher and an ordinary person are looking at a wren from the same distance and angle, they are acquainted with the same object, but their respective experiences differ significantly. Perceptual experiences do not only present objects, they also shape future experiences. As Goldstone and Byrge put it: "Perception can be learned. Experience shapes the way people see and hear" (2015, 812).

I should make explicit that, in agreement with all these authors, I assume that perceptual learning involves *genuinely perceptual* changes. While this is the dominant position, there are scattered examples in the literature in which putative cases of perceptual learning are approached as changes in judgments/beliefs instead of changes in the experience's phenomenology.

1 For more details on the characteristics of perceptual learning, cf. Connolly (2017).

2 Of course, Siegel and Connolly differ in the lessons they draw from this phenomenological difference. While Siegel argues that cases of perceptual learning show that even high-level properties such as being a pine tree can be perceptual contents, Connolly attempts to explain the phenomenological difference in terms of a subject's "attentional pattern onto other low-level properties" (2014, 1408; cf. also 2019).

Jack Lyons, for instance, argues that when a herpetologist and a novice look at a copperhead, although "it looks like a copperhead" to the herpetologist and "only like a snake to" the novice, both, the herpetologist and the novice, "have identical visual experiences" (2009, 104).[3] In a similar fashion, McDowell (2008, 3) and Smith (2002, 96–97) have denied or questioned perceptual changes in particular cases of perceptual learning. Furthermore, an anonymous referee of this journal has emphasized that psychologists often talk in terms of "changes in processing and/or behavior" instead of in terms of phenomenal changes, and that this is a terminology also adopted by some philosophers, as exemplified by Stokes (2021). This is because changes in behavior and processing can be measured. Phenomenal changes, on the other hand, cannot be quantified from the third-person perspective. Of course, researchers who avoid talking about phenomenal changes do not necessarily deny them, but these considerations put some pressure on my presupposition that perceptual learning is genuinely perceptual.

The most extensive and convincing defense of the claim that perceptual learning is genuinely perceptual is offered in Connolly (2019, chap. 2). Here Connolly elucidates "converging evidence that comes from different levels of analysis: from philosophical introspection, neuroscience, and psychology" (2019, 46). Concerning philosophical introspection, Connolly invokes the "multiplicity of philosophers from different times and places who independently argue, based on introspection, that" perceptual learning involves perceptual changes. Regarding neuroscience, Connolly discusses the "neuroscientific evidence that perceptual learning modifies the primary sensory cortices" (2019, 48), arguing that this is why most scientists do indeed consider perceptual learning a genuinely perceptual process. I take Connolly to have successfully shown that perceptual learning should be considered a process that involves perceptual changes. Importantly, the cases that I discuss in section 1.2 and on which my epistemological considerations are based in section 1.3 are cases in which it should be uncontroversial that the experiences occurring before and after perceptual learning differ phenomenologically.

While it is beyond doubt that perceptual learning is a philosophically interesting phenomenon with crucial implications for philosophy of mind, it is only very recently that researchers have begun to investigate whether we

3 Here I only want to stress that I take a statement such as "It looks like A to person P1 and like B [whereby A ≠ B] to person P2, but P1 and P2 have identical visual experiences (in the sense that P1 and P2 have phenomenologically indistinguishable experiences)" to be highly implausible, even contradictory. For a criticism of Lyons's portrayal, cf. Vaassen (2016, 139).

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can draw genuinely *epistemological* lessons from this (cf. Brogaard and Gatzia 2018; Chudnoff 2018; Siegel 2017; and Vaassen 2016). Does perceptual learning tell us something about experiential justification?[4] The main thesis of this section is that perceptual learning has epistemological implications and does tell us something about experiential justification. The main thesis of this paper is that a phenomenon analogous to perceptual learning also takes place with respect to rational intuitions. But first things first.

In the present section, I am particularly concerned with the following phenomenon:

> THESIS PERCEPTUAL LEARNING (TPL). Due to experience, practice, or gaining new information, the phenomenal character of my perceptual experiences of object O can change such that new characteristics C_i of O can be perceived in a way that my experiences with the "new" phenomenal character can justify me immediately in believing that O has C_i.

I may supplement TPL by specifying the following scenario:

> SPL. Confronted with a physical object O, person S cannot see that O has the feature F. Due to experience, practice, or gaining new information, S can manage to see that O has F. Once S sees F, S is immediately justified in believing that O has F.

I say that an experience E provides immediate justification for believing proposition *p* if having E is sufficient for justifiably believing that *p*, which means that the belief that *p* is not in need of epistemic support from anything other than the underlying experience E.[5]

TPL and SPL refer to cases in which one is perceptually aware of an object but only after some time of experience and practice becomes perceptually aware of certain features of that object. Here I am interested in examples where it is uncontroversial that a *phenomenal* change—initially one's experiences did not have a presentive character concerning certain features of the object, but once the process of perceptual learning is finished, they do—is

4 By experiential justification I understand justification provided by experiences.

5 Of course, such immediate experiential justification is always prima facie justification, i.e., justification in the absence of defeaters. Also, there can be epistemic overdetermination. It is not ruled out that a basic (perceptual) belief gets *additional* justification by other experiences or other beliefs.

accompanied by an *epistemological* change—one becomes justified in believing that the object has these features. When discussing such examples in the next subsection, I will argue for a close connection between phenomenology and epistemology. TPL and SPL are meant to shed different perspectives on the same phenomenon. TPL emphasizes the phenomenal change, SPL the epistemological change.

It is controversial whether the examples of perceptual learning we have discussed so far (twin, pine tree, and wren recognition) exemplify TPL. While Siegel argues that cases of perceptual learning show that even high-level properties, such as being a pine tree or being a wren, can be perceptual contents, i.e., represented by experience, she is hesitant to draw the conclusion that in such cases one is immediately justified in believing that the tree is a pine tree (cf. 2017). Chudnoff (2018) argues that, for experiential justification, it is not enough that an experience represents a content. What is needed is that the experience has a presentational phenomenology with respect to this content.[6] In what follows, however, I will present three simple examples showing that TPL is highly plausible.[7]

1.2 *Exemplifying TPL*

Let us suppose you are looking at a piece of paper with two lines that slightly differ in length. At time t_1, you are unable to spot the difference in length. It visually seems to you that both lines have the same length. Yet, after some practice, the phenomenal character of your experience has changed in a way that allows you to spot the difference at time t_2. Now, it visually seems to you that the lines differ in length. Plausibly, at t_2, you are immediately justified in

6 For Chudnoff, "what it is for an experience of yours to have presentational phenomenology with respect to *p* is for it to both make it seem to you that *p* and make it seem to you as if this experience makes you aware of a truth-maker for *p*" (2013, 37). It is to be noted that this is Chudnoff's characterization of the distinctive justification-conferring phenomenology of both perceptual experiences as well as rational intuitions. While in the case of perceptual experiences, the conception of a seeming awareness of a truth-maker seems to lead to an overintellectualization of perceptual experiences that does not adequately capture what it is like to undergo a perceptual experience, Chudnoff's characterization is much more plausible to me with respect to rational intuitions.

7 I would like to point out that it is not entirely clear whether the following examples qualify as cases of perceptual learning as introduced above since it is not clear whether the perceptual changes really are long-term changes. However, I am confident that the examples are close enough to justify my terminology.

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believing that the lines differ in length. You are, simply because you can see it. You seem[8] to be visually aware of two lines that differ in length.

Figure 1: Vernier Acuity[9]

Vernier acuity can be defined as "a measure of one's ability to detect failures of alignment between line segments" (Chudnoff 2018, 8). Vernier acuity is an experimentally well-studied phenomenon. McKee & Westheimer confronted test subjects with pictures like the one above, with the result that "every [test] subject showed some improvement in vernier acuity with practice" (1978, 259). More precisely, "the overall decline in threshold after 2,000–2,500 responses is about 40%" (1978, 259).

Say person S is looking at the picture and is unable to spot any failure of alignment. S seems to see one straight line. After some practice, S looks again at the picture and sees that there is a failure of alignment. S is now immediately justified in believing that there is a failure of alignment simply because she can see it. S seems to be visually aware of a failure of alignment.

8 I say "seem" to be visually aware to indicate that perceptual experiences are not factive mental states but can turn out to be illusions or hallucinations. For more details concerning the presentive, justification-conferring phenomenal character of perceptual experiences, cf. Berghofer (2020a).

9 This picture stems from Wikimedia Commons, licensed under: https://creativecommons.org/licenses/by-sa/3.0/deed.en. Vernier acuity and its philosophical implications concerning perceptual learning and experiential justification are discussed in Chudnoff (2018).

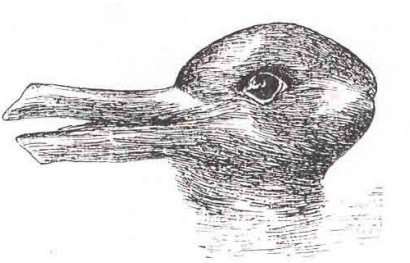

Figure 2: Ambiguous Image[10]

Suppose at time t_1, person S looks at the duck-rabbit image but is only able to see that this image shows a rabbit. S is unable to detect the duck. At t_1, S is immediately justified in believing that the image shows a rabbit simply because she can see it. S may be *inferentially* justified in believing that this image also shows a duck (perhaps a trustworthy person has told her that this is an ambiguous image that shows a rabbit and a duck), but at t_1, S is not immediately justified in believing that the picture shows a duck. At least she is not experientially justified in the sense that her experience provides her with immediate justification for this belief. At t_2, you tell S that the rabbit's ears are the duck's beak. This information helps S to see the duck. Now S is immediately justified in believing that this picture also shows a duck simply because she can see it.

1.3 *Epistemological Lessons*

These three examples strongly speak in favor of TPL. If you believe that experiential justification is possible, these examples should convince you that TPL is true. More precisely, I take it that these examples support the following three theses:

> P1. Perceptual learning is fundamentally linked to a change in the experience's phenomenal character.

10 This picture stems from Wikimedia Commons, licensed under: https://creativecommons.org/licenses/by-sa/3.0/deed.en. No changes were made.

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> P2. Perceptual learning can have an influence on the experience's justificatory force, such that before the learning process, your experience did not immediately justify you in believing that *p*, but after the learning process, it does.
>
> P3. Perceptual experiences gain their justificatory force precisely by virtue of their distinctive justification-conferring phenomenal character.

P1 and P2 should be uncontroversial. All this suggests P3.[11] P3 is a strong claim that is genuinely internalist and opposed to currently popular positions such as reliabilism. Here, I cannot provide a detailed defense of P3. However, it is important to note that P3 *offers the most natural explanation of the link between perceptual learning and experiential justification*. All three examples had the following structure: At t_1, one's perceptual experience does not have a presentive[12] phenomenology with respect to *p*, and at t_1, one is not experientially justified in believing *p*. At t_2, due to perceptual learning, the perceptual character has changed such that one's perceptual experience now has a presentive phenomenology with respect to *p*, and at t_2, one is experientially justified in believing *p*. Thus, in each of these cases, a shift in the experience's phenomenal character from not having a presentive character with respect to *p* to having a presentive character with respect to *p* is accompanied by a shift in the experience's justificatory force from not justifying *p* to justifying *p*. P3 is the most natural explanation because it states the obvious: Perceptual justification is linked to the experience's phenomenal character in the sense that certain experiences gain their justificatory force simply by virtue of their distinctive phenomenal character. As Chudnoff has recently put it, "the phenomenology grounds the epistemology" (2016, 117). Perceptual experiences justify by virtue of their presentive phenomenology, and they justify precisely those propositions with respect to which they have a presentive phenomenology.

11 For recent works that elaborate on and defend P3, cf. Bengson (2015a), Chudnoff (2013), Church (2013), Koksvik (2011), and Berghofer (2023). The same basic idea can be found in Husserl (2008, 343; 1982, 36–37).

12 For a detailed account of the distinctive, justification-conferring phenomenology of perceptual experiences, cf. Berghofer (2020a).

The main thesis of this paper is that parallel claims are true with respect to rational intuitions. In section 5, I will argue for this thesis by discussing concrete examples, analogously to how I proceeded in this section.

2 What Are Intuitions?

Rational or a priori intuitions have always been of central philosophical interest. From Plato to Augustine, to Descartes, to Kant, to Husserl, for all these thinkers, the nature and epistemic role of intuitions were a central theme of their philosophical investigations. The significance of intuitions may be particularly obvious in current analytic philosophy. This is because, regarding orthodox philosophical methodology, there is considerable agreement that "intuitions are presented as our evidence in philosophy" (Williamson 2007, 214) and that "analytic philosophy without intuitions just wouldn't be analytic philosophy" (Weinberg 2007, 318; cf. also Pust 2000, xiii). The reliance on intuition is considered as one of the defining features of philosophy: "One thing that distinguishes philosophical methodology from the methodology of the sciences is its extensive and avowed reliance on intuition" (Goldman 2007, 1).[13] Despite this consensus on the significance of intuitions, there is no agreement concerning even the most fundamental questions, such as: What are intuitions? Can intuitions be a source of immediate justification? Can intuitions be a source of justification at all? Can intuitions tell us something about reality?

Concerning the nature of intuition, the question of what intuitions are, the two opposing views are sui generism and reductivism. According to sui generism, intuitions are sui generis mental states that cannot be reduced to other, more fundamental types of mental states. Intuitions are irreducible. Reductivism is usually introduced as a form of doxasticism, according to which intuitions can be reduced to doxastic states such as judgments (cf. Williamson 2007), beliefs or opinions (cf. Lewis 1983), or inclinations to believe (cf. van Inwagen 1997; and Sosa 2007, 54). Of course, the answer to the question of what intuitions are has significant implications for the questions of whether and how intuitions can be a source of justification. If intuitions are merely beliefs, they cannot be a source of immediate justification. However, if intuitions are sui generis mental states and perhaps even a type of experience

13 To be sure, there are scholars such as Cappelen (2012), Deutsch (2010), and Ichikawa (2014) who actively and explicitly dispute the claim that intuitions are essential for philosophical inquiry. However, these authors are clearly in the minority.

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in the sense of having a distinctive phenomenal character, intuitions, just as perceptual experiences, may be a source of immediate justification. In what follows, we shall discuss cases of intuitional learning that are parallel to the cases of perceptual learning we have discussed above. By discussing such cases of intuitional learning, I will show that intuitions are sui generis mental states that have a distinctive phenomenal character. My findings will indicate that *intuitions are a source of immediate justification by virtue of their distinctive phenomenal character*.

It is important to note that the term "intuition" is usually used in a very broad sense. People are said to rely on their intuitions when they deem it irrational to propose p and not-p, when they are convinced that $2 + 2 = 4$, when they claim that Gettier cases are not cases of knowledge, when they understand that it is not a good idea to build a house on sand, when they condemn their neighbor for torturing his cat just for fun, when they feel that it will rain tomorrow, or when they decide that their pants match their shirt. Sometimes the term "intuition" is used in the sense of a quasi-perceptual experience that reveals an a priori truth; often it is used in the sense of a gut feeling or strong conviction. By the term "intuition," people may refer to

(i) gut feelings
(ii) strong convictions
(iii) intuitional experiences that have a distinctive phenomenal character.

Note that these different usages of "intuition" can occur in the very same field, for instance, mathematics. A mathematician's "intuition" that the continuum hypothesis is true may simply be a gut feeling. A novice's "intuition" that $(-1) \cdot (-1) = 1$ may be nothing but a strong conviction. As I use the term, an intuition is an intuitional experience that has a distinctive phenomenal character. Of course, many current epistemologists deny that there are intuitions in this sense. While the view that intuitions are some kind of intellectual perception has been popular among many of the most influential historical philosophers, such as Plato, Descartes, and Husserl, this view, under the pressure of moderate and radical empiricism, has nearly vanished in the second half of the twentieth century. However, the end of the twentieth century has seen a revival of rationalism that has been famously dubbed a "rationalist renaissance" (Bealer 2002, PAGE-NUMBER). It is one of the cornerstones of this revival that intuitions are viewed as a source of justification. Of course, not every rationalist and not every philosopher who holds that intuitions are

justifiers subscribes to the view that intuitions are some kind of intellectual perception. According to Bengson, the view that "intuition is a form of intellectual perception, affording epistemic access to abstract truths without mediation by conceptual understanding, remains relatively unpopular—and unexplored—by comparison" (2015b). Having clarified that I mean by "intuitions" intuitional *experiences* that have a distinctive phenomenal character, I will now shed light on this distinctive phenomenal character. The focus is on *mathematical* intuitions.

3 Mathematical Intuitions—Towards a Phenomenological Clarification

By mathematical intuitions, I understand intuitions with contents such as "$1+1=2$," "$3<4$," "2 is an even number," or "2 is the only even prime number." In the literature, there is no consensus on whether such mathematical intuitions are merely beliefs, inclinations to believe, or sui generis mental states, namely experiences with a distinctive phenomenal character (cf. Pust 2017). I am committed to the latter view. Let us call it the experience-view. In this section, I will not defend the experience-view but presuppose it, aiming at clarifying the phenomenal character of these experiences.[14] In the following sections, I will motivate the experience-view via the phenomenon of intuitional learning.

In current debates, perhaps the most popular version of the experience-view is what we may call the seeming-view. In the twenty-first century, the seeming-view has been made popular by the works of George Bealer and Michael Huemer. According to the seeming-view, a priori intuitions are intellectual seemings. For Huemer, it is of crucial significance that seemings are neither beliefs nor inclinations to beliefs but irreducible mental states, namely, some kind of experience (cf. Tucker 2013b). Huemer argues that every seeming is a source of prima facie justification: "If it seems to *S* as if *P*, then *S* thereby has at least prima facie justification for believing that *P*" (2001, 99). In this picture, a priori intuitions are a subclass of seemings among other types of seemings, such as perceptual or introspective seemings. Mathematical intuitions, in turn, are a subclass of a priori seemings.

Although Huemer's approach enjoys much popularity, objections have been put forward that the notion of "seeming" is too broad and that declaring every seeming a source of prima facie justification is too liberal since this

14 For a defense of the experience-view, cf. Chudnoff (2013, 2014).

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opens the door to various counterexamples (cf., e.g., Markie 2005). My main concern is that the seeming terminology is not an adequate *phenomenological* description of what it means to undergo a mathematical intuition. When I have the intuition that $1 + 1 = 2$, it does not simply seem to me that this is the case. This intuition has a more distinctive phenomenal character that seems to make me aware of *why it must be so*.

In the works of Elijah Chudnoff and in BonJour (2005), we find similar claims, demanding a phenomenological characterization of a priori intuitions that goes beyond characterizing them as seemings. For Chudnoff, justification-conferring experiences gain their justificatory force by what he calls their "presentational phenomenology." With respect to intuitions, this means: "If your intuition experience representing that p justifies you in believing that p, then it does so because it has presentational phenomenology with respect to p" (Chudnoff 2013, 94). For Chudnoff, it is essential that presentational phenomenology goes beyond simply making it seem to you that p. An experience has presentational phenomenology only if it also "make[s] it seem to you as if this experience makes you aware of a truth-maker for p" (2013, 37).

Recently, Laurence BonJour has provided a similar characterization:

> [A priori insights] are not supposed to be merely brute convictions of truth, on a par with the hunches and fears that may simply strike someone in a psychologically compelling way. On the contrary, a priori insights at least purport to reveal not just that the claim is or must be true but also, at some level, *why this is and indeed must be so*. (BonJour 2005, 179, my emphasis)

The basic idea is that a priori intuitions do not merely make it seem that p, or push you towards believing that p, but reveal why p must be true.[15] What all versions of the experience-view have in common is the analogy to perceptual experience: A priori intuitions are a source of immediate prima facie justification, exhibiting a distinctive phenomenal character. In current debates, proponents of the experience-view tend to characterize the phenomenal characters of perceptual experiences and a priori intuitions not only analogously but identically (cf., e.g., Chudnoff 2013; Church 2013; Huemer 2001; and Koksvik 2011). I believe that this is a mistake. Although sharing many important epistemic features (such as being a source of immediate

15 In this context, cf. also Husserl (2002, 410; 2008, 120).

prima facie justification), perceptual experiences and a priori intuitions differ significantly in how they present their contents.

When I look at my desk, I am visually aware of a black book lying on the desk. This perceptual experience has a presentive phenomenal character concerning the proposition "There is a black book on the desk." However, I do not seem to see *why* there is a book or any reason why it could not be different. When I intuit that $2+3=5$, I am not simply aware of this fact: I can see why it must be so and could not be different. The metaphysical difference that one is a contingent fact while the other is a necessary truth is reflected phenomenologically in how these contents are presented by the respective experiences.

For mathematical intuitions, I postulate the following phenomenal character:

> Phenomenal Character of Mathematical Intuitions. If S has the intuition I with respect to p, I not only presents p as true but seems to reveal why p must be true.[16]

Accordingly, we say that a subject's mental state is a mathematical intuition in the sense that I use this term if and only if this mental state is (i) intentionally directed at a mathematical proposition and (ii) seems to reveal why this mathematical proposition must obtain.

So far, I have only stated how I conceive of intuitions and how I understand their phenomenal character. In what follows, by discussing what I call the phenomenon of intuitional learning, I will motivate the following claims: Intuitions are (i) sui generis mental states that (ii) have a distinctive phenomenal character, and they (iii) provide immediate prima facie justification for those propositions with respect to which they have such a distinctive phenomenal character.

4 Intuitional Learning

I use the term "intuitional learning" such that it precisely parallels what I have claimed concerning perceptual learning. In analogy to the thesis TPL from section 1, I introduce the following thesis concerning intuitional learning:

16 I say that an intuition "seems" to reveal why its content must be true in order to indicate that here we are talking about the experience's phenomenal character. There is no systematic reason to think that intuitions are infallible.

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> TIL. Due to experience, practice, or gaining new information, my contemplating an a priori truth T can change phenomenologically such that T can be intuited in a way that my intuition can justify me immediately in believing that T obtains.

I may supplement TIL by specifying the following scenario:

> SIL. Confronted with an a priori truth T, person S cannot intuit that T obtains. Due to experience, practice, or gaining new information, S can manage to intuit that T obtains. Once S intuits T, S is immediately justified in believing that T obtains.

I would like to point out one crucial difference between perceptual learning and intuitional learning. Let us simplify matters and say that at time t, perceptual/intuitional learning takes place. In the case of perceptual learning, I have perceptual experiences of an object O before t and after t, and all that changes is the phenomenal character of my experiences. The type of mental state that is directed at O remains the same—perceptual experiences. In the case of intuitional learning, the mental states directed at the a priori truth T are not the same before and after t. Only after t, i.e., after intuitional learning has taken place, I am able to intuit T. Remember that I use the term "intuition" in the sense of an experience having a distinctive phenomenal character. Before t, I am only contemplating T but fail to intuit it. When intuitional learning takes place, the intuition is an *emergent* mental state resulting from contemplation, practice, etc.[17] In the following section, I will discuss cases exemplifying TIL. First, let me briefly clarify some crucial terms that play a role in this and the following sections. We need to be aware of the distinctions between *contemplating* a theorem, *believing* a theorem, *understanding* a theorem, *proving* a theorem, and *intuiting* a theorem.

By contemplating a theorem, I basically mean thinking about it, being intentionally directed at it. When you read in your textbook that 2 is the only even prime number, and you wonder whether this statement is true and how it could be proved, you are contemplating it. By believing a theorem, I simply mean taking it to be true. There are several reasons why you might believe a theorem. You might believe it because your textbook or teacher says it is true, you might believe it because you have proved it, or you might believe

17 Note that this does not imply that I can never intuit a truth T at once without contemplation. But in cases of intuitional *learning*, intuitions are emergent states.

it because you can intuit it. By understanding a theorem, I mean grasping the content of a theorem, which implies being familiar with all the terms that are involved. When contemplating the theorem that 2 is the only even prime number, you need to understand the terms "2" and "prime number" to understand the theorem. Understanding a theorem does not imply believing a theorem. You may understand Goldbach's conjecture without believing it to be true.

What it means to prove a theorem is much more controversial. In its most rigorous sense, proving a theorem means to show that it follows from the most basic axioms. The most basic axioms of current mathematics are the set-theoretic axioms of ZFC. Only (a few) trained mathematicians would be capable of showing how a statement as simple as $1 + 1 = 2$ follows from ZFC. In its perhaps most liberal sense, proving a theorem could be understood as providing the means, e.g., an argument or a diagram, such that a person contemplating this argument/diagram can be helped to see why the respective statement must be true. What this means will become clearer shortly when we discuss picture proofs.

Determining the relationship between intuiting and proving is difficult since there are many different forms of proof. Concerning rigorous symbolic proofs, it can be argued that the relationship is such that a proof P can justify a subject S in believing a mathematical theorem only if S intuitively grasps every step of P (cf. Berghofer 2020b). The relationship between picture proofs and intuitions will be determined below.

Importantly, there is a distinction between intuiting a theorem and understanding why a (type of) proof works. Consider a proof by exhaustion with a large but finite number n of cases. When a theorem can be split into n cases and for each case it can be shown that the theorem holds, this means that the theorem is true.[18] For instance, the infamous four color theorem can be proved by splitting it into 1936 cases, showing that it holds in each of them. However, even if you had personally proved the statement for each of the 1936 cases, after having finished this procedure, you still could not intuit the theorem. You may have proved the theorem, and due to your proof, you may be (inferentially) justified in believing the theorem, but the theorem has not suddenly become intuitive to you. The theorem is not presented to you as true in a way that you can see why it must be true. In some sense,

18 In fact, I claim that you can intuit that proof by exhaustion is a valid form of proof. You can see that it could not be that a theorem that holds in all possible cases is not true.

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you know why it must be true—because you know now that it holds in all possible cases—but this does not mean that the theorem is presented to you in an intuitive manner. There is a clear phenomenological difference between understanding that a proof works for a theorem and intuiting the theorem. However, in the case of very simple proofs, proofs in which every step can be grasped at once, proving and intuiting may coincide. Now we shall motivate all this by discussing concrete cases of what I call intuitional learning.

5 Cases of Intuitional Learning

As pointed out in section 2, the term "intuition" is used rather ambiguously by ordinary people as well as by philosophers. In the literature, examples such as $2+2=4$ are used as prime examples for intuitions. I believe that the use of such examples is problematic since, especially in cases that are so obviously true and well-known as the proposition that $2+2=4$, it is very difficult not to confuse different mental states such as strong convictions and genuine intuitions.[19] There are many reasons for us to believe that $2+2=4$. We have learned it, we have calculated it, we have used it in more complex calculations that confirmed it, and we have intuited it many times. Thus, when one says that she has the intuition that $2+2=4$, it remains unclear whether she is talking about her strong conviction or about her experience that has a distinctive phenomenal character concerning this proposition. Furthermore, since this proposition can be intuited so easily and has been intuited by the same person so many times, one might doubt whether there really is a difference between simply knowing this truth and intuiting it. In section 6, I will illustrate the difference between strong convictions and intuitions by using the example of negative multiplication. In this section, I want to discuss examples in which we can plausibly tell the following story: Initially, when confronted with the a priori truth T, one fails to intuit this proposition. One may know that T obtains as one knows that the Pythagorean theorem obtains without being able to intuit the Pythagorean theorem, i.e., without being able to "see" why the Pythagorean theorem must be true. Then, after a process of contemplation and/or gaining new information, one can intuit T. There are many different ways to know an a priori truth. One may rely on a trustworthy authority such as a textbook or a teacher (justification by testimony), one may have learned

19 I suspect that opponents of intuitive justification who claim that intuitions cannot be justifiers as they can be reduced to mere beliefs (or inclinations to believe) are guilty of such confusion. For a critical discussion of this "absent intuition challenge," cf. Chudnoff (2013, 52–57).

it by heart, one may have proved it rigorously, one may remember to have proved it rigorously, or one may intuit it. The following examples are intended to highlight these differences and to illuminate what is meant by *intuiting* an a priori truth.

5.1 *Prime Number*

Consider the true proposition that 2 is the only even prime number. Let us assume that when first confronted with this a priori truth, you could not "see" that it obtains and thus refused to accept it. Now, at t, you are reminded that every even number can be divided by 2 without leaving a remainder. This information helps you to see, i.e., to intuit that 2 is the only even prime number. Before t, you understood the statement that 2 is the only even prime number, but you could not intuit it. At t, you are reminded that every even number can be divided by 2. Now you can intuit the statement that 2 is the only even prime number. *You can see why it must be true*. Of course, there are different ways to come to know that 2 is the only even prime number. Your knowledge may rest on a trustworthy authority or a rigorous proof. Such knowledge, however, is inferential knowledge. Only by intuiting the theorem are you immediately justified in believing it. Such an intuition may occur immediately when confronted with the theorem or may be the result of intuitional learning; in each case, your intuition is a source of immediate justification.

The thesis of intuitional learning states that there are possible cases in which an a priori truth T at first is not intuitive to a subject S, although S understands T perfectly well. After some time of contemplation, T becomes intuitive to S. The moment t is the moment when the light goes on, when intuitional learning takes place. Intuitional learning cannot be accounted for in terms of understanding the theorem. Before t, S understood T perfectly well. In our example, you understood the theorem that 2 is the only even prime number perfectly well, even before you could see why it must be true.

Furthermore, intuitional learning cannot be accounted for in terms of believing or being strongly convinced of the theorem. Before t, S may have been strongly convinced of T. Intuitional learning is to be accounted for in terms of a phenomenal change concerning how T is presented to S when contemplating it. After t, T is presented to S as necessarily true, and S sees why T must be true. The mental state presenting T in such a way to S is what I call an intuition. Since intuitional learning cannot be accounted for in terms

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of beliefs, convictions, or understanding, my analysis supports the claim that intuitions are sui generis mental states, namely, experiences with a distinctive phenomenal character, that cannot be reduced to other mental states such as beliefs or convictions. Also, intuitions should not be reduced to inclinations or dispositions to believe. Intuitions are no more inclinations to believe than perceptual experiences. When you see a black laptop in front of you, you are inclined to believe that there is a black laptop simply because a black laptop is presented to you as being there. When you intuit that 2 is the only even prime number, you are inclined to believe that 2 is the only even prime number simply because you can see why it must be true.

Finally, we note that the *phenomenal* change that takes place in intuitional learning—T becoming intuitive to S—is accompanied by an *epistemological* change—S becoming immediately justified in believing T. Just like in the case of perceptual learning, this supports the claim that phenomenology grounds epistemology in the sense that perceptual and intuitional experiences justify by virtue of their distinctive presentive phenomenology.

One may object that the reminder that every even number can be divided by 2 does not help you to "see" that 2 is the only even prime number but helps you to form an argument and (unconsciously) infer that 2 is the only even prime number. However, even if it turned out that intuition necessarily involves unconscious inference, this would not imply that intuition cannot be a source of immediate justification. Recent investigations concerning perception reveal that even perception involves unconscious inferences. Thus, "we now see that the existence of unconscious inferences is no objection to a process's being perceptual, since perception typically involves unconscious inferences" (Legg and Franklin 2017, 332). So how can perceptual experience be a source of immediate justification despite involving unconscious inferences? According to the picture I aim to establish in this work, the answer is straightforward: It all depends on the experience's phenomenal character. If a perceptual experience presents a table being in front of you, you are justified in believing that there is a table in front of you simply because your experience has a "presentive" character with respect to this object/content. *It does not matter why the perceptual experience has such a phenomenal character*. Analogously, if an intuition not only presents a statement as true but makes you see why it must be true, you are justified in believing this proposition simply due to how it is presented within intuition. *It does not matter why the*

intuitional experience has such a phenomenal character.[20] I would even say that an intuition can be a source of immediate justification, even if it results from a *conscious* inference. If a simple proof, where you can grasp all steps simultaneously, makes you see why a theorem must be true, you have immediate and inferential justification for this theorem. Immediate justification because you can intuit it, and inferential justification because you can prove it.

This means that my account of experiential justification is a genuinely internalist one, according to which the *genesis* or *etiology* of an experience does *not* contribute to the experience's justificatory force. Instead, the experience's justificatory force is determined by its phenomenology. This is why I would refer to my account as phenomenological internalism. Of course, the etiology of an experience can play an epistemically important role *when the subject knows about it*. When I have the perceptual experience of a pink elephant, this perceptual experience provides me with immediate prima facie justification for believing that there is a pink elephant. However, this experiential justification may be defeated by my knowledge that I took a drug that causes hallucinations. This defeating justification is *inferential* justification. The *immediate* experiential justification provided by my elephant experience is not diminished or reduced; it remains unchanged but is defeated. Although highly controversial, my claim that an experience's justificatory force is not affected by its etiology is not uncommon for internalists. Huemer, for instance, says: "When the subject is unaware of an appearance's etiology, that etiology is irrelevant to what it is rational for the subject to believe" (2013, 344). For a defense of this claim and an elaboration of my phenomenological internalism, cf. Berghofer (2020a).

5.2 *Pythagoras*

Roger Nelsen, author of the three volumes of *Proofs without Words*, characterizes proofs without words as "pictures or diagrams that help the observer *see why a particular statement may be true*, and also to see how one might begin to go about proving it true" (1993, vi, my emphasis). Assume you are familiar with the Pythagorean theorem $c^2 = a^2 + b^2$, but you cannot intuit it. You cannot see why it must be true. You are told that the picture above is a

20 For similar approaches to intuitional justification, cf. Chudnoff's account of "hard-won intuitions" in (2020) and Koksvik's argument that "contrary to popular opinion, intuition can result from conscious reasoning" (2013, 710).

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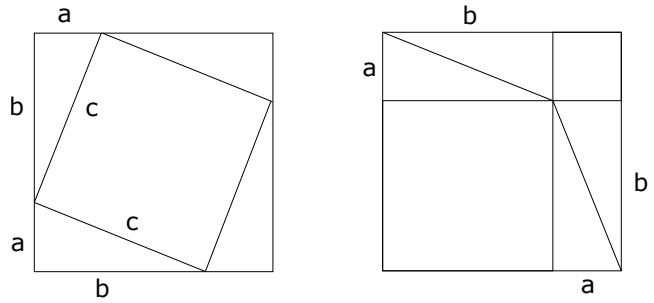

Figure 3: Pythagoras

proof without words for the Pythagorean theorem, but you cannot see why. You can see that the big left square and the big right square have the same area, $(a + b) \cdot (a + b)$. You can also see that the four right-angled triangles appearing in both big squares have the same area, $2 \cdot (a \cdot b)$. You can see that the square appearing in the left big square equals c^2, and you can see that this square is equal to the two squares appearing in the big right square. Still, you fail to intuit the Pythagorean theorem and why this picture is supposed to prove it. Now, you are told that the two squares appearing in the right big square have the area of a^2 and b^2, respectively. By gaining this information, you can now intuit the Pythagorean theorem and see why this picture proves it. Your intuition seems to reveal why the Pythagorean theorem must be true.

Of course, you knew that the Pythagorean theorem obtains even before intuitional learning took place, but only now are you immediately justified in believing it. You are, simply because you can see why it must obtain. *Note the similarity to the case of the ambiguous image* we have discussed in section 1.2. In the case of the ambiguous image, you failed to see that the picture also shows a duck. After being told that the rabbit's ears are the duck's beak, you could see the duck and thus were immediately justified in believing that this picture also shows a duck. In the case of the Pythagorean theorem, the additional information that the two squares appearing in the right big square have the area of a^2 and b^2 helped you to see that the Pythagorean theorem obtains. Importantly, the picture did not help you to understand the terms involved. Even before the picture helped you to intuit the Pythagorean theorem, you understood all the terms involved perfectly well. Similarly, with respect to your beliefs, convictions, and dispositions to believe: The picture

proof did not help you to form new beliefs or dispositions to believe. Instead, it helped you to form an intuition that presented to you the theorem in a way such that you could see why it must be true.

In the case of perceptual learning, once you have seen that the picture also shows a duck, it becomes easier for you to spot the duck the next time you look at this ambiguous image. Similarly, for intuitional learning, once you have understood the proof without words, the next time you look at the picture, it is easier for you to intuit the Pythagorean theorem simply by looking at the picture. One may say that it is not such a surprise that a picture proof works for a theorem of *geometry*. However, the next picture proof we discuss is intended to help you intuit a theorem of number theory.

5.3 *Sum of Odd Numbers*

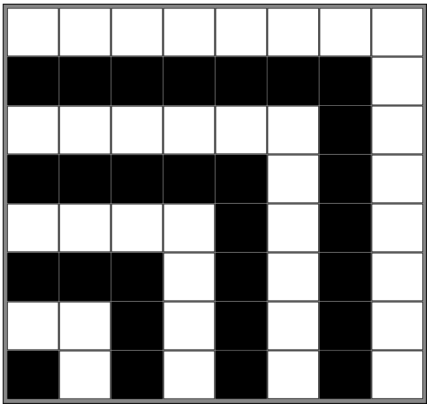

Figure 4: Odd Numbers[21]

This picture is a proof without words for the theorem: $1+3+5+\ldots+(2n-1) = n^2$. Assume you understand the theorem but fail to intuit it and fail to see how the picture might prove it. You start with $n = 2$. $2^2 = 4 = 1+3$. You see that in the picture, 2^2 is the area of one black square $+3$ white squares, which means that the picture gets it right for $n = 2$. Still, you fail to see how this proves

21 This picture stems from Wikimedia Commons, licensed under: https://creativecommons.org/licenses/by-sa/3.0/deed.en. No changes were made.

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the theorem. You proceed with $n = 3$. $3^2 = 9 = 1 + 3 + 5$. You see that in the picture, 3^2 is the area of one black square +3 white squares +5 black squares, which means that the picture gets it right for $n = 3$. Still, you fail to see how this proves the theorem. You proceed with $n = 4$. $4^2 = 16 = 1 + 3 + 5 + 7$. You see that in the picture, 4^2 is the area of one black square +3 white squares +5 black squares +7 white squares, which means that the picture gets it right for $n = 4$. Now, suddenly, you can intuit the theorem and see how the picture proves it. Importantly, your insight does not rest on or consist in some kind of empirical induction. The point is not that you have realized that the picture works for the three cases discussed so far, and now you are convinced that it will work for any number. The point is that now you can *see why it must work for any number*.[22]

5.4 *Summary*

One may object that proofs without words are not real proofs since everything depends on the intuitions of the subject who is looking at the picture. For more details on the relation between picture proofs, intuitions, and justification, cf. Berghofer (2020b). Now, let us recapitulate the results of the present section. By discussing concrete examples, I argued that TIL obtains. Our discussion supports the following three theses (analogous to the results P1–P3 of section 1):

> I1. Intuitional learning is fundamentally linked to a *phenomenal* change in the subject's contemplating.
>
> I2. Intuitional learning can have an influence on the contemplating's justificatory force, such that before the learning process, your contemplating did not immediately justify you in believing that *p*, but after the learning process, it does—by the contemplating resulting in an intuitional experience.

22 Concerning the differences and similarities between perceptual and intuitional learning, an anonymous referee of this journal pointed out "that there are fundamental differences between perceptual processes and the processes resulting in intuition. And if intuitional learning is similar to perceptual learning, then it can only be in the results, not the causes." I agree. And as it was put in an editorial comment of this journal, the point is that perceptual and intuitional learning "both result in a phenomenology that has epistemological import." This captures precisely what I take them to have epistemologically in common.

> I3. Intuitional experiences gain their justificatory force precisely by virtue of their distinctive justification-conferring phenomenal character.

I1 and I2 should be plausible.[23] All this suggests I3, since I3 offers the most natural explanation of the link between intuitional learning and intuitional justification. All examples had the following structure: Before t (i.e., the moment when intuitional learning takes place), you were thinking about T, you were contemplating T, and you understood T, but you were not immediately justified in believing T. After t, due to intuitional learning, the phenomenal character of your thinking about T has changed. You can now see why T must obtain. Your contemplating T has resulted in an intuition of T. Now you are immediately justified in believing that T. You are immediately justified simply because you can see why T must obtain. Thus, in each of these cases, a shift in phenomenal consciousness is accompanied by a shift from not being immediately justified in believing T to being immediately justified in believing T. I3 delivers the most natural explanation: intuitional justification is linked to phenomenal consciousness in the sense that certain experiences gain their justificatory force simply by virtue of their distinctive phenomenal character.

One notable difference between perceptual learning and intuitional learning is that the former is more of a gradual process where it is often not possible to identify a moment t at which the phenomenal character shifts from not presenting *p* within experience to presenting *p* within experience (and thereby from not having a justification-conferring phenomenology concerning *p* to having a justification-conferring phenomenology).[24] In the case of intuitional learning, there often is a eureka moment, an aha moment,[25] at which phe-

23 You may still doubt I1 in the sense that you are not convinced that intuitions have a distinctive phenomenal character. In section 6, I will provide a further example that is intended to reveal more clearly the phenomenal difference between strongly believing and intuiting.

24 However, as two anonymous referees of this journal have pointed out to me, this is not true about perceptual learning in general. There are borderline cases in which no gradual process takes place but that involve an aha or eureka moment, similar to cases of intuitional learning. One such example is described in Ahissar and Hochstein (2004, 457–458). In fact, they call this the "Eureka effect." Similar cases are bistable figures such as the duck-rabbit image discussed in section 1.2. All this strengthens the analogy between perceptual and intuitional learning.

25 An anonymous referee of this journal called my attention to psychological studies of so-called insight problems, e.g., Metcalfe (1986), in which problem solvers undergo similar aha moments as in my examples of intuitional learning. This aha- or eureka-phenomenology manifests experimentally such that "no gradual rationalization process precedes the correct response to insight problems" (1986, 623). What I take to be particularly interesting about Metcalfe's findings is that

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nomenal consciousness shifts from merely thinking about T or understanding T to intuiting T, i.e., seeing why T must obtain.[26]

6 Intuition vs. Strong Conviction: Negative Multiplication[27]

Assume you are still not convinced that intuitions have a distinctive phenomenal character. In your opinion, they are strong convictions and nothing else. By contemplating the Pythagorean theorem, for instance, the picture proof helps you to form an argument in favor of the Pythagorean theorem such that you simply know that it is true. There is no distinctive phenomenal character involved. In this section, I shall provide an example that clearly shows that strong convictions, firm knowledge, or gut feelings can be phenomenologically distinguished from intuitions. This example is different from the foregoing ones in that I do not provide an example of an intuition of which I argue that it has a distinctive phenomenal character. Instead, I will provide an example in which you believe that you have an intuition. However, I will argue that what you take to be an intuition merely is a strong conviction and that there is a clear *phenomenal contrast* to the cases of intuitions we have discussed so far.

This example concerns negative multiplication. We all know that $(-3) \cdot (-2) = 6$. Let us assume that you are just as strongly convinced in believing that $(-3) \cdot (-2) = 6$ as you are in believing that $3 \cdot 2 = 6$. I claim that although you are equally strongly convinced that the respective statement is true, you can only intuit the latter but not the former. You say there is no phenomenal difference in your grasping of both statements, which shows that there is no distinctive phenomenal character involved. But now I ask you: Do you see *why* it is true that $(-3) \cdot (-2) = 6$? Concerning *my* intuition that $3 \cdot 2 = 6$, I can see that this statement must be true because I can see that $3 + 3 = 6$ and

if an answer was preceded by gradual rationalization processes (and thus a less pronounced aha-phenomenology), this "indicated that the answer would be incorrect" (1986, 623). I consider this experimental support for my claim that intuitional learning involves such an aha-phenomenology (and evidence for the significance of intuitional experiences).

26 In this section, we discussed three examples of intuitional learning in some detail. Of course, there are many more plausible examples, and only a few of them involve picture proofs. Further mathematical statements that could be used to demonstrate intuitional learning would be "there is no greatest natural number" or the axiom of extensionality.

27 This example is based on Chudnoff's talk, "Mature Intuition," delivered at the University of Graz on May 13, 2016.

could not be different. But what about your "intuition" that $(-3) \cdot (-2) = 6$? Can you tell me why this statement must be true?

If you are like most people, you cannot. Your seeming that $(-3) \cdot (-2) = 6$ is simply a strong conviction. You have learned it many years ago, and since then, this belief has turned out to be consistent with many other beliefs, which reinforced its evidential status. But, despite the fact that you "simply know" it to be true in the sense that you do not have to think about or need to actively infer it, you cannot intuit it. There is a clear phenomenological difference between intuiting that $3 \cdot 2 = 6$ and knowing that $(-3) \cdot (-2) = 6$. The difference is that $3 \cdot 2 = 3 + 3 = 6$ is presented to me as being necessarily true, such that I can see that it could not be different. 3 and 3 add up to 6, which is why $3 \cdot 2 = 6$. With respect to $(-3) \cdot (-2) = 6$, you would not even know how to express $(-3) \cdot (-2)$ in terms of "+." You believe, are strongly convinced, and know that $(-3) \cdot (-2) = 6$, but this truth is not presented to you in any distinctively intuitive way. You may respond that $(-3) \cdot (-2) = 6$ because two negatives, of course, make a positive. This is true, but obviously, this just leads to the question of why two negatives make a positive. Do you intuit that two negatives make a positive? Most likely, you do not (and neither do I).

The point of this example is that what you initially took to be intuitively clear turned out to be nothing but a strong conviction that is phenomenologically clearly different from intuiting that, e.g., $3 \cdot 2 = 6$. Hence, intuiting involves a distinctive phenomenal character. The foregoing suggests that only an intuition can *immediately* justify an a priori truth, and that intuiting T means that your intuition has its distinctive phenomenal character with respect to T.

7 Epistemological Lessons from Intuitional Learning

Questions concerning the nature and epistemic status of intuitions rank among the most controversial and most widely discussed problems in the history of philosophy. Often, it has been claimed that there is an astonishing parallel between perceptual experiences and intuitions. But apart from arguing that both perceptual experiences and intuitions can be a source of immediate justification, the details of this parallel often remain unclear. To address this issue more thoroughly, one needs to answer the following questions:

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> Q1: What is it that makes perceptual experiences a source of immediate justification?
>
> Q2: What is it that makes intuitions a source of immediate justification?
>
> Q3: In what sense are perceptual and intuitional justification related?

This paper engaged with these questions by first discussing concrete examples of perceptual learning and then proceeding to show that there are parallel cases of intuitional learning. With respect to perceptual learning, I put forward the thesis TPL. By discussing concrete examples, I showed that TPL obtains and that these examples support the following three claims:

> P1. Perceptual learning is fundamentally linked to a change in the experience's phenomenal character.
>
> P2. Perceptual learning can have an influence on the experience's justificatory force, such that before the learning process, your experience did not immediately justify you in believing that *p*, but after the learning process, it does.
>
> P3. Perceptual experiences gain their justificatory force precisely by virtue of their distinctive justification-conferring phenomenal character.

This highlights that the phenomenal character of perceptual experiences should be *the* focus of investigations concerning perceptual justification, which implies a close connection between epistemology and philosophy of mind. Furthermore, we are provided with an answer to Q1: Perceptual experiences gain their justificatory force from their distinctive phenomenal character.

Concerning intuitional learning, I proposed the thesis TIL. By discussing concrete examples, I showed that TIL obtains and that these examples support the following three claims:

> I1. Intuitional learning is fundamentally linked to a *phenomenal* change in the subject's contemplating.

> I2. Intuitional learning can have an influence on the contemplating's justificatory force, such that before the learning process, your contemplating did not immediately justify you in believing that *p*, but after the learning process, it does—by the contemplating resulting in an intuitional experience.
>
> I3. Intuitional experiences gain their justificatory force precisely by virtue of their distinctive justification-conferring phenomenal character.

This highlights that the phenomenal character of intuitional experiences should be *the* focus of investigations concerning intuitional justification, which implies a close connection between epistemology and philosophy of mind. Furthermore, we are provided with an answer to Q2: Intuitional experiences gain their justificatory force from their distinctive phenomenal character. This, of course, also provides an answer to Q3: Perceptual experiences and intuitional experiences are parallel in the sense that they both gain their justificatory force by virtue of their distinctive phenomenal character. This may be specified as follows: A perceptual experience E or an intuitional experience I immediately justifies believing that *p* if and only if E/I has its distinctive phenomenal character with respect to *p*.

Similar results can be found in Bengson (2015a), Chudnoff (2013), Church (2013), and Koksvik (2011). One distinctive feature of my reasoning concerns the way I arrived at my conclusion: beginning with cases of perceptual learning, I proceeded to show that there are parallel cases of intuitional learning. Another distinctive feature concerns the difference between a perceptual experience's justification-conferring phenomenal character and an intuitional experience's phenomenal character. According to the aforementioned authors, there is no real difference. At least none is specified. The twenty-first century roots of such an identical treatment of perceptual and intuitional justification can be found in Michael Huemer's principle of phenomenal conservatism, according to which every seeming is a source of immediate prima facie justification, suggesting that intellectual seemings and perceptual seemings do not differ in phenomenologically significant ways (cf. 2001, 99). From a phenomenological point of view, such a conception is superficial at best. In this paper, I argued that intuitions do not only present their contents as true: they *seem to reveal why they must be true*. This is a clear phenomenological difference to how perceptual intuitions present their objects/contents.

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These results, of course, also have significant implications concerning the question of what it means that an a priori statement is immediately justified. Immediate justification does *not* entail that, when understanding theorem T, you can immediately grasp that T obtains. It might well be that even when understanding the terms involved, you fail to intuit T. Immediate justification only takes place when your contemplating T results in an intuition of T in the sense that you can see why T must obtain. When contemplating T, such an intuition of T may never occur, occur only after a long period of time, or occur only after proving T.[28] Thus, immediate justification is *not* linked to how strongly one is pushed towards believing a proposition or to the belief's reliability, *but only to how a content is presented within experience*. Of course, this leads to a distinctively internalist conception of experiential justification.[29]

Finally, we may address the questions raised in section 2. Intuitions are sui generis mental states, namely experiences that have a distinctive phenomenal character. They are a source of immediate but fallible[30] justification and seem to tell us something about a mind-independent reality. However, I may point out a certain limitation of my investigations. In section 2, I mentioned that current analytic philosophy draws heavily on intuitions as evidence, which is one of the reasons why intuitions must be a focus of philosophical considerations. In the present paper, however, I have only discussed cases of mathematical intuitions. One might argue that even if all I have argued for here is true, this may have significant implications for perceptual and

28 Of course, not every proof of a theorem T results in an intuition of T. But I take it that a simple proof involving only very few steps can result in an intuition of T. In such a case, you have immediate and inferential justification for T. You have immediate justification because you can intuit that T, and you have inferential justification because you can prove it.

29 Internalist in the sense that it is not external factors such as reliability or truth that determine a basic belief's epistemic status but rather the internal factor of how the content is presented within experience.

30 In this paper, we have only superficially touched on the topic of fallibility. While traditional rationalists such as Descartes insisted on the infallible character of immediate justification, rationalists now accept the fallible character of intuitions. This is mainly due to well-known historical and everyday cases in which intuitions turn out to be misleading. Our considerations reveal why it is natural to assume that intuitional justification is fallible. Since intuitions gain their justificatory force from their distinctive phenomenal character, there is no reason to assume that intuitions are infallible. It is all about how these experiences present their contents. There is no systematic reason to think that such presentations can never be misleading. Of course, there may be cases of infallible intuitive justification. Your beliefs that $1 + 1 = 2$, that $2 > 1$, or that 2 is an even number may be cases in which your intuitions never go wrong. $17 + 15 = 32$ may be another story.

intuitional justification, but only with respect to mathematical intuitions and not with respect to philosophical intuitions such as, e.g., Gettier intuitions.[31]

I admit that there is a need for further elaborations. It might well be that there are different types of justification-conferring intuitions—different types in the sense of having a different type of justification-conferring phenomenology. Epistemic intuitions concerning hypothetical cases—such as Gettier intuitions—may differ phenomenologically from epistemic intuitions of general epistemological principles, from ethical intuitions, and from mathematical intuitions. The aim of the present paper was only to show that there are cases of intuitional learning and that there are intuitions that are sui generis experiences that have a distinctive, justification-conferring phenomenology. The question of whether "our" intuitions in epistemology, ethics, and other areas of cognition can have the same justification-conferring phenomenal character as our examples of mathematical intuitions remains to be discussed by future phenomenological-epistemological investigations.*

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31 Williamson, for instance, states that "mathematical intuition can have a rich phenomenology, even a quasi-perceptual one" (2007, 217), but doubts that this is true for philosophical intuitions. For a critical discussion, cf. Chudnoff (2013).

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If Philosophers Aren't Using Intuitions as Evidence, What Are They Doing?

James Andow

Various philosophers have recently argued for a descriptive account of philosophical methodology in which philosophers do not use intuitions as evidence. This paper raises and considers an objection to such accounts. The objection is that such accounts render various aspects of philosophical practice inexplicable. The contribution of this paper is to demonstrate that one can provide a satisfactory account of the relevant aspects of philosophical practice without saying that philosophers use intuitions as evidence. One could, for example, maintain that the relevant aspects of philosophical practice serve purely explanatory roles.

Not Evidential has recently been defended by a number of philosophers:[1]

Not Evidential. Philosophers *do not* use intuitions as evidence.

These philosophers present various arguments in favour of Not Evidential, and the merits and significance of their position and arguments have been debated at length in the literature.[2]

This paper raises and considers an objection to Not Evidential that hasn't, to my knowledge, received attention so far in the literature but which highlights a real shortcoming of a descriptive account of philosophical methodology that endorses Not Evidential. The objection in question centres on the fact that there are various aspects of philosophical practice that are perfectly explicable if philosophers do use intuitions as evidence but are rather more

1 For example, Earlenbaugh and Molyneux (2009), Molyneux (2014), Cappelen (2012, 2014b), Deutsch (2015, 2010), Ichikawa (2014); Williamson (2007).

2 For example, Boghossian (2014), Weatherson (2014), Chalmers (2014), Weinberg (2014), Bengson (2014), Hannon (2018), Ramsey (2019), Nado (2016, 2017), Climenhaga (2018), Andow (2016, 2017, 2023), Landes (2023), Egler (2020), Pedersen (2015), Colaço and Machery (2017), Chudnoff (2017), Wysocki (2017), Cappelen (2014a).

puzzling if Not Evidential is true. I'll call these aspects of philosophical practice "I-Practices" and introduce them properly in the next section.[3]

The objection to Not Evidential considered and rebutted in this paper can be presented as follows:

(P1) A significant shortcoming of any descriptive account of philosophical methodology would be that it can't give a satisfactory explanation of I-Practices.
(P2) A descriptive account of philosophical methodology that endorses Not Evidential can't give a satisfactory explanation of I-Practices.
(C) So, any descriptive account of philosophical methodology that endorses Not Evidential has a significant shortcoming.

The key task of this paper is to show that P2 is false by providing an explanation of I-Practices that is compatible with Not Evidential; whatever else might be said for or against Not Evidential, there is a satisfactory alternative explanation of I-Practices that proponents of Not Evidential can give.

This paper thus presents a very limited defence of Not Evidential. The aim is not to argue in favour of Not Evidential by showing that it can give the best all-things-considered account of I-Practices. The aim is merely to show that one specific charge won't stick. The charge that won't stick is the charge that the proponent of Not Evidential can't satisfactorily account for I-Practices. I'll show they can if they want to.[4]

The structure of the paper is as follows: § 1 outlines the relevant I-Practices, i.e., practices that seem difficult to explain given Not Evidential; § 2 generates a possible alternative explanation for these practices using a device

3 There are other things you might think are difficult to explain given Not Evidential, too: (a) that philosophers *talk* about intuitions a lot (Andow 2015a; Ashton and Mizrahi 2018); (b) that belief in the falsity of Not Evidential is widespread among philosophers (for related evidence, see Kuntz and Kuntz 2011). The proponent of Not Evidential might also need alternative explanations of these phenomena—they might focus on sociological factors, the influence of Chomsky (in a slight variation on Hintikka 1999), or appeal to linguistic trends (Cappelen 2012)—but they won't be discussed further in this paper. The relevant explanandum is that philosophers use I-Practices.

4 The literature on intuitions in philosophy covers various issues. It is worth being explicit about what the topic of this paper is not. We can set aside questions about how philosophers use the word "intuition," about the heritage of that use, and about how intuitions should be characterized. When I talk of "intuitions" or "using intuitions" in this paper, it is only ever as a convenient way to talk about a certain class of things philosophers do: I-Practices. It comes with no commitment to the idea that, *given some specific substantive notion of what an intuition is*, philosophers use intuitions, or even to the idea that intuitions exist.

involving genealogical reflection, i.e., I-Practices serve a purely explanatory role; § 3 argues that this alternative explanation is not only compatible with Not Evidential but has some baseline plausibility, being able to account for the use of I-Practices within the context of contemporary philosophy, including concrete examples from recent highly cited articles; § 4 wraps things up and addresses some likely objections.

1 I-Practices

What are I-Practices? What do philosophers do that seems to betray a use of intuitions as evidence? What would be difficult to explain given Not Evidential? The following is intended as an illustrative, although not exhaustive, list.[5]

Case Wielding Philosophers appeal to cases a lot. Infamously, Gettier (1963) did so. But focusing on one paper, or some small collection of supposedly paradigmatic uses, fails to capture the extent to which philosophers wield cases. Enter any philosophical seminar room or lecture hall in the world, and you'll be lucky to avoid a helter-skelter of cases in discussion. Cases are often imaginary or outlandish, but sometimes they are based on real cases or are otherwise realistic in some sense. Whether or not philosophers should do this, they do it a lot. Some aspects/kinds of philosophers' use of cases are often described as "appealing to intuitions about cases as evidence." Indeed, that's a natural way to describe the practice. If we think of the relevant cases eliciting or involving intuitions (whatever we mean by that), then the way that use of such cases helps to move philosophical debate forward, shapes which accounts we are willing to give credence, and can serve to change our minds seems naturally to be described in terms of those intuitions playing

5 Names like "case wielding" shouldn't be taken to indicate that *all and any* use of cases by philosophers pose a problem for the proponent of Not Evidential. Any difficulty will clearly be with a subclass. There is room for debate about exactly which subclasses might be thought to be more difficult to explain, but this section gestures at the kinds of characteristics they might have. Concrete cases from the literature have been avoided in order to sidestep the distraction of interpretive issues, but the tropes identified should be familiar. Similar points apply to all the I-Practices identified here. Note also: use of intuition-talk itself is not considered an I-Practice here. Why philosophers talk about intuitions is a distinct question. The I-Practices I list may sometimes be talked about using the word "intuition," but the claim is not that there is any particular connection within first-order philosophising between the occurrence of the word "intuition" and the presence of I-Practices.

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an evidential role. Our question will be whether an alternative explanation can be given *of ways in which philosophers appeal to cases that might typically be interpreted as appealing to intuitions as evidence*. Can the defender of Not Evidential account for this phenomenon?

Idea Motivating Philosophy can be a bit obscure. Why would anyone be interested in this? That's a question the person in the street might ask if told what a lot of us worked on. Indeed, that's likely a question many of us would ask when considering our colleagues' work if they didn't provide some motivation for thinking about their idea, topic, or argument. It is important to give your audience some sense of why anyone would care about what you are talking about. Consequently, we motivate our theorizing by pointing out how the problem we are grappling with arises from our ordinary ways of thinking about *X*, the things we naturally want to say about *X*, and so on. This is not the only way to motivate a view. But it is an effective one. Moreover, many cases of motivating an idea are naturally described in terms of intuitions, e.g., "To provide some motivation for this view, just consider a tension between two very intuitive claims about the moral status of future generations." Moreover, it is sometimes very natural to describe the use of these "intuitions" as establishing an evidence base—or a partial one—for the philosophical discussion to follow. Again, our question will be whether an alternative explanation can be given in such cases. Can the defender of Not Evidential account for this phenomenon?

Assumption Footstamping Making progress in philosophy could be difficult if interlocutors decided to be like an annoying child and ask, "But why?… Back up that claim… *prove* it…" after every claim adduced. In any debate, a lot must be taken for granted. Now, simply *making assumptions* isn't an I-Practice. That alone isn't difficult to explain for the proponent of Not Evidential as one can make assumptions just for the sake of exploring what would happen if we held certain things fixed. "Assumption footstamping" is a more specific manoeuvre within philosophical discourse. Philosophers often put certain claims beyond question, at least for the duration of particular debates, talks, question sessions, papers, etc., in a way that goes beyond simply making an assumption. Sometimes this practice is described in terms of intuitions: "I'm just treating this as a basic intuition about domain *X*. It *could* be denied, but I can't really make sense of why anyone would want to do that, and, in the kind

of debate I'm interested in, we're just not interested in engaging with that kind of position, so let's just assume it in what follows." The move is treating certain claims as enjoying a particular status: they are taken for granted in the debate; we are not interested in arguing for them; we simply take ourselves to be justified in assuming them. Insofar as the relevant claims are intuitive, this kind of manoeuvre seems naturally described in terms of philosophers taking intuitions to provide evidence and in some way appealing to them as enjoying a certain evidential status. Again, our question will be whether an alternative explanation can be given *of ways in which philosophers set out the assumptions made in their projects, which might typically be interpreted as treating intuitions as evidence*. Can the defender of NOT EVIDENTIAL account for this phenomenon?

INTUITION RESPECTING Say you've defended your favourite philosophical position. Now, you give your audience some bonus material. You point to various ideas that your audience might endorse, which might appear to conflict with the theory you have advocated or the argument you have given for it, and demonstrate how there is in fact no conflict. You acknowledge various ways in which your approach connects up with other ideas in philosophy, and show that there are no problems that result, and point out various nice things that your account allows one to say about these other ideas. You can do something similar in advance. You can lay out at the beginning various beliefs that you think your audience might endorse. You focus in on beliefs that your audience is probably not going to want to give up on, i.e., if your accounts were to conflict with the relevant beliefs, your audience would probably not be on board with your arguments. You also focus on beliefs that, for example, your account's competitors end up having to reject and that you think your audience would rather not reject. You can generate a list of desiderata that any satisfactory account must satisfy. Such practices are often going to be naturally described in terms of "intuitions" being taken to count as evidence in favour of the relevant theories, as the reason that many of the relevant claims are on the table in the first place is that they are intuitive/counter-intuitive. "There are various intuitions that this sort of account allows us to respect…" or "There are various intuitions that are at stake in this debate…" or "There are various intuitive claims that you might want to respect." Again, our question will be whether an alternative explanation can be given in such cases where

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philosophers might naturally be interpreted as treating intuitions as evidence. Can the defender of Not Evidential account for this phenomenon?

Weights and Balances Philosophy Sometimes glorified under labels such as "reflective equilibrium," there is a notable style of philosophizing that aims to evaluate the relative merits of theories by working out how they stack up against all the various considerations that might favour or count against them.[6] For example, in the philosophy of time, presentism fairs well with respect to accounting for various basic ideas about time flowing and about the privileged present, but fairs less well with respect to the truth-maker problem and the modal asymmetry of past and future. Conducting weights and balances philosophy is somewhat less rigid than having a list of desiderata. But the idea is similar: there are various things it would be nice if a theory did, and the best theory will be the one that does the most. In this style of philosophy, being able to accommodate or account for "intuitive" ideas is frequently counted among the good features a theory might have, and having counter-intuitive implications among the theoretical costs of a theory. As the last sentence demonstrates, the language of intuitions is very naturally adopted to describe certain aspects of weights and balances philosophy. The active inclusion of "intuitions" among the weights and balances is naturally taken to indicate that intuitions are serving as evidence in philosophy. Again, our question will be whether an alternative explanation can be given of cases of weights and balances philosophy where the standard interpretation might be that intuitions are being treated as evidence. Can the defender of Not Evidential account for this phenomenon?

Negotiating Dilemmas, Inconsistent Triads and So On Here's a frequent feature in the philosophical terrain: We face a dilemma. We are pulled strongly in two directions at once and can't immediately see how to resolve the two pulls. At other times, we come to recognize that there are three or more claims we are pretty attached to that are not consistent. Some claims may be on the table because of established dogma. Others may be empirical facts. Often, however, the reason these claims are on the table is that they are attractive in a way naturally described as being "intuitive." The fact that we pause when we come to these features in the landscape and allow the shape of philosophical

6 One of the clearest examples I have in mind is the approach implicit in the opening of Lewis (1986, 3–5).

discussion to be guided by them might be taken as a sign that "intuitions" are playing a guiding role in the debate. These features of the philosophical landscape exert no small influence. The entire trajectory of debates in certain subfields is structured in relation to certain dilemmas or paradoxes. Thus, it is natural to see many instances of this as indications of philosophers treating intuitions as evidence. Again, our question will be whether an alternative explanation can be given of such cases. Can the defender of Not Evidential account for this phenomenon?

2 Genealogical Reflection

The fact that philosophers engage in I-Practices is easily explicable given the falsity of Not Evidential, and so makes denying Not Evidential attractive. With respect to each I-Practice, there is an element that we might provisionally label "intuition" that seems to play something like a supporting role. These "intuitions" seem to play an important role in what views philosophers come to believe are true. In many cases, even if these "intuitions" wouldn't be the first port of call for a philosopher who wanted to convince another of their view, the "intuitions" are nonetheless there in the background being treated as claims to which the relevant philosophers are epistemically entitled: they seem to guide theorizing, speak in favour of views, and generally seem to be part of the implicitly assumed story about why some theories are better than others.

It is not immediately obvious how one might explain the fact that philosophers engage in I-Practices, given the truth of Not Evidential. So, the defender of Not Evidential faces a theoretical burden. How can the defender of Not Evidential account for the fact that philosophers engage in I-Practices? What function might I-Practices be playing within philosophical practice, if not justificatory/evidential? This is, at least at first glance, a significant burden for the proponent of Not Evidential.

To think about possible alternative explanations, I have found it helpful to employ the device of genealogical reflection: to consider a specific kind of imaginary "philosophical state of nature." The kind of "state of nature" it is helpful to reflect upon is a very artificial construct. The idea is to isolate in our imagination an environment in which (in a sense) issues of *evidence* and of *justification* are simply not in play and yet in which something that

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(in other respects) resembles philosophy (or "protophilosophy") exists.[7] The idea is to try to imagine an environment where agents are not involved in any activities within which practices of adducing evidence or attempting to provide justification would arise (but which would of course still be a world in which evidence and justification exist). We can then ask whether there would be any clear purpose to employing I-Practices in such an environment, any function they might serve.

I should clarify the *aims* of the genealogical reflection in this section. The genealogical reflection in this section is only in the business of *generating* a hypothesis.[8] I use the genealogical reflection to search for a *possible* alternative explanation for I-Practices that would be compatible with NOT EVIDENTIAL. What the genealogical reflection helps us to see is that I-Practices could serve, at least in principle, a purely *explanatory* function rather than a justificatory/evidential function.[9] It is worth repeating that the genealogical reflection alone is not intended to provide any support for this hypothesis. It will be important to demonstrate—given the aims of this paper—that this hypothesis has some baseline plausibility, but that is a task taken up in the next section (§ 3).

I should also clarify the *nature* of this genealogical device. Let me clearly set aside a number of distinct kinds of genealogical reflection that are not part of the exercise below.[10] The aim isn't to speculate about the actual history

7 I hedge my terms here and elsewhere simply to avoid making any claims about what does and what does not count as "doing philosophy" or "being a philosopher." Such issues are not relevant to the argument of the paper.

8 This is, of course, not the only way to generate a hypothesis. Another, suggested by a comment made by an anonymous referee, would be to look for comments within the methodological literature regarding "other uses" of I-Practices, such as consideration of hypothetical cases, i.e., other than those whose most natural interpretation involves the use of intuitions as evidence. For example, Cohnitz and Häggqvist (2017) considers the use of thought experiments as "illustrations" and "puzzles." One might also look at the diversity of roles that philosophers of science—at least since Popper—have talked about being played by thought experiments in science (Brown and Fehige 2019). There are also various ideas concerning alternative ways of interpreting what philosophers are doing with intuitions and "intuitions," which might inspire other alternatives. I have suggested elsewhere that "a prevalent use of intuition talk [across the academy] is in passages that are geared towards giving the audience a way to understand a theory or position where 'the intuition' or 'the intuitive' is not associated with evidential/theoretical/formal support for that theory or position" (Andow 2015b, 532).

9 I'll unpack what I mean by "explanatory" below, but, importantly, the hypothesis is not the claim Bengson (2015) considers, that intuitions constitute epistemic bases for states of understanding.

10 The inspiration for the use of this device is Craig's (1990) reflections on knowledge (although it is arguable that his "state of nature" isn't supposed to be pure fantasy in quite the same way).

or provenance of I-Practices or philosophy. I am not interested in reflecting on the nature or role of intuitions themselves (the mental state), the word "intuition," or the use of the word "intuition" in philosophy. Those projects might be interesting in their own right, but they are not relevant to the task in hand. The object of the exercise is simply to provide some illumination as to what functions the above I-Practices might serve in philosophy—specifically, what functions they might play that are compatible with NOT EVIDENTIAL. To that end, the genealogical reflection pursued is pure fantasy to help generate ideas.

FIRST STAGE: SOLITARY THINKING We need to try to imagine an environment in which people do not engage in justifying philosophical claims to others or attempt to provide evidence for philosophical claims, and yet in which something that (in other respects) resembles philosophy or "protophilosophy" exists. A natural place to try and start is an environment in which someone is engaged in (something like) philosophical thinking but isn't engaged in trying to justify her position or adduce evidence for it simply because she does it without engaging with anyone else.

So, picture a protophilosopher wandering about the streets, interacting with her surroundings, making knowledge attributions, referring to things, approving and disapproving of various things in various ways, thinking about stuff, making judgements and beliefs, being fairly confident about some stuff and super unsure of other things, being au fait with various culturally peculiar practices, beliefs, myths, and so on. She might reflect on these and other ordinary aspects of life, ask questions about them, and eventually come to have some interesting thoughts about them. That is to say, she generally tries to make sense of the world, including her own thoughts and experiences.

Does this solitary protophilosopher have any use for I-Practices? Perhaps some. For instance, she may purposefully structure her thinking around what to say about various cases. However, I think it is plausible that the only real need for most I-Practices emerges within interactions with others. So we need to consider a slightly different imaginary environment.

SECOND STAGE: INTERACTIONS Is there a way we might change our solitary protophilosopher's environment—such that a need for I-Practices might emerge—without introducing practices involved in adducing evidence and jus-

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tification? We can simply imagine an environment in which our protophilosopher engages with others but doesn't try to persuade them of anything.

So, suppose our protophilosopher has for the first time reflected philosophically on her world, asked some new questions, and hesitantly considered some answers. Now she wants to share her enquiry with others. This is tricky. How might she proceed? It would be natural to attempt to retreat to familiar ground: "So, you know *X*." "Sure." "Well, if you think about it, there's something odd about…" Because a large part of philosophy starts from reflecting on our ordinary ways of thinking about the world, a large part of the relevant common ground will consist in ways in which her interlocutors are themselves disposed to think. Our protophilosopher might start with cases with which the audience is familiar or which are not too difficult to grasp, and with judgements that the audience itself tends to endorse.

Does our protophilosopher now have any use for I-Practices? I think she clearly does. In particular, the activities described in the previous paragraph are instances of Case Wielding and Idea Motivating as described above. It is important to note that these I-Practices can clearly be of use to her, despite the fact that she is nowhere near a context of justification. The nature of her communicative act is purely explanatory or pedagogical. It takes place in what I will call an *explanatory context*: a context in which the aim is not to provide evidence for theories; a context in which the primary aim is simply to communicate unfamiliar thoughts; the aim is that someone else comes to understand what you are on about.

Calling this an "explanatory context" might invite some misunderstanding, so I should take a moment to explain what I mean by "explanation" in this paper.[11] An explanation has the following features: (a) All things being equal, it is a good making feature of an explanation that one's audience comes to understand whatever the hell you are on about; and (b) there is a sense in which an explanation fails in the event that it just doesn't help one's audience "get it." It is this sense of "explanation" I use.[12]

11 This is not intended as an account of explanation. It's merely a stipulation of how I'm using words.

12 Your preference might be for an understanding of explanation that says, in addition, that (c) there is an important sense in which an explanation might still succeed and be a good explanation despite not making sense to the intended audience, and (d) there is scope for an explanation to fail even if the intended audience feels like they really understand and the relevant idea makes sense to them. What I say here intends to be compatible with such an understanding, but not to imply it.

Although we have seen how some I-Practices might have a use outside of a context of justification, we haven't yet seen that all of them might have such a use. In particular, it is unclear whether our interacting protophilosopher would have much use for anything like Assumption Footstamping or Weights and Balances Philosophy. So we need to consider a slightly different imaginary environment.

Third Stage: Differences of Opinion Can we imagine our protophilosopher's circumstances evolving in such a way that a use for all I-Practices would emerge and yet there would still not be a context in which their function was to justify or persuade? I think we can.

Consider that her explanation attempts can fail: an explanation that strives to begin from common ground may fail if it turns out what she supposed to be in the common ground wasn't; she might draw attention to some feature of "the ordinary way of thinking about things" that turns out simply to be a quirk of her personal experience. If our protophilosopher reaches for some common judgements, patterns of thought, or ideas from which to move forward and convey her thinking, it is important that she finds some. Otherwise, the audience just isn't going to be brought up to speed, they're not going to understand, and they are not going to be able to share the protophilosopher's ponderings, questions, or tentative answers.

How might our protophilosopher discover that she has failed in this way? An interlocutor might simply look baffled and walk away. But if they are willing to try to engage, they might ask questions of their own or explain exactly where they get off the bus. "I can see why you would say that about *X* kind of case, but I'm inclined to think differently about the sort of case you offered" or "That doesn't quite match how I tend to think about *X*" or "I'm struggling to see how *Y* fits in to this… What would you say about that?" Within an interaction of this kind, there could be a clear use for all the I-Practices. In explaining her position, it can be helpful to situate it within the slightly broader landscape of her or their thinking—to help her interlocutor understand the topic within which the interesting question she's encountered crops up. Structuring the topic around the "fixed points" of the background to her question in terms of (perhaps intuitive) assumptions-to-be-held-fixed or certain dilemmas, etc., could be a helpful way to do this, but doing so needn't indicate that those fixed points are adduced as providing or enjoying any particular epistemic support. Devices such as these—or laying out intuitions

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that are respected or claims to be balanced against each other—can serve to articulate how the ideas and questions she is thinking about are related to the worldview of her interlocutor to help them understand it.[13]

So, once a protophilosopher is engaged in conversation with someone else—even if both of them are merely trying to understand where each other is coming from and not attempting to argue for a view or to change each other's mind—you have a conversational context in which all the I-Practices serve a function. Let me emphasise that, in such a context, it doesn't make sense to talk of intuitions (or indeed anything) being used *as evidence*. The nature of the interaction is (by stipulation) one in which the sole exercise is attempting to explain/understand. I-Practices in such a context are not playing a part in arguments for positions or being used to persuade other parties of any position. Whatever is being used, it is being used in the elucidation of ideas and in the sharing of one's ideas with others, and that includes anything that you might be tempted to call an "intuition."

3 Explanatory Practices

The genealogical reflection in § 2 has generated a hypothesis, a possible alternative explanation of I-Practices in philosophy. What function might I-Practices play in philosophy, if not justificatory/evidential? The hypothesis: they serve an explanatory role. The next step is to assess how plausible it is that this is the role I-Practices actually play within contemporary philosophy. I will make the case that it is somewhat plausible.

My case for its plausibility has four parts. First, I make the case that it is still plausible to regard an I-Practice as serving an explanatory role even when deployed by philosophers who are presenting arguments and attempting to persuade each other of positions. Second, I take each I-Practice in turn and demonstrate that we can, in the abstract, make sense of each of them serving a purely explanatory role within contemporary philosophy. Third, I take a series of concrete examples of I-Practices from recent journal articles and demonstrate that we can give a plausible reading of each of them such that the function of the I-Practice is merely to explain and not to justify or adduce evidence. Fourth, I address the concern that while case-by-case one can give a plausible reading in which I-Practices play a purely explanatory role, what the

13 In the protophilosopher's context, the I-Practices in question likely wouldn't look exactly the same as when they occur in the context of professional philosophy—but that's true of pretty much any part of verbal or nonverbal communication. See also Objection #6 below.

proponent of NOT EVIDENTIAL needs to be plausible is an alternative reading of the whole philosophical corpus in which I-Practices are not understood as typically functioning to adduce evidence or to justify.

3.1 *Plausibility within a Context of Persuading*

Is it plausible to regard an I-Practice as serving an explanatory role when it is used within the context of contemporary philosophy, in which philosophers present arguments and attempt to persuade each other of positions? The context in which philosophers use I-Practices is very different from the imaginary environment we invoked in our genealogical reflection. Philosophers are not just a bunch of people explaining their ideas to each other. Philosophy, as we know it, is a project of joint enquiry into the nature of reality, including ourselves and our place in it. We are looking for the truth, or something like it. We defend positions. We object to others. We offer reasons in favour and reasons against. The nature of our conversations is one in which persuasion plays a big role. Philosophers offer evidence for and against positions. There are elements of the picture of philosophy I just presented that you might want to deny.[14] But, for sake of argument, suppose this picture is right.

Our context and the imaginary context in which we placed our protophilosopher are undeniably very different. Indeed, were we to imagine our protophilosopher's environment evolving to more closely resemble our context, many things in their lives would change. However, it is important to recognise that the function of I-Practices need not change. There is no in principle reason why I-Practices couldn't serve an explanatory function in a context such as ours.

It might seem implausible that I-Practices serve an explanatory function in philosophy because they *appear* to play a justificatory/evidential role. But this appearance would be expected, even if their role is explanatory. It would be easy to mistake the function of explanatory I-Practices in philosophy. One

14 For example, I wouldn't insist on placing truth-orientation at the heart of my conception of philosophy. I am willing to buy that, historically and cross-culturally, it is far from obvious that philosophy is always concerned with truth. There might even be a case to be made that contemporary analytic philosophy is an *anomaly* with its concentration on truth. However, insofar as (a) I am giving a genealogy of the idea popular in contemporary analytic philosophy that intuitions serve as evidence in philosophy, and (b) the relevant community in which this idea has become popular is a community that by-and-large has a conception of philosophy as truth-oriented, it isn't inappropriate to make a background assumption in our genealogy that one of the pressures underlying thinking of intuitions as providing evidence is a concern for truth.

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reason for this is that understanding an idea, at least in the sense of it making sense to one, is something like a precondition for accepting the idea. There will be, if you are good at persuading, a decent correlation between those to whom you successfully explain your position and those who are persuaded of your position. However, that doesn't mean the I-Practices (playing a role in the relevant process of explanation) themselves serve the function of persuasion. It is at least a tenable view that in a context such as ours—a context of arguments, persuasion, and joint enquiry into the nature of reality—the function I-Practices themselves are playing is really still only an explanatory one. And that whatever persuasion we manage is achieved by other means. And that whatever evidence we adduce is adduced in distinct practices.

The idea that some of the things philosophers do—in the process of defending positions and attempting to ascertain the truth—are not themselves playing an evidential function is essential to the argument of this paper. While a simple idea—and I hope commonsense—it is worth taking a little time to clarify, as I have found the idea invites misinterpretation. It would be implausible, I take it, that everything a philosopher does in the process of defending a position is best understood in evidential terms. When I press the letter "T" on my keyboard as I type this, it seems unnecessary to insist that the function of that keystroke was to adduce evidence or anything similar. Likewise, when I say, "Here is the view I am attacking… and the reason I think it is flawed is…" we can make sense of the idea that the function of my activities during the first ellipsis is not best understood as involved in providing evidence against the relevant view. So long as we can make sense of that, we can make sense of the idea that philosophers' use of I-Practices, though occurring within a discourse in which philosophers defend positions, etc., nonetheless doesn't itself function to provide evidence or justify positions.

Note something else about the ellipses case. You will perhaps have observed that, in this case, there are possible (and perhaps prima facie plausible) revisionary readings of the case in which the activities during the first ellipsis do serve an evidential function despite the way they are explicitly framed. This exemplifies a more general truth that is also important to this paper: we should be open to the possibility that revisionary readings of philosophical methods might be the best; it is reasonable to think that our best descriptive account of the methods in any domain might produce some surprises, such that some of the aspects of the relevant approach that were thought to be serving such-and-such a function are revealed by the best descriptive methodology to be doing something else. The proponent of Not Evidential who

adopts the idea that I-Practices serve a purely explanatory role is going to be doing something similar. I don't pretend that their account wouldn't be a surprising one.

3.2 *Plausibility for Each I-Practice*

To make the case that it is plausible to view I-Practices as serving explanatory roles when used in contemporary philosophy, we can now look at each of the I-Practices in turn. In each case, our question is the same. Is it plausible to view this I-Practice as playing a fundamentally explanatory role—as involving the use of intuitions to explain rather than persuade, or in the business of making sense of things rather than in discerning and establishing the truth—in the context of contemporary philosophy, even if the I-Practice might at first seem to betray the use of intuitions as evidence?

Can We Make Sense of Case Wielding Being Explanatory? Suppose you are thinking about society-level decisions and their impacts on the next generation and generations to come. There are various tensions that arise. One such tension is revealed by the so-called repugnant conclusion (see Arrhenius, Ryberg and Tännsjö 2017). If you are going to explain tension to someone, you need to start appealing to some pretty wacky cases—not as evidence but just to help them understand your viewpoint. One is not explaining *that such-and-such* is true of a case or offering the truth of such-and-such as evidence in favour of a view; one is simply explaining the view in relation to familiar examples or examples whose structure is well-suited for the task. For example—and here, fittingly, the purpose of my example is simply to illustrate the nature of my claim in this section and not to provide evidence for any particular view—the idea might be that when a philosopher appeals to a pair of cases, those of the "trolley problem," in the context of discussion of deontological and consequentialist ethics, the function of the appeal is simply to illustrate the content of one or other view, or indeed both views—to explain what would be true were *X* true.

We needn't deny that the nature of other philosophers' interest in your viewpoint is ultimately whether it is true/defensible. The idea is simply that such a practice of Case Wielding itself needn't be in the business of adducing evidence that one's viewpoint is true. Your interlocutor can challenge the spin that you put on cases, they can fail to see where you are coming from,

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the conversation can be one in which persuasion is the main aim and in which your interlocutors reach for new cases during their attempt to persuade you. But we can still make sense of the idea that, in reaching for the cases in attempts to persuade, the real work being done is to explain a position to you in the hope that you judge it to be true, rather than to adduce evidence.

Can We Make Sense of Idea Motivating Being Explanatory? In § 1, the example I used to introduce the I-Practice of Idea Motivating involved providing some motivation for some debate: noting an apparent tension between two claims that we might ordinarily endorse, showing that the problem we are grappling with arises out of our ordinary ways of thinking about something. Consider utterances such as, "There's something to be said in favour of *X*, and there's something to be said in favour of *Y*." Such utterances are fairly familiar in philosophy. And while we might interpret them in terms of articulating pro tanto evidence or prima facie justification, there is another way to understand what is going on. The key thought would be as follows: ultimately, the reason that we motivate the debate in these terms is that it helps to explain to people the shape of the philosophical debate.

You might object that such an interpretation only makes sense in case the speaker is offering the intuitiveness of these claims as a reason to accept them—why else would there be an interesting puzzle?—but that's not right. There is a philosophically interesting puzzle to be found simply in noting a tension in our ways of thinking and exploring that tension: we ordinarily think both *X* and *Y*, which seems inconsistent when you think about it; I wonder if we can resolve that. That puzzle can be presented without the starting position being "we have evidence for *X* and evidence for *Y*…" Now, of course, there would be no tension to be explored unless truth was in the mix somewhere—the tension is precisely that we tend to think both, but they can't both be *true*—but that doesn't mean that when philosophers motivate ideas in this way, they are adducing evidence or employing a device whose function is to persuade. My point is simply that we can make sense of the relevant I-Practice—Idea Motivating—playing an important role in philosophical conversations where, even if the conversation is concerned with truth and arguments, the function of *this I-Practice* is not to provide support, adduce evidence, etc., but purely explanation.

Can We Make Sense of Assumption Footstamping Being Explanatory? Take an example of a philosophical debate that revolves around a particular knotty problem, perhaps the free will debate. Although our interest is in philosophical methodology (i.e., research) rather than pedagogy, it will be helpful to consider for a moment how one might introduce the topic for the first time in an undergraduate class. You need to find a common ground from which everyone in the conversation is willing to work. The conversation doesn't yet have a set of assumptions. And, even though the game is still exploratory and explanatory, recognizing and drawing attention to relevant common assumptions can play an important role in ensuring that everyone in the discussion is able to understand the ideas being bandied about. When you are trying communally to make sense of the world in a way that involves sharing and explaining ideas, there needs to be some common ground that helps one articulate one's thoughts to those in the conversation. Moreover, to ensure that everyone is making sense to each other, it can be helpful to police that conversation—making clear what everyone in the conversation accepts without argument and even excluding those potential interlocutors who don't accept these things from the conversation.

Now consider the philosophical debate about free will outside the context of teaching introductory classes. It is quite plausible to view the role of footstamping in the debate between philosophers as continuing to play the exact same role. The nature of the conversation is different, for sure, as participants in academic debate are interested in persuading each other of various claims. Moreover, these assumption footstamping practices might well *seem* to take on a different role since the positions considered in the relevant conversation may well stand or fall on some set of assumptions. It may look like, especially from the outside, these footstamping practices involve presenting certain "intuitions" as being taken as evidence in the debate. But if we can still make sense of these practices being essentially explanatory, then rather than the articulation of assumptions being in the business of noting what is taken to be evidence in the debate, the practices are simply involved in the business of explaining the nature of the positions, arguments, and debates concerned.

We are now in the position of being able to deal with the last few I-Practices relatively quickly. It should be rather clear how the general pattern of thinking might be applied to each of them, given the discussion so far.

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Can We Make Sense of Intuition Respecting & Weights and Balances Philosophy Being Explanatory? Why respect intuitions? Why draw attention to the fact that something you want to say is compatible with some things that others want to say and is not compatible with some things that they want not to say? Doing this can help to make sense of ideas for an audience by helping to locate the idea within the audience's worldview. This can still be their function in the truth-oriented project of an enquiry that is contemporary philosophy. Admittedly, the nature of the conversation is different, and the relevant parties are interested in truth and in discerning and evaluating favouring and disfavouring considerations. But, still, the inclusion of something intuitive or even described as an intuition on a list of desiderata or favouring considerations can still be interpreted as a communicative act, to communicate that this is a claim that, in the current debate, is taken to have something to be said for it, and importantly, an act that doesn't adduce the claim as evidence or as enjoying any particular evidential status.

Can We Make Sense of Negotiating Dilemmas, Inconsistent Triads, and So on Being Explanatory? Why structure philosophical debates in these ways? On the current hypothesis, their main function is communicative. Crystallizing issues around sets of inconsistent propositions brings a tight focus on the precise issue in question. They break an issue down into discrete chunks, which can be explained separately. Structuring debates in this way ensures that everyone is on the same page and that they do not talk past each other. Within the philosophical community, this might naturally be interpreted as laying out the evidence, but we can also make sense of the idea that structuring discourse around dilemmas, etc., is to employ an explanatory device. Intuitive claims feature, where they do, in part because they help to smooth the process of communication: I can more easily understand what you are telling me about a particular theory if you can relate it to some intuitive claims I find very easy and familiar.

3.3 *Plausibility in Recent Articles*

Perhaps the above isn't enough. To make the case that the alternative hypothesis is plausible, perhaps we also need to see it give a plausible reading of

real examples from contemporary literature.[15] So let's turn to some examples from contemporary literature.[16] Looking at these examples is particularly helpful for addressing any residual concern that the alternative explanation can't make sense of the way that philosophers engage with the I-Practices of other philosophers.[17] For example, the worry might be that the idea that the function of these practices is explanatory can't make sense of the way that philosophers respond to and engage with each other's appeals to cases. Some of the examples are helpful for addressing such worries as they involve examples of engagement with (rather than use of) I-Practices.

A note on methodology in this section: what is needed is to demonstrate that the alternative explanation under consideration is a somewhat plausible explanation of what is going on, to which the proponent of Not Evidential might appeal. The alternative explanation under consideration is that the function of I-Practices is to explain (rather than justify or persuade). It isn't necessary that the alternative explanation is *the most plausible explanation*, *the only possible explanation*, or something similar. The most important thing is that it isn't completely implausible for the proponent of Not Evidential to hold that in the cases considered, the I-Practices serve an explanatory function.[18]

Example #1: Pryor (2000) Pryor begins as follows:

> Consider the skeptic about the external world. Let's straightaway concede to such a skeptic that perception gives us no conclusive or

15 Thanks to anonymous referees for encouraging me to include these. However, I should be clear that I take the below simply to be illustrations of how the alternative hypothesis can make sense of a small selection of examples. The discussion of this small sample isn't supposed to represent a compelling argument that the alternative explanation can make sense of all extant I-Practices. A small sample could be cherry-picked or otherwise unrepresentative. Nonetheless, considering just a small number of cases helps me articulate the way in which I envisage the alternative explanation accounting for I-Practices in contemporary philosophy.

16 The examples are the top 5 articles in the journal *Noûs* according to citation rates across the past three years. Search 28/11/19. Citation counts were provided by Wiley-Blackwell, which used Crossref. The journal *Noûs* was chosen as it is a highly ranked generalist journal. This way of selecting examples was taken to avoid the risk of simply cherry-picking easy cases that suit my point. However, it does mean that the cases are not necessarily the cleanest or most straightforward examples.

17 Thanks to an anonymous referee for pressing me on this.

18 Although the more plausible such an interpretation is, the better the indirect support lent to Not Evidential.

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> certain knowledge about our surroundings. […] Let's also concede to the skeptic that it's metaphysically possible for us to have all the experiences we're now having while all those experiences are false. Some philosophers dispute this, but I do not. (2000, 517)

Later on, he makes a (in some respects) similar move, this time more explicitly framed in terms of "intuitions":

> For a large class of propositions, like the proposition that there are hands, it's intuitively very natural to think that having an experience as of that proposition justifies one in believing that proposition to be true. What's more, one's justification here doesn't seem to depend on any complicated justifying argument. […] One might be wrong […] But it seems like the mere fact that one has a visual experience of that phenomenological sort is enough to make it reasonable for one to believe that there are hands. No premises about the character of one's experience—or any other sophisticated assumptions—seem to be needed.
>
> I say, let's take these intuitive appearances at face value. (2000, 536)

How might we interpret these moves? There is a straightforward interpretation according to which the moves serve to set aside certain claims in a debate as basic intuitions that enjoy a certain epistemic privilege, such that it doesn't make sense to question them. This seems to be a species of what I called "ASSUMPTION FOOTSTAMPING" above.

But can these moves plausibly be explained—as per our alternative strategy—as serving a purely explanatory function within a context in which Pryor is certainly interested in justifying a conclusion? Yes, we can. Here, the alternative explanation for these practices is that they (particularly in the first instance) serve to help Pryor isolate the topic of interest, the locus for further discussion, and (particularly in the second instance) to communicate the nature of the claims involved.

EXAMPLE #2: ELGA (2007) Elga appeals to some cases in setting up the issues for discussion:

> When it comes to the weather, I completely defer to the opinions of my local weather forecaster. My probability for rain, given that

her probability for rain is 60%, is also 60%. [...] I treat her as an expert about the weather. That means: conditional on her having probability x in any weather-proposition, my probability in that proposition is also x.

In treating my forecaster this way, I defer to her in two respects. First, I defer to her *information*: "As far as the weather goes," I think to myself, "she's got all the information that I have—and more." Second, I defer to her *judgment*: I defer to the manner in which she forms opinions on the basis of her information.

In the above case, we may suppose, I am right to treat my forecaster as an expert. But advisors don't always deserve such respect. For example, suppose that the forecaster has plenty of meteorological information, but I can see that she is dead drunk and so isn't responding properly to that information. In that case, I shouldn't treat her as an expert. Or suppose that the forecaster responds perfectly well to her information, but I can see that I have information that she lacks. In that case too, I shouldn't treat her as an expert.

Even in such cases, I shouldn't just ignore her opinion. [...] If my forecaster is drunk or otherwise addled, then I should only partially defer to her judgment. I postpone discussion of such cases. For now, suppose that I do completely defer to my forecaster's judgment. Nevertheless, I think that she lacks relevant information that I possess. What then?

An example will suggest the answer. Suppose that my forecaster lacks one highly relevant tidbit: that I have been secretly seeding the clouds for rain. Suppose that I'm sure her probability for rain is low—5%, say. In this case, I shouldn't set my probability for rain to that same low value, since my cloud-seeding activities make rain much more likely. But I *should* be guided by the forecaster's opinions. Roughly: my probability for rain should be what hers would be *if she were informed that I'd been seeding the clouds*. (Elga 2007, 479, emphasis in original)

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It is tempting to read such a use of cases as involving Elga justifying his opinion to the reader by adducing evidence in the form of intuitive verdicts about these cases that Elga assumes the reader will share.

But we don't have to think of the device of appealing to cases as playing that kind of role here. Yes, Elga is, *in general in this article*, interested in defending a view and not just communicating it. But we can still understand an appeal to cases—indeed, the above appeal to cases—within that context as playing a purely communicative/explanatory role: the appeal to illustrative cases serves simply to articulate a certain view about appropriate norms for deference. Of course, it is key to the illustration that his readers don't radically depart from his understanding of the cases. But we don't have to think of the specific manoeuvre, viz., *appealing to these cases*, as serving to provide support for any position or offer reasons for accepting it. We can think of this manoeuvre as merely serving to communicate the position in terms likely to be easily intelligible to the expected audience.

Example #3: Hohwy (2016) Hohwy's paper is involved in making an indirect case for a particular model of brain functioning: PEM (prediction error minimization). Part of that indirect case involves engaging with the idea of extended cognition—the idea that cognitive processing is not skull-bound or body-bound but extends into the world—and engaging with part of the standard case for thinking of cognition as being extended. Part of the standard case for thinking of cognition as being extended is that extended cognition models respect the idea that there can be a functional equivalence between neurally-based processes and processes partially realised in external resources such as a notebook or smartphone. Hohwy's engagement with this involves pointing out that PEM may be able to avoid any pressure to accept that cognitive processes extend into the world since, according to PEM's model of what the brain is doing, there isn't obviously a relevant functional equivalence between what the brain is doing and processes involving notepads and smartphones.

> [I]t is far from clear that notebooks and smartphones actually play any part of the functional role set out by PEM. There does not seem to be the right kind of hierarchical message passing between the notebook or phone and the rest of the neural system to implement variational Bayes with respect to hidden causes. The challenge is to specify the role of notebooks or smartphones, or any other

> thing, such that it clearly plays an appropriate prediction error minimization role. (2016, 270)

Hohwy isn't obviously directly involved in any of the I-Practices itemized above. Instead, he is engaging with others' use of I-Practices. It is natural to read the proponents of extended cognition models as presenting a case that rests on intuitive responses to certain kinds of cases—intuitively, there is no relevant difference between certain cases—and to read Hohwy as trying to undermine that case by undermining the intuitive evidence, or perhaps as disputing the relevance of the intuitive evidence depending on how we parse the case.

But we don't have to read the role of cases in this way. It is plausible instead to read the cases, as used by proponents of extended cognition, as serving simply to explain what it means to say that cognition is extended and to articulate the sorts of features that need to be present for it to be appropriate to treat a case as one of extended cognition. We can then read Hohwy, *specifically regarding his engagement with these cases*, as explaining how PEM isn't committed to thinking that those features are present in the relevant cases. Of course, in the paper as a whole, Hohwy isn't just pointing out who is committed to what. He ultimately has views and intends to defend them. But we don't have to think of either (a) the use of cases by the proponent of extended cognition models or (b) Hohwy's engagement with their use of cases as having to do with adducing or undermining evidence. It's plausible to view these specific aspects of the discourse as serving purely explanatory roles.

Example #4: Nichols and Knobe (2007) Nichols and Knobe's paper involves experimental philosophy. The way they present their project makes it clear that they (like Hohwy 2016) are engaging with other philosophers' use of I-Practices rather than directly using them themselves:

> The debate between [compatibilism and incompatibilism about moral responsibility] has invoked many different resources […] But recent discussions have relied heavily on arguments that draw on people's intuitions about particular cases. Some philosophers have claimed that people have incompatibilist intuitions (e.g., Kane 1999, […]); others have challenged this claim and suggested that people's intuitions actually fit with compatibilism […]. But […] relatively little has been said about the specific psychological

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> processes that generate or sustain people's intuitions. And yet, it seems clear that questions about the sources of people's intuitions could have a major impact on debates about the compatibility of responsibility and determinism. There is an obvious sense in which it is important to figure out whether people's intuitions are being produced by a process that is generally reliable. (Nichols and Knobe 2007, 663–664)

It is natural to read Nichols and Knobe as being concerned with investigating whether intuitions about cases that they take to be used as evidence by others should be used as evidence.[19]

To assess whether we can give a plausible alternative explanation of the practice in this case, it is helpful to go back to the literature they are engaging with. For example, here is Kane (1999):[20]

> The second stage of this two-stage argument in support of compatibilism will concern me here, the one that goes through [the principle that if an action is undetermined at a time *t*, then its happening rather than not happening at *t* would be a matter of chance or luck, and so it could not be a free and responsible action] [...] to show that indeterminism would [...] undermine, freedom and responsibility. What is at stake here is not merely the clever arguments of philosophers; for it happens that the case for [such principles] is a powerful one. It *is* difficult to see how indeterminism and chance can be reconciled with freedom and responsibility. Philosophers have tried to bring this out in a number of ways [...] We may think of these as the varied intuition pumps that support [such principles]. [...]
>
> (2) [...] suppose a choice occurred as the result of an undetermined event (say, a quantum jump) in one's brain. Would

19 There are other features of this extract that proponents of Not Evidential might need to explain, namely appeals to what "seems clear" and there being "an obvious sense in which X." Note that proponents of Not Evidential have taken up the burden of explaining philosophers' use of language such as this elsewhere.

20 Note that the exact quote that Nichols and Knobe (2007) pick up on in Kane isn't the best candidate for *using intuitions as evidence*—being more of an autobiographical comment—so I've picked up on this passage from a page or two later as it is illustrative of the method that Kane was beginning to set up in the bit Nichols and Knobe (2007) quoted.

> that be a free choice? Being undetermined, it would appear to be more of a fluke or accident than a free and responsible action. [...]
>
> (3) [...] Imagine that you are intending to make a delicate cut in a fine piece of cloth, but because of an undetermined twitching in your arm, you make the wrong cut. Here, indeterminism is no enhancement of your freedom, but a hindrance or obstacle [...].
>
> (4) Even more absurd consequences follow if we suppose that indeterminism or chance is involved in the initiation of overt actions. Arthur Schopenhauer imagined the case of a man who suddenly found his legs start to move by chance, carrying him across the room against his wishes. (1999, 219–220)

Although Kane talks of such "intuition pumps" *supporting* principles, we don't have to think of this being their true function. Suppose the relevant philosophers are not, by appealing to these cases, providing evidence against the idea that indeterminism is the friend of freedom, is there any way to make sense of what function these appeals might be playing? We can see these manoeuvres as being concerned with explaining a position (i.e., that which the relevant philosopher thinks is false). It is plausible to view the function of the "intuition pumps" being simply to help us see what it means to say that indeterminism is the friend of freedom.

Example #5: Haslanger (2000) Haslanger's paper offers revisionary accounts of gender and race. As she puts it, "the task is to develop accounts of gender and race that will be effective tools in the fight against injustice" (2000, 36).[21] She makes a couple of moves in the vicinity of either intuition-respecting (of the retrospective variety) or weights and balances philosophy. After offering an account of gender, she says, "One advantage of this account of gender is the parallel it offers for race" (2000, 43). Then, following the main discussion, Haslanger opens the closing sections, saying,

21 There are various complexities in this case owing to the normative nature of Haslanger's project. There are interesting questions about the relation between such projects and the idea that philosophers use intuitions as evidence that are yet to be fully explored (see Cappelen and Plunkett 2020; and Andow 2023).

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> Let me now turn to summarize some of the advantages of the proposed definitions. […] [An] interesting question is whether it is useful to think of these groups *in these terms*: Does it serve both the goal of understanding racial and sexual oppression, and of achieving sexual and racial equality to think of ourselves as *men* or *women*, or *raced* in the ways proposed?
>
> By appropriating the everyday terminology of race and gender, the analyses I've offered invite us to acknowledge the force of oppressive systems in framing our personal and political identities. Each of us has some investment in our race and gender: I am a White woman. On my accounts, this claim locates me within social systems that in some respects privilege and in others subordinate me. Because gender and racial inequality are not simply a matter of public policy but implicate each of us at the heart of our self-understandings, the terminological shift calls us to reconsider who we think we are. […]
>
> [T]he appropriation under consideration intentionally invokes what many find to be positive self-understandings […] and offers analyses of them which emphasize the broader context of injustice. Thus there is an invitation not only to revise one's understanding of these categories […], but to revise one's relationship to their prescriptive force. By offering these analyses of our ordinary terms, I call upon us to reject what seemed to be positive social identities. I'm suggesting that we should work to undermine those forces that make being a man, a woman, or a member of a racialized group possible […]. This, I hope, will contribute to empowering critical social agents. (2000, 46–48, emphasis in the original)

One *might* interpret this kind of move as resting on the premise that—at least within critical anti-racist/feminist theory—we should adopt concepts that are effective tools in the fight against injustice; a premise that might be regarded as having the status of a basic intuition (of some kind) at least within the relevant domain of discourse.[22] Suppose we run with an intuition-

22 In fact, it probably isn't that plausible to think of intuitions playing this kind of role in Haslanger's argument. Haslanger's paper isn't really the kind of case one might think *inexplicable* given the truth of Not Evidential. However, I don't exclude it from the sample here, as it still serves the

based interpretation of such a move. Is it plausible to interpret the use of the intuition in a purely explanatory way? I think we can. We can somewhat plausibly read the function of such a use of intuitions to be to explain the view proposed and its implications, and the relation between that view and various other positions, albeit within the context of an argument for that view.[23]

3.4 *Plausibility across the Whole Corpus*

One might have some residual doubts even if one accepts that there is a somewhat plausible reading of any individual case along the lines of the alternative explanation I suggest. The thought might be something like the following: I am willing to entertain the possibility that one or two of my friends lie about whether they dye their hair, but I am not really willing to entertain the possibility that they all do so. And what the proponent of Not Evidential needs is more analogous to the latter. The proponent of Not Evidential needs to be able to look at the entire philosophical corpus of I-Practices—those which would otherwise invite an explanation in terms of intuitions being used as evidence—and give a plausible reading of that whole body of practice that is compatible with their position. Nonetheless, it is worth just quickly clarifying what exactly the proponent of Not Evidential needs to be a plausible thing to say about the entire philosophical corpus (and what they do not need to be plausible).

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point of this section: that, *insofar as one might be drawn to interpret I-Practices as involving the use of intuitions as evidence in any particular case*, the alternative explanatory reading is available.

23 Does this conflict with Haslanger's clear presentation of the relevant moves as being in the business of adducing reasons to accept her conclusions, i.e., as noting "advantages"? I'll restrict myself to two points here. The first is that although proposing an explanation that was revisionary in this way would involve a theoretical cost, it is plausibly one the proponent of Not Evidential should be relatively happy with. Remember, they have already made their peace with a descriptive account of philosophical methodology, which runs counter to many philosophers' conceptions of their own methods. The second is that the proponent of Not Evidential can, if they wish, appeal to something like the following model, which would avoid incurring the theoretical burden envisaged. When a philosopher appeals to intuitive implication P as an "advantage" of theory *T*, the appeal might serve distinguishable communicative and evidential functions. With respect to any evidential function that appealing to *P* serves, the fact that *P* is intuitive is irrelevant/superfluous—what's key is the epistemic status of *P*. With respect to the explanatory function that appealing to P serves, the intuitiveness of *P* is key—and any epistemic status of *P* by-the-by. For a related point, see Objection 1 below. This understanding seems broadly consistent with many of the things defenders of Not Evidential want to say.

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The proponent of Not Evidential doesn't need it to be plausible that all the instances of I-Practices in the corpus serve a purely explanatory function (although if it is, that's no problem). Why not? First, because the alternative interpretation of I-Practices I've provided here needn't be the only plausible alternative interpretation. Indeed, by making the case that one alternative interpretation is available, this paper might well provide some indirect evidence that further alternative interpretations may be available. So this particular alternative interpretation ultimately need only be a part of an overall explanation. Moreover, while it is implausible to interpret, for example, all instances of I-Practices as mere functionless fluff or elaborate verbal ticks, it isn't implausible to think that a small proportion of I-Practices might be accounted for in this way.

Second, proponents of Not Evidential don't need to be committed to the idea that *no philosopher has ever used intuitions as evidence* in order to have an important point. Cappelen (2012, 1) may claim that philosophers don't rely on intuitions as evidence extensively *or "even a little bit,"* but he conceives of his main point going through even if some philosophers do rely on intuitions sometimes (in a way that isn't characteristic of philosophy, 2012, 16; or as the result of being misled by a false metaphilosophical idea, 2012, 1). And, indeed, Cappelen is explicit that the claim he targets—"Contemporary analytic philosophers rely on intuitions as evidence for philosophical theories"—is to be understood as "a claim about what is characteristic of philosophy," which "*allows for some exceptions*, but is true only if it applies to a wide range of paradigms of contemporary philosophical practice" (2012, 15–16, my emphasis). Similarly, Deutsch—even though he states his personal opinion is that "intuitiveness does not play even a small evidential role in any philosophical argument" (2015, 78), and says things like it is "simply a myth that philosophers employ a method, in reasoning about thought experiments and cases, whereby they make evidential appeals to intuitions" (2015, xvi)—is clear that the claim he really takes issue with in his book is the position that philosophers "treat intuitions as *the only, or at least as essential, evidence*, when it comes to the truth or falsity of judgments about thought experiments" (2015, 77, my emphasis), and says that his point is that "[appealing to the intuitiveness of a judgment about the thought experiment in order to provide (what he or she regards as) essential evidence for the truth of the judgment] is *not at all common* in analytic philosophy" (2015, 174, my emphasis).

So, for my argument to go through, it doesn't need to be plausible that all I-Practices are purely explanatory. Nonetheless, it does need to be plausible

that large proportions of I-Practices in philosophy are purely explanatory. How plausible? Well, there is no precise threshold. That's not how theoretical costs and benefits work. I have said that a significant cost to NOT EVIDENTIAL would be that it rendered I-Practices inexplicable. But it is difficult to put a figure on how significant a cost this would be—and readers will likely vary in their assessments. It is also just one cost among many relevant costs and benefits relevant to theory choice in this area. Various considerations have been raised and debated for and against NOT EVIDENTIAL in the literature—see footnote 2—and so it is difficult to give a definitive idea of how this one consideration stacks up against other relevant considerations.[24] Perhaps the best I can say is simply that the more plausible an alternative explanation of I-Practices in philosophy the proponent of NOT EVIDENTIAL can give, the better.

How plausible is it that large proportions of I-Practices in philosophy are purely explanatory? I can only report that for myself, it is sufficiently plausible to take NOT EVIDENTIAL more seriously than I did before, i.e., when the position appeared to render many aspects of philosophical practice inexplicable. Proponents of this position can say something sensible about the kinds of aspects of philosophical practice that might have looked anomalous given their position: they serve a function in communication between philosophers, and (for most of them) that function is purely communicative rather than supportive—to explain key ideas and dialectics. I have made this case in general terms (in § 3.1 and § 3.2) and only appealed to specific cases (in § 3.3) in order to demonstrate that the general interpretative strategy doesn't come unstuck when encountering the details of individual cases.[25]

24 That's particularly important if the question is, "How plausible does this alternative explanation need to be for it to make a big difference to my attitudes to NOT EVIDENTIAL?" For example, if you consider extant arguments in favour of NOT EVIDENTIAL to be very strong, you might consider the fact that it renders use of I-Practices a little mysterious to be only a minor negative point—a bullet you were already willing to bite—in which case, you are likely to think that as soon as proponents of NOT EVIDENTIAL have a remotely viable way to render use of I-Practices in philosophy explicable, then they have done quite enough work in discharging the relevant burden. If, on the other hand, you think there is no merit whatsoever in any of the arguments in favour of NOT EVIDENTIAL and all the evidence suggests philosophers use intuitions as evidence, then even a demonstration that proponents NOT EVIDENTIAL can accommodate I-Practices in a completely plausible way shouldn't be expected to sway you to any appreciable extent.

25 Of course, nothing I've said here is the final word on this. Further considerations, including considerations taking into account evidence from large-scale corpus work, could provide evidence that undermined the plausibility of this kind of story.

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4 Concluding Remarks

There is a recent trend in metaphilosophy to defend Not Evidential. I-Practices present a prima facie challenge to Not Evidential. A natural explanation of the fact that philosophers widely engage in I-Practices is that philosophers use intuitions as evidence. But it is not obvious how to explain I-Practices given the truth of Not Evidential. It is not compelling to think that I-Practices are empty and contribute nothing to philosophy. The purpose of this paper is simply to explore whether there is any alternative story—a story that is compatible with Not Evidential—to be told about the function of I-Practices within philosophical practice.

The conclusion is that there is a somewhat plausible story that one might tell. The brief genealogical reflection above provided the seed of an alternative to viewing I-Practices as involving an evidential use of intuitions: the contribution of I-Practices is that they help philosophers to understand what each others' positions are; they are part of philosophers' attempts to explain ideas to each other; I-Practices play a purely explanatory role in philosophy. To accept this explanation is not to accept a view that says philosophers are always only in the business of explaining positions to each other, but rather, specifically, that the function of our I-Practices within our wider practice is an explanatory one. I have not defended the claim that this is in fact the function of I-Practices. Merely that it is a somewhat plausible story that is available to the proponent of Not Evidential. The availability of this alternative explanation of I-Practices provides indirect support for Not Evidential.

Before closing, let me see off a few potential lines of resistance and acknowledge some limitations to my argument.

Objection #1 If the role of I-Practices is purely explanatory, then none of our positions are justified in philosophy, and that's false!

The idea here might be that all the time philosophers have taken themselves to be providing evidence for their positions, they have merely been explaining their positions, and thus their positions lack justification. However, note that just because I-Practices don't involve adducing evidence or providing justification, this doesn't mean that philosophers don't adduce evidence for

their positions or justify their positions, nor does it mean that philosophers don't have evidence for their positions or have justified positions.[26]

A subtler, but related, objection is that in many cases—such as those case studies selected above—once we interpret the relevant I-Practices within a paper or literature as serving purely explanatory functions, it becomes somewhat untenable to even interpret the relevant philosophers as providing arguments for their views. The thought might be: that *the only bits of those papers or literature that are plausibly interpreted as involved in justifying positions or evidence adducing* are the bits involving the employment of I-Practices; so, once we interpret I-Practices as serving purely explanatory roles, there's no plausible reading available on which these philosophers are arguing for their positions.[27]

In response, I think it is important to make two points. The first is to concede that there may be some instances in which the proponent of Not Evidential, who interprets I-Practices as I suggest, is forced into interpreting a philosophical text that we typically think of as providing an argument for a view as doing nothing of the kind. I'm not inclined to think this is a big problem, as I see no reason to think they'll be forced into such an interpretation for vast swathes of the philosophical literature—only the occasional instance. But I acknowledge that it is a cost for the proponent of Not Evidential, who interprets I-Practices as I suggest, that they may sometimes interpret a philosopher as not presenting an argument (when the philosopher themselves thinks they are). However, the alternative explanation I argue is available to the proponent of Not Evidential isn't typically going to say, "*X* thinks they are giving an argument, but they are not." It says, "*X* is giving an argument, but the function of device *Y* within the discourse is purely explanatory." And that only involves going against *X*'s self-conception of their practice insofar as they had any commitment specifically to the function of *Y* being something more than purely explanatory—and I'm not sure how common that is.

26 Moreover, it would even be possible to hold Not Evidential—a claim about *using* intuitions—and that, nonetheless, the justification for philosophical positions must ultimately bottom out in intuitions or intuitive propositions at some point. Although this is not something that all advocates of Not Evidential can be open to.

27 Although I take this objection seriously, I should note that there is some plausibility to the idea that we routinely over-emphasize the role of arguments in philosophy (at least descriptively). Perhaps much more philosophy than we typically think is ultimately—perhaps even covertly—engaged in communicating views rather than arguing for them. But I don't argue for that view here.

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The second is to note that a single passage of philosophy may contain both an I-Practice that serves solely to explain the claim that *p* as well as present the claim that *p* as evidence. This is the interpretation I envisage the proponent of Not Evidential, who interprets I-Practices—as I suggest—as playing a purely explanatory role, taking in relation to any cases in which a passage containing an I-Practice seems to be the only plausible candidate for a passage in which support is offered for a position. Consider the following imaginary excerpt from a text in which the I-Practice of appealing to cases plays a role:

> Berries. Ally claims that if something is a berry, it's a cherry. But recall all the berries you've encountered. I bet you've eaten dewberries and elderberries. Perhaps you've eaten a fox grape too! Imagine the reaction of someone eating a gooseberry who was expecting to eat a cherry. I expect you'll agree with me that none of these berries is a cherry. Some berries are simply not cherries, and so what Ally claims is false.

Suppose that no intuitions are adduced as evidence in the presentation of this text. Instead, taking a line typical of proponents of Not Evidential, let's say that what is adduced as evidence is something like the claim that *some berries are not cherries* or else something like *dewberries are berries, dewberries are not cherries*, or similar. If that's right, that deals with the question of, "How is the argument supposed to work if it doesn't involve the use of intuitions as evidence?" But it would still leave open the question that motivates this paper: "What role is the appeal to cases playing there?—can it just be empty fluff?" And the answer proffered in this paper is that the appeals to intuitive judgements about cases are not serving to adduce evidence or present reasons; rather they just explain some relevant claims—claims that *might* themselves be being adduced as evidence.[28]

Objection #2 If the role of I-Practices is explanatory, then I-Practices (often) involve the use of intuitions as evidence (which is inconsistent with Not Evidential and the fact that philosophers do use I-Practices).

There are various reasons one might hold this conditional. There are two I have encountered.

28 For a related point, see footnote 23.

The first line of reasoning exploits a putative link between understanding and modal knowledge. The thought might be that philosophers often use conceivability as a test of possibility. Insofar as that is true, a device employed for helping someone merely understand/conceive of something in philosophy is often ipso facto in the business of evidencing a philosophical theory. Thus, it might be argued, there is no such thing as a purely explanatory practice in philosophy, since a successful explanation provides evidence for a modal claim. However, the types of explanations involved in I-Practices do not seem to fit this picture. For instance, explaining questions and articulating the basic structure of debates: these are not explanations that fit into this picture whereby explanations provide understanding, which is in turn linked to conceivability; the type of understanding they provide doesn't seem to have any straightforward link to which worlds are possible. The types of explanations that I-Practices are concerned with is not in explaining scenarios or thought experiments in the hope that one's audience will recognize that the described scenario is conceivable. For just one example, in "Case Wielding," a case is used to explain a theory. And it doesn't seem right to me to say that explaining a theory is automatically a matter of providing evidence that the theory is possibly true or necessarily false. Moreover, just because an explanation helped make certain evidence available wouldn't mean that the explanatory practices used were ipso facto practices whose function is to provide evidence.

The second line of reasoning exploits a model of philosophical enquiry as being largely "abductive," i.e., seeking the best explanations of the available evidence. Insofar as philosophers are always or very often doing that, might be the thought, there is no useful distinction between justificatory and explanatory practices. There are various concerns one might have about this thought. The most important point to make, however, in response to the thought *as an objection* to my argument in this paper, is that it exploits an equivocation. Suppose we are in the context of a general collaborative effort to determine the best explanation of the available evidence about some philosophically interesting phenomena. Within such a context, there will be some practices I perform whose function is to provide support for one or another explanation being the best explanation, and there will be some practices I perform whose function is to communicate the precise nature of some candidate explanation under discussion. Given what I mean by "explanatory practices," there is plenty of room for practices performed within the context of abductive enquiry to not be explanatory practices, and explanatory practices within such a context are not automatically involved in supporting/evidencing/justifying.

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> Objection #3. This is not a plausible hypothesis about the function of I-Practices in philosophy, as it is barely even a hypothesis. There are at least two accounts on the table. (1) I-Practices are in the business of evidence adducing. (2) I-Practices are in the business of explanation. It ought to be an empirical matter which of those theories was correct. But the distinction is not empirically tractable.

Let's quickly elaborate on why one might think the distinction was not empirically tractable in the right way. First, we can't test this by simply asking philosophers what methods they use. It is a cornerstone of the whole debate in this area that philosophers may well be largely mistaken about what they are doing when they philosophize. It is on the table, for instance, that despite thinking that they have been using intuitions as evidence all along, many philosophers are mistaken about this—that's what proponents of Not Evidential tend to hold. Second, we can't seem to test this by examining philosophical texts, talks, and discussions. Why? Since philosophers are generally trying to make the case for or against some position, it is unclear what would enable one to discern, from the surface features of our texts or speech, whether some particular device really has a purely explanatory function—indeed, the cases studied above demonstrate one can interpret cases in various ways. So, the thought might be, this is not a plausible hypothesis because it is amorphous and not empirically tractable.

The most important thing to do in response is to note that there are virtues to an account of philosophers' use of I-Practices beyond being able to give an empirically adequate account of I-Practices. There may be non-empirical considerations that speak in favour of an account that focuses on an explanatory function rather than a justificatory one. There may also be empirical considerations relating to distinct but related matters, philosophers' use of intuition-related language (see Andow 2015b), what else philosophers do in close proximity to I-Practices (see Cappelen 2012), the extent to which philosophers are disposed to update their views in relation to I-Practices (when encountering certain framings of debates or cases), the extent to which philosophers use I-Practices in contexts that are explicitly oriented around explanation (teaching, textbooks). Ultimately, deciding the best view of philosophical practice is going to involve the synthesis of a whole host of considerations. And so, while I agree that a plausible alternative explanation of philosophers' use of I-Practices ought to be "testable" in the sense that there ought to be some considerations that would support it rather than the

standard explanation, the potentially relevant considerations are not limited to empirical observations directly of philosophers' I-Practices. One place to start looking for such relevant considerations would be, of course, the various considerations that proponents of NOT EVIDENTIAL adduce in favour of their view in the first place (see the opening section for references and Nado 2016 for a critical overview).

OBJECTION #4 When talking to each other, philosophers don't need to explain basic concepts. It is plausible that when talking to new students and to members of the public, philosophers need to explain their ideas. It is not plausible that, when addressing each other at conferences and in print, philosophers have any great need to explain concepts, positions, or ideas.

I have encountered this objection, but it rests on either a misunderstanding of my analysis or on an implausible worldview. Take a look back over this paper and estimate the proportion of the wordcount that is involved purely in articulating and clarifying the view under consideration. My estimate is that it is the vast majority. That is my experience of writing philosophy, reading philosophy, giving talks, and sitting in talks. When addressing philosophers, maybe we don't need to explain exactly the same things that we need to explain when addressing nonphilosophers, but surely there is still a lot of explanation that needs doing. I don't claim that I-Practices are used among philosophers to explain exactly the same ideas that one has a need to explain when addressing nonphilosophers; the claim is that I-Practices can be interpreted as playing the same general explanatory function. I think it would be very implausible to think that communication between philosophers didn't require a lot of explanation.

OBJECTION #5 The alternative explanation given for philosophers' use of I-Practices is problematic because there is nothing that unifies I-Practices. There is no assurance that this alternative explanation will extend to all phenomena—including other I-Practices that may exist but which haven't been explicitly addressed in this paper—that make attractive the view that philosophers use intuitions as evidence.

This is a genuine limitation of the current project. I have only demonstrated how the alternative explanation can handle the specific set of practices considered above. These are the most salient examples of practices that would otherwise seem difficult for the defender of NOT EVIDENTIAL to explain. And

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I'll admit that there are not any other salient practices of this kind that I can think of. Indeed, the list invoked in this paper is already much longer than that with which most of the methodological literature around intuitions has concerned itself (the fixation tending to be on appeals to cases). Nonetheless, it may well be that there are some such practices I haven't thought of, and it would be important to ask whether the suggested alternative explanation can be extended to them. If it didn't, the defender of Not Evidential would have to look for a different alternative explanation. However, this is only a slight possible limitation to the main contribution of this paper, which is to give the defender of Not Evidential the resources to discharge the theoretical burden of not being able to account for I-Practices—they can at least account for the most salient ones.

Objection #6 I agree that I-Practices, as described in the proto-philosophical context, plausibly play only an explanatory role. However, I don't accept that the very same practices exist within contemporary professional philosophical discourse. For example, any "Weights and Balances" philosophy conducted by proto-philosophers would clearly be in a merely suppositional/exploratory/speculative/explanatory spirit, but that means that what proto-philosophers do is far less committal than what actual philosophers do, sufficiently different to mean it is a distinct practice (or at least that the plausibility of the explanatory reading doesn't carry over).

I have a few things to offer in response. First, there are lots of things that look different once one enters an academic context; I'm willing to bet you could train an AI to identify academic contexts based solely on data about blinking, gesticulation, or turn-taking in conversation. I wouldn't want to confuse the performative elements of academic discourse with anything deep about the practice. Second, I don't buy that the distinction is as sharp as the objection suggests. One thing that the work of folks like Cappelen (2012) and Deutsch (2015) makes clear is that the "stereotype" putative instance of "using an intuition as evidence" is pretty elusive in the literature. My impression is that philosophers' actual use of I-Practices is far less committal than a stereotype might suggest. But that's an empirical claim that would be interesting to pursue: how committal are philosophers in their actual use and engagement with I-Practices? Third, and finally, even if how things look in philosophy is very different in this respect than how we imagined things in the philosophical state of nature—and so different that we don't want to say

they involve the same practices—that only really detracts from the point of this paper if, given how things actually look in philosophy, the alternative explanation I have claimed has some baseline plausibility doesn't. Above, I demonstrated how the alternative explanation can give a somewhat plausible reading of a number of contemporary cases, and I'm confident I could do so for a wider range of cases (although that will have to wait for future work).*

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How Existential Dependence Can Ground Existential Grounding

Stefano Caputo

Schnieder (2020) argues, against Orilia (2009) and Koslicki (2013), that claims of existential grounding of the form "the fact that *x* exists is grounded in the fact that *y* is *F*" cannot be grounded in claims of existential dependence of the form "*x* existentially depends on *y*" and defends the view that the latter claims are grounded in the former, *via* a definition of existential dependence. I will first argue that Schnieder's main point against the claim that existential grounding is grounded in existential dependence is not conclusive. I will then put forward a proposal concerning how claims of existential grounding can be grounded in claims of existential dependence. The proposal is a third way between those of Schnieder and Orilia/Koslicki, which, although accepting the former's definition of existential dependence in terms of grounding, makes room for the latter's idea that existential dependence does the real job of structuring reality.

According to a broadly Aristotelian metaphysics, reality is structured by relations of ontological priority: many kinds of entities inhabit the world, but they don't live all on the same floor; some of them are more basic or fundamental than others, and the latter owe their existence to the former. However, even philosophers sympathetic to this layered conception of reality can still disagree on important questions. One of these questions concerns which notion (or notions) is more theoretically fruitful and metaphysically revealing to unfold and make the Aristotelian intuition precise. Starting from the seminal work of K. Fine (1995, 2001, 2012a), the notion of grounding has come to the fore as an appealing candidate for this role: that reality is layered in different levels of fundamentality should be spelled out saying that some facts or propositions are grounded in other facts or propositions, where the notion of grounding points to an objective explanatory connection of a non-causal kind between facts or propositions.

A central question regarding grounding is what, if anything, grounds facts of grounding themselves. In virtue of what, for instance, does the following fact obtain?

1) ⟨The fact that the singleton of Socrates exists is grounded in the fact that Socrates exists⟩.[1]

A sensible answer to this question seems to be that (1) obtains because the singleton exists in virtue of Socrates (and not the other way around); similarly, one could say that the following fact

2) ⟨The fact that fictional character J. Gatsby exists is grounded in the fact that F.S. Fitzgerald wrote the novel *The Great Gatsby*⟩[2]

obtains because the character owes his existence to the writer. Generalizing: whenever there is an objective explanatory connection between the fact that a given thing exists and the fact that another thing is a certain way, this is explained by the existence of an objective relation between the entities involved in those facts, namely the relation of existential dependence; facts of existential grounding are in turn grounded in facts of existential dependence. This stance concerning the ground of existential grounding facts seems to be endorsed by philosophers like Orilia (2009) and Koslicki (2013). They should, therefore, be prepared to endorse the following principle by which Schnieder (2020, 114) makes explicit this view:

> DEP → GROUND. For any x, for any y, if $\exists F(\langle y \text{ is } F\rangle$ grounds $\langle x$ exists$\rangle)$, then $\langle x$ existentially depends on $y\rangle$ grounds $\langle \exists F(\langle y \text{ is } F\rangle$ grounds $\langle x$ exists$\rangle)\rangle$.

Those advocating DEP → GROUND think that existential dependence does the real job of structuring reality and that existential grounding claims simply keep track of it. On the opposite side, people like Schnieder (2006b, 2020) and Correia (2005) think that facts of existential dependence are grounded in facts of existential grounding, therefore advocating the following principle:

1 As it is customary, angle brackets have here the same role as the clause "the fact that," that is to say, the role of forming names of facts starting from sentences. So $\langle p\rangle$ means the same as "the fact that p." Square brackets will instead be used in some of the examples below as means of syntactic disambiguation.

2 I borrow this example from Schnieder (2020) just replacing his preferred fictional characters (Ahab, Gandalf) with mine.

> GROUND → DEP. For any x, for any y, if $x existentially depends on y, then ⟨∃F(⟨y is F⟩ grounds ⟨x exists⟩)⟩ grounds ⟨x existentially depends on y⟩.

GROUND → DEP follows from the fact that, according to Schnieder and Correia, existential dependence can be *defined* in terms of grounding in the following way:

> DF.DEPENDENCE. x existentially depends on y $=_{df}$ □(x exists → ∃F(⟨y is F⟩ grounds ⟨x exists⟩)).

That is to say, an entity x existentially depends on another entity y when, necessarily, if x exists, there is a way y is such that the fact that y is that way grounds the fact that x exists.

Provided that definitions like the former entail a strict non-causal explanatory relation between the *definiens* and the *definiendum*, one can infer GROUND → DEP from the latter definition: since existential dependence can be defined in terms of grounding, facts of existential dependence are grounded in or metaphysically explained by facts of grounding; the former stay at an upper, less fundamental, level of reality than the latter.

Orilia (2009) and Koslicki (2013) have complained that DF.DEPENDENCE turns things upside down: that there is an objective explanatory connection between the fact that a given thing exists and the fact that another thing is a certain way should be explained by some fact concerning the entities involved in those facts and not the other way around. This fact is, according to Orilia and Koslicki, that one of these entities existentially depends on the other. Therefore, both DF.DEPENDENCE and GROUND → DEP should be rejected in favour of DEP → GROUND.

1 Schnieder's Point against DEP → GROUND

Schnieder's (2020) main objection to DEP → GROUND is, in a nutshell, that claims of existential dependence cannot ground claims of existential grounding such as

3) ⟨Fitzgerald wrote *The Great Gatsby*⟩ grounds ⟨The fictional character J. Gatsby exists⟩,

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since the notion of existential dependence is too coarse-grained to sustain such an explanatory role.

The reason lies in the predicative content of the grounding facts involved in such claims. In fact, what grounds the existence of something in such claims is that something else is a certain way. However, the bare existence of a thing is consistent with and is actually accompanied by many different ways this thing is, many of which have no explanatory role for the existence of the grounded entity. So, pointing to the bare fact that *x* existentially depends on *y* gives no hint about which of these ways *y* explains why *x* exists.Thus, an explanation such as

4) [⟨Fitzgerald wrote *The Great Gatsby*⟩ grounds ⟨The fictional character J. Gatsby exists⟩] because [the fictional character J. Gatsby existentially depends on Fitzgerald][3]

suffers from an explanatory gap that depends on the genericity of the *explanans* in respect of the *explanandum*. Since the bare existence of Fitzgerald is consistent with his being in many different ways, many of which have no role in grounding the existence of the fictional character J. Gatsby, in order to explain why a fact like (3) obtains something more must be said than simply pointing to the fact that the existence of one of the entities involved in it (J. Gatsby) depends on the existence of another one (Fitzgerald) (see Schnieder 2020, 116). This limit is similar to that of an explanation such as "This rose is scarlet because it is red." Since a red rose can be, for instance, also crimson or cardinal red, something more must be said in order to account for a rose being scarlet, rather than simply pointing to the fact that it is red.

3 There is a wide consensus that grounding is an explanatory notion and that claims of grounding may be expressed both in relational and non-relational form (cf. Correia 2010; Correia and Schnieder 2012; Fine 2012a; Berker 2018), leaving open the questions concerning which of these two forms is metaphysically more revealing (what Schnieder 2020 calls the "grammatical question"), and whether grounding reduces to metaphysical explanation or is a relation "backing" this kind of explanation (cf. Maurin 2019; Glazier 2020). Here and in many of the examples in the rest of the article, I express claims of grounding in non-relational form using the connective "because," although nothing I will say in the course of the paper depends essentially on this choice. My preference for the "because" form has two reasons. Firstly, using this form will make many of the examples less cumbersome; secondly, since many arguments that will be discussed below are concerned with the explanatory dimension of grounding, it seems to me that to express the examples involved in them in the "because" form, which is the form in which explanations are usually expressed, will make it easier to appreciate and assess them.

Another related point made by Schnieder is that different properties of the grounding entities will be involved in different cases of existential grounding (for instance, the fictional character J. Gatsby exists because Fitzgerald wrote a novel, but a philosophy conference exists because some people behave in certain specific ways). But according to the advocates of DEP → GROUND, in all these different cases, there is always the same kind of fact serving as ground, namely that a given entity existentially depends on another. So, explanations like (4) and a fortiori DEP → GROUND lack systematicity: "There seems no systematic way in which the bare fact that x existentially depends on y could serve as an appropriate basis for such a variety of predications, and in particular on how it should pick out the relevant predications in the different cases" (Schnieder 2020, 116).[4]

Notice that, while according to DEP → GROUND, what is grounded in a fact of existential dependence is a general, quantified fact (namely $\langle \exists F(\langle y \text{ is } F\rangle$ grounds $\langle x \text{ exists}\rangle)\rangle$), what I have said so far concerns the grounds of specific instances of this general fact, such as (3).

This follows Schnieder's line of reasoning since he accepts Fine's (2012b) logic of ground, according to which an existentially quantified fact is immediately grounded only on its instances and, mediately, by whatever grounds them. Therefore, since

5) $\exists F(\langle$Fitzgerald is $F\rangle$ grounds $\langle$The fictional character J. Gatsby exists$\rangle)$

is immediately grounded in (3), the only sensible way in which DEP → GROUND can be justified is by claiming that the relevant instance of $\langle x$ existentially depends on $y\rangle$ (i.e., $\langle$The fictional character J. Gatsby existentially depends on Fitzgerald$\rangle$) grounds (3), and this is tantamount to arguing in favour of (4). Once this has been done, it will follow, by the transitivity of grounding or "because," that

6) [$\exists F(\langle$Fitzgerald is $F\rangle$ grounds $\langle$The fictional character J. Gatsby exists$\rangle)$] because [the fictional character J. Gatsby existentially depends on Fitzgerald],

which is the relevant instance of DEP → GROUND.

What Schnieder wants to point out is precisely that the crucial step in this line of reasoning (that is to say (4)) is, for the reasons given above, flawed.

4 That grounding explanations should be systematic has been stressed by deRosset (2013).

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Although I agree with this line of reasoning, I will try to show in the following paragraphs that a modified version of DEP → GROUND can successfully survive it and that, therefore, the advocate of existential dependence still has space to argue that claims of existential grounding, such as (3), are in fact grounded in claims of existential dependence. Since the core idea of my argument will be that what the advocate of existential dependence must do in order to get her point is to choose the right kind of *dependees* in the relation of existential dependence, I will call it "the ontological challenge" to Schnieder's criticism of DEP → GROUND.

2 The Ontological Challenge

Consider the following explanation:

7) [⟨Fitzgerald wrote the Great Gatsby⟩ grounds ⟨The fictional character J. Gatsby exists⟩] because [the fictional character J. Gatsby existentially depends on Fitzgerald *qua* author of *The Great Gatsby*].

(7) doesn't suffer from the explanatory gap and the lack of systematicity that affect (4). At the same time, the *explanans* of (7) is a sentence asserting that an entity (the fictional character J. Gatsby) exists in virtue of another entity (Fitzgerald *qua* author of *The Great Gatsby*), so it is a claim of existential dependence. What happened is that I substituted for the singular term "Fitzgerald" a different singular term in which the information that was missing in the *explanans* of (4) is now embedded. What changed, as far as the objects referred to by the sentence are concerned, is that the singular term "Fitzgerald *qua* author of *The Great Gatsby*" refers to what Fine (1982) called a *qua-object*, where *qua*-objects are objects that differ from their ordinary twins for some of their essential properties (the main difference between a and a *qua* F, with F a contingent property of a, being that a *qua* F, but not a, is essentially, so necessarily, F).

If the advocate of existential dependence as the ground of facts of existential grounding takes this route, he must adopt a modified version of DEP → GROUND. In fact, according to DEP → GROUND, the fact that there is a certain way y is such that x exists because y is that way is grounded in the fact that x existentially depends on y. But according to the picture sketched above, the ontological ground of x, in the claim of existential dependence, is not the same entity y which is involved in the grounding fact to be explained: Fitzgerald

and Fitzgerald *qua* author of *The Great Gatsby* are in fact two different entities that coincide in the actual world. So, DEP → GROUND must be substituted by

> DEP → GROUND*. For any x, for any y: if $\exists F(\langle y \text{ is } F\rangle \text{ grounds } \langle x \text{ exists}\rangle)$ then $\exists z(\langle x \text{ existentially depends on } z\rangle \text{ grounds } \langle \exists F(\langle y \text{ is } F\rangle \text{ grounds } \langle x \text{ exists}\rangle)\rangle)$,

where z is an entity suitably related to y and its being F.[5]

It should be noted that someone accepting DEP → GROUND* is not forced to admit *qua*-objects in his preferred ontology; in fact, *qua*-objects are not the only entities that can do the desired job. What is needed is, in fact, an entity that is as fine-grained as an individual having a property and referred to by a singular term embedding the same information as the sentence saying that the individual at stake has the relevant property. A linguistic device by which one can obtain this kind of singular term from sentences is *nominalization*. For instance, by nominalizing the sentence "Fitzgerald wrote *The Great Gatsby*," we obtain singular terms such as "Fitzgerald's writing *The Great Gatsby*" or "the fact that Fitzgerald wrote *The Great Gatsby*," which refer, if they refer at all, respectively to an event and a fact. Events and facts are not the only entities that can do the job. For instance, starting from "this rose is red," we can obtain "the redness of this rose," which, presumably, refers to a trope.

3 Too Easy?

The advocate of the priority of grounding has an easy rejoinder to the ontological challenge. She could say, in a nutshell, that the challenge is based on a linguistic trick that should be banned from serious metaphysics. The trick in question is the linguistic transformation based on the nominalization device by which one can obtain singular terms (or, better, expressions functioning grammatically as singular terms) from sentences. But the fact that we can legitimately transform sentences such as "the fictional character Jay Gatsby exists because Fitzgerald wrote *The Great Gatsby*" into sentences such as "the fictional character Jay Gatsby exists because of, or in virtue of, Fitzgerald's writing *The Great Gatsby*" or "the fictional character Jay Gatsby

5 Notice that (7) is an instance of "$\exists z(\exists F(\langle y \text{ is } F\rangle \text{ grounds } \langle x \text{ exists}\rangle)$ because x existentially depends on z)" which is the non-relational version of the consequent of the conditional open formula contained in DEP → GROUND*.

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exists because of, or in virtue of, Fitzgerald *qua* author of *The Great Gatsby*" is no real advance as far as metaphysical explanation is concerned.

Consider the sentence: "It is true that nobody is in the room because nobody is in the room The fact that we can transform it, by nominalization, into"it is true that nobody is in the room in virtue of nobody's being in the room" is not a sufficient reason to claim that there is an entity, referred to by the expression "nobody's being in the room," which makes the proposition that nobody is in the room true, which is, so to speak, the ontological ground of its truth. In fact, first of all, it is not granted that the expression "nobody's being in the room," although functioning grammatically as a singular term, is semantically a singular term, that is, a denoting term. And second, provided that the expression refers to something, it should be demonstrated that the existence of this something explains why the proposition is true. In the same way, in order to justify the claim that the purported entity referred to by the expression "Fitzgerald's writing *The Great Gatsby*" is the existential ground of the fictional character J. Gatsby, one should, in the first place, argue that such an entity exists (that is, that the expression "Fitzgerald's writing *The Great Gatsby*" is a genuine singular term), and, in the second place, that its existence has explanatory force towards the existence of the fictional character. Concerning the first point, it should be noted that the mere fact that a term a functions grammatically as a singular term, for instance, allowing existential generalizations (inferences from "a is F" to "Something is F") is consistent with its not being a denoting term, since the existential quantifier can be interpreted, in such cases, substitutionally. (This is why the simple fact that we can infer "there is something I dreamt of last night" from "I dreamt of a unicorn last night" doesn't force us to admit the existence of dreamt unicorns.) Concerning the second point, even granting that nominalizations are genuine singular terms, one could still embrace Schiffer's (2003) view, according to which the entities referred to by these terms are *pleonastic entities*, that is, entities supervening on our linguistic practices and having no explanatory power concerning the rest of the world.[6]

6 That pleonastic entities lack explanatory power concerning the rest of the world is a consequence of Schiffer's view that admitting their existence does not affect in any way our prior picture of the world. Schiffer tries to make this idea more precise by saying that if the concept of an F is a pleonastic concept then, for any theory T, the theory T^1 obtained by adding to $T^{\sim F}$ (the theory that results from restricting each quantifier of T to things that aren't F). This concept, together with the corresponding linguistic transformations (which he calls "something-from-nothing

If this is true, then, although one can infer, in virtue of the syntactic transformation taking us from "p" to "nom (p),"[7]

8) The fictional character J. Gatsby exists in virtue of the fact that Fitzgerald wrote *The Great Gatsby*/Fitzgerald's writing *The Great Gatsby*/Fitzgerald *qua* author of *The Great Gatsby*

from

9) The fictional character J. Gatsby exists because Fitzgerald wrote *The Great Gatsby*,

one cannot infer from (8)

10) The fictional character J. Gatsby exists because the fact that Fitzgerald wrote *The Great Gatsby* exists/Fitzgerald's writing *The Great Gatsby* exists/Fitzgerald *qua* author of *The Great Gatsby* exists,

since it is not granted that the grammatically singular term involved in the *explanans* of (8) refers and, provided it does, that it refers to a non-pleonastic entity.

But if the relation of existential dependence must be able to do a serious metaphysical job, such as the job of grounding claims of existential grounding, as is claimed by the advocate of Dep → Ground*, what is needed is (10) and not just (8). This can also be seen by taking note of the following fact.

Since (8) is obtained by (9) through the trivial linguistic transformation from a sentence to its nominalization, it is reasonable to claim that (9) is conceptually prior to (8): understanding a nominalization, in fact, involves understanding the sentence nominalized but not the other way around. One can generalize this point by introducing what could be called a "pleonastic" notion of existential dependence, which is implicitly defined by the following schema:

> Pleonastic Existential Dependence (PED). x existentially depends on/exists in virtue of ^{PL} nom (p) $=_{df}$ $\Box[x$ exists $\rightarrow$ (x exists because p)].

transformations"), is a conservative extension of $T^{\sim F}$, that is, for any sentence S expressible in the language of $T^{\sim F}$, if S is a theorem of T^1, it is also a theorem of $T^{\sim F}$ (Schiffer 2003, 57).

7 From now on I will use "nom (p)" as a schematic expression whose instances are the nominalizations of (the instances of) "p."

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Now, PED cannot be the notion involved in the sentences of the form

11) [⟨y is F⟩ grounds ⟨x exists⟩] because [x existentially depends on nom (y is F)]

to which the advocate of DEP → GROUND* is committed. In fact, if the notion of existential dependence at stake here were the pleonastic one, the sentences of this form would be *false* for the following reason.

Once it is admitted that definitional links (or even just conceptual priority) holding between a sentence P and another sentence Q (where P is conceptually prior or definitional in respect of Q) justify the assertion of an explanation of the form Q *because* P, one should be prepared to accept, when PED is at stake, a sentence like

12) [x existentially depends on/exists in virtue of $^{\text{PL}}$ nom (y is F)] because [x exists because y is F].[8]

But (12) together with (11) entail, given the transitivity of "because,"

13) [⟨y is F⟩ grounds ⟨x exists⟩] because [x exists because y is F],

which is equivalent, shifting from "ground" to "because" talk to

14) [x exists because y is F] because [x exists because y is F]

which violates the irreflexivity of "because." So, if the existential dependence at stake in the *explanans* of (11) were PED, (11) would be false, since it would entail something false, and DEP → GROUND* should be rejected.

Therefore, what is needed to defend DEP → GROUND* is not PED but a full-blooded notion of existential dependence that can be characterized as follows.

> FULL-BLOODED EXISTENTIAL DEPENDENCE (FED). x existentially depends on/exists in virtue of $^{\text{FB}}$ z $=_{df}$ $\Box(x \text{ exists} \rightarrow (x \text{ exists because } z \text{ exists}))$.[9]

8 In the *explanans* of (12), I use a non-necessitated version of the definition of PED. This is, in this context, harmless and renders (12) less cumbersome.

9 A definition of existential dependence along these lines was put forward for the first time by Lowe (1998, 145). Both Schnieder (2006b) and Correia (2005) view DF.DEPENDENCE as an improvement on a definition of this kind. A definition of truth-making along the lines of FED can be found in Schnieder (2006a) and in Caputo (2007).

It should be noted that FED is an instance of Df.Dependence since the former can be obtained from the latter by instantiating the predicate variable *F* with the existence predicate. For this reason, FED is more demanding than the notion defined by Df.Dependence. In fact, whereas according to the latter, what is needed in order that *x* existentially depends on *y* is that *x*'s existence is explained by some feature of *y*; according to FED, however, the existence of the dependent entity must be explained by the bare existence of the *dependee*. So, "*x* depends on $^{\text{FB}}$ *y*" entails "*x* depends on $^{\text{DEF.DEP}}$*y*" but not the other way around.[10]

4 The Third Way

Let's take stock. So far, I have argued that an advocate of existential dependence can circumvent Schnieder's argument against Dep → Ground by putting forward another principle according to which claims of existential dependence ground claims of existential grounding, that is, Dep → Ground*. Then I explained why, in order to defend this principle, a notion of existential dependence (FED) is needed, which is an instance of Schnieder's characterization of existential dependence in terms of grounding. This means that the supporter of Dep → Ground* must argue in favor of sentences such as

15) [J. Gatsby exists because Fitzgerald wrote *The Great Gatsby*] because [J. Gatsby exists because nom (Fitzgerald wrote *The Great Gatsby*) exists].[11]

This amounts to arguing for the claim that a sentence like

16) J. Gatsby exists because Fitzgerald wrote *The Great Gatsby*.

That is to say, the *explanandum* of (15), is true in virtue of the fact that the entities referred to by expressions such as "Fitzgerald *qua* author of *The Great*

10 Concerning the relation between the extensions of FED and PED, it should be noticed what follows: on the one hand, there are entities which full-bloodedly existentially depend on others without doing it pleonastically. For instance, the singleton of Socrates full bloodedly existentially depends on Socrates, since the singleton exists because Socrates exists, but doesn't depend pleonastically on him, since the nominalizations of "Socrates exists" are expressions such as "the fact that Socrates exists" or "Socrates' existence" which do not refer, if they refer at all, to Socrates. On the other hand, as I stressed before, the fact that an entity pleonastically existentially depends on another does not guarantee that the former full-bloodedly existentially depends on the latter, since it is not granted either that the term "nom (*p*)" refers or that, provided it does, it refers to a non-pleonastic entity.

11 Notice that (15) is just (7) with "because" substituted for "grounds."

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Gatsby," or "the fact that Fitzgerald wrote *The Great Gatsby*," explain, by their existence, the existence of the fictional character J. Gatsby.

I'm going now to show how this could be done. The resulting picture will be a syncretistic third way between that of Schnieder/Correia and that of Orilia/Koslicki; on this picture, in fact, on the one hand, the grounding/explanatory characterization of existential dependence put forward by the first pair of authors is accepted, but, on the other hand, the idea of the second pair of authors, according to which existential dependence does the real metaphysical job in structuring reality, is maintained.

I think that what the supporter of DEP → GROUND* should do to defend (15) is, first of all, to argue in favor of the *explanans* of it, that is to say,

17) J. Gatsby exists because nom (Fitzgerald wrote *The Great Gatsby*) exists

which says that J. Gatsby full-bloodedly existentially depends on the entity referred to by the nominalization of "Fitzgerald wrote *The Great Gatsby*." This can be done by arguing for

18) Fitzgerald wrote *The Great Gatsby* because nom (Fitzgerald wrote *The Great Gatsby*) exists.

(18), in fact, together with

19) J. Gatsby exists because Fitzgerald wrote *The Great Gatsby*

(which is the explanatory claim endorsed by the advocate of GROUND → DEP) entails (17).

How could (18), the crucial premise of the argument, be justified? I think that what the advocate of DEP → GROUND* should do is claim that what it is for something to be *F* is for the entity referred to by "nom (*y* is *F*)" to exist. More generally, what the advocate of DEP → GROUND* should argue for is a conception of reality according to which what it is for an *n-tuple* of individuals to exemplify an n-ary property is for some entity to exist. This amounts to defending a metaphysical view, according to which the entities referred by the nominalizations in question are not pleonastic entities, but, on the contrary, are *bona fide* and fundamental constituents of reality. For instance, if one thinks that "nom (*y* is *F*)" refers to a given fact, one should embrace a Tractarian or Armstrongian metaphysics, according to which the world *is* a world of facts. According to such a view, what it is for Fitzgerald to write *The Great Gatsby* is for a given entity (a fact) to exist. Defending this

kind of metaphysics is indeed a difficult task but not an incoherent one, and someone could and has actually claimed one worth pursuing.

Once the advocate of DEP → GROUND* has successfully argued that what it is for *y* to be *F* is for some entity to exist, she can reasonably claim that an explanation of the form "*x* exists because *y* is *F*" is made true by the fact that *x* exists in virtue of the entity in question, and that, therefore, the explanation "*x* exists because nom (*y* is *F*) exists" is metaphysically more revealing than the explanation "*x* exists because *y* is *F*." This justifies the assertion of sentences of the form

10) [*x* exists because *y* is *F*] because [*x* exists because nom (*y* is *F*) exists],

of which (15), above, is an instance, and which, given the definition of FED, are equivalent to

21) [*x* exists because *y* is *F*] because [*x* existentially depends^{FB} on nom (*y* is *F*)],

which states that a claim of existential grounding ("*x* exists because *y* is *F*") is grounded in a claim of (full-blooded) existential dependence.

Someone could observe that there is a more direct way for the advocate of existential dependence to defend DEP → GROUND*. This way is the *semantic strategy*, according to which the two sentences "*x* exists" and "*y* is *F*" – which are, respectively, the *explanandum* and the *explanans* in "*x* exists because *y* is *F*" – *represent* two states of affairs, respectively ⟨*x* exists⟩ and ⟨*y* is *F*⟩, which stand in turn in a relation of existential dependence (since the former obtains in virtue of the latter). What I would say concerning this semantic strategy is that, although it is actually a viable one, it is not, appearances notwithstanding, a more direct strategy than the one I propose. In fact, what an advocate of the semantic strategy should do is, first, advocate a Tractarian-like metaphysics according to which the world is a world of facts and, second, defend a semantics according to which (true) sentences in natural languages are endowed with meaning in virtue of representing these facts. On the contrary, someone pursuing the strategy I propose can just care about the metaphysical question concerning what in the world, if anything, makes true predicative sentences of the form "*y* is *F*," remaining neutral with regard to the semantic question concerning the nature of sentence-meaning.

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5 Conclusion: Beyond Ideology

An advocate of the third way I sketched above concedes a lot to the supporter of grounding: in fact, he accepts DF.DEPENDENCE, and, therefore, also GROUND → DEP, which is a consequence of it. He can, however, point out that to acknowledge that claims of existential dependence are better analyzed by notions such as "ground" or "because" is tantamount to granting the notion of grounding *ideological* priority in respect of the notion of existential dependence. He can further stress that once the ideological match has been conceded to the supporter of grounding, there is still room for the view that existential dependence wears, so to say, the metaphysical trousers in structuring reality. The reason is that, according to the supporter of the third way, existential explanations, explanations of why a given thing exists, are existential not only in their *explanandum* but, at the most fundamental level, also as far as their *explanans* is concerned: the existence of things is, at bottom, always metaphysically explained by the bare existence of other things. The metaphysically fundamental truths are existential truths, and the "is so and so" of predication is always grounded in the "is" of existence.

Since this view does not concern the best way of defining existential dependence but the form of the metaphysically fundamental truths, it is not sufficient to counter it by putting forward a definition of existential dependence in terms of grounding. What is instead needed is a defense of the idea that existential explanations may have, also at the more fundamental level, predicative and not existential form as far as their *explanans* is concerned, and that the metaphysically fundamental truths may not be truths stating that a given thing exists. However, they can be, and most often are, truths to the effect that a given thing is a certain way.

The supporter of grounding, unless he is content with his ideological victory, should meet this challenge.*

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Dispositions and Token Identity

Niall J. Paterson

What is the relationship between dispositions and their categorical bases? Those who answer "identity" bear the burden of accounting for multiple realisation. According to orthodoxy, multiple realisability is a distinctively type-type phenomenon, and hence is unproblematic for token-token identifications. In this paper *plurally realised* dispositions are presented. It is argued that plural realisation is as problematic for the token-token identity theorist as standard type-type multiple realisation is for the type-type identity theorist. As an upshot, retreats to token identity in response to the problem of multiple realisability are shown to be dialectically inert, and alternative responses are corroborated.

1 The Identity Theory

What is the relationship between dispositions and categorical properties, for instance fragility and molecular structure, or belief and states of the brain? According to

> The Identity Theory. Each dispositional property is identical to some categorical property.[1]

What are dispositions, and the categorical properties they are to be identified with? Standardly, both categories are ostensively defined. Fragility, flammability, mass, charge, and the like—*these* are the dispositions. Categorical prop-

1 I have restricted the discussion to dispositional properties. The arguments that follow may, though, have force for those mental properties that are naturally construed in dispositional terms (i.e., belief and desire). They will not have force with respect to the identification of mental and physical *events* (Davidson 1970a, 1970b). Proponents of the identity theory either in the metaphysics of dispositions or the philosophy of mind (and in several cases both), in various forms, include Place (1956), Feigl, Scriven and Maxwell (1958), Smart (1959), Quine (1960, 1974), Lewis (1966), Armstrong (1968, 1977, 1973, 2005), Robb (1997, 2013), Heil (1999, 2003a, 2003b, 2011), Heil and Robb (2003), and Martin (2008).

erties include geometric properties, such as sphericity and squareness, and microstructural properties, such as being composed of H_2O or atomic lattices.[2]

How do dispositional and categorical properties differ? Whilst there does appear to be some difference between the two, that difference is notoriously elusive. In fact, reflection on usage reveals a range of ways the distinction has been drawn. Let me name a few.

The *first* is ontological. On this approach dispositional and categorical properties form distinct categories of existents (Ford 2012; Contessa 2019; Tugby 2020; Azzano 2021). Dispositions are properties with modally fixed causal profiles. In contrast, categorical properties have causal profiles that are modally variant (Bird 2016, sec.2.2). Some reserve the terms "power" and "quiddity" for this distinction which is, I think, a sensible approach. Importantly, on this view "categorical" simply means "non-dispositional". Evidently if *that* is what the identity theorist intends their theory is stillborn. But it seems clear they have no such distinction in mind. Even if all properties are powers, or if there are quiddities also, whether dispositions are identical to certain categorical properties remains an open question. To grant the identity theorist the fair trial they deserve, then, we must seek an alternative criterion.

The *second* is semantic. On this view the distinction lies not between properties but predicates (Quine 1974, 11; Armstrong 1999; Shoemaker 1980). More precisely, categorical and dispositional predicates differ in their intensions i.e., their conditions of application. In particular, the intensions of dispositional but *not* categorical concepts make essential reference to the ascribed property's effects. For example, the intension of "fragility" may be thought to make essential reference to breaking, smashing, or cracking. In contrast, whilst "being spherical" may be *associated* with certain effects, such as rolling or fitting in other shaped crevices and holes, the concept is not *defined* in terms of them. Put another way: only dispositional predicates are defined in terms of their manifestations.

The *third* is epistemological.[3] On this view dispositions differ from categorical properties in their apparent conditions of (non-inferential) perceptual

2 Some prefer to use the term "qualitative" as opposed to "categorical" (e.g., Martin 2008). If there is a difference between the use of these terms, I am unsure of it. If they prefer, friends of the qualitative/dispositional distinction may substitute talk of categoricity with talk of qualitativity throughout.

3 I take this primarily from Molnar (2003, 167). For similar views, though, see Ellis (2002, 28–70) and Mumford and Anjum (2011, 480).

knowability.[4] Whilst dispositional properties appear to be perceptually knowable only by witness of their manifestations, categorical properties appear to be so knowable throughout the persistence of their instantiation. In a sense, dispositions are the apparently "hidden" or "inconspicuous" properties of objects and contrast with their relatively "conspicuous" categorical cousins. The dual notions of "dispositional" and "categorical", on this view, denote the respective presence and absence of an apparent kind of *perceptual concealment*. Dispositions are the apparently perceptually inconspicuous persisting properties borne by objects. Categorical properties are unlike dispositions in that they do not appear to *lie latent*. It is this concealment, perhaps, that gives dispositions their distinctively "spooky" flavour and which moves us, as Goodman (1955) wrote, to bring them down to earth.[5]

For present purposes we needn't commit to either the semantic or the epistemological view. To investigate the identity theorist's dialectic we need only grant that some plausible distinction exists. And so long as we are concerned only with the internal dialectic of their theory, we must. Furthermore, if we focus on paradigmatic examples the exact nature of the distinction will not affect the arguments that follow. Hence, for the purposes of evaluating the retreat from type-type to token-token identity theories I'll assume there is some plausible distinction available to the identity theorist.

4 "Apparent" here is the operative word: if the identity theory is correct then the fragility of a glass merely *seems* to lie in wait. If the distinction were not one of mere appearance the identity theory would again be stillborn: there is no set of conditions under which a property is both knowable and not knowable. Traces of this view may be found in Goodman (1955, 40) who held that dispositional properties are "unobservable".

5 The epistemological conception is not without its difficulties. On the one hand, it may be held that perceptual knowledge is *always* the manifestation of a disposition, rendering the distinction inert. On the other, it may be argued that dispositions are perceptually knowable without witness of their manifestations. An athlete's strength, for example, may be known by perceiving the shape of their arms. Recognising this, Mumford and Anjum (2011, 480) offer a subtle account according to which dispositions are *originally* known by witness of their manifestations, and subsequently knowable via a blend of perceptual and inferential capacities.

But there is one reason, I think, that speaks in favour of the epistemological view. Whilst the epistemological criterion may explain why we have a semantic criterion, the converse fails. Whilst it is not because they are conceptually distinct that dispositions and categorical predicates differ epistemologically, plausibly it *is* the epistemological difference that gives rise to the semantic distinction. We have both dispositional and categorical predicates, perhaps, precisely because the properties are known via distinct perceptual modes.

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2 The Argument from Causal Roles

Why accept THE IDENTITY THEORY? One influential argument employs the

> CAUSAL IDENTITY PRINCIPLE. Two properties P, P' are the same property just in case P and P' bestow the same total causal role R to their bearers.

The CAUSAL IDENTITY PRINCIPLE is Eleatic in spirit: it is causal efficacy that gives a property its ontic bite. But the principle goes further. Causal efficacy is not merely the mark of the sparse, but properties are individuated by the causal roles they bestow. The precise nature of a property's causal profile is what makes it the very property that it is, and that which distinguishes it from all distinct properties.

What are causal roles, and what is it to bestow them? Whilst this question is hardly straightforward, for present purposes we may bruit a rough view. For a property P to bestow a causal role R to some bearer x is for x to bear R in virtue of instantiating P. Causal roles themselves we may think of as sets of possible causal contributions. A property P bestows a causal contribution at a case α just in case P is causally efficacious in α.[6] For instance, if a force F is exerted on a rubber band in α which as a result deforms reversibly then the band's elasticity bestows a causal contribution at α. On the precise nature of being causally efficacious we may remain neutral, saying only that P is efficacious with respect to some effect e just in case e occurs in virtue of the instantiation of P. A property's total causal role R is the set of all causal roles P bestows. According to this criterion, since the causal contributions bestowed by "being water" are the same as those bestowed by "being H_2O" the properties are identical. In contrast, since the causal contributions bestowed by "being flammable" and "being cube-shaped" differ the properties are distinct.

Inquiry informs us that when a dispositional property manifests, certain categorical properties bestow causal contributions to that manifestation. When a disposition has some categorical property that bestows a causal contribution to its manifestations, that property is said to be its *causal basis*. For instance, the causal basis of the band's elasticity is its possessing certain polymer chains

6 A *case* on the present sense is a modified version of the Lewisian (1979) notion of a centred world, i.e., a triple of some subject, at some time, at some world. Cases on the present understanding are triples but we allow for individuals more broadly construed. Thus we may consider some match, at some time, at some world. For discussion, see Vetter (2014).

which are causally efficacious in its reversely deforming. With such discoveries to hand, the causal identity principle may be employed in an argument to The Identity Theory.[7] The identification holds between dispositional properties and their categorical causal bases. Letting "D" denote dispositional properties and "C" categorical causal bases, it runs as follows:

(1) For all D, there is some R such that D bestows R.
(2) For all D, there exists some C such that if D bestows R, C bestows R.
(3) If D bestows R and C bestows R, then $D = C$.
(C) For all D, there exists some C such that $D = C$.

To clarify, consider elasticity. Elasticity bestows a causal contribution to its bearers: elastic objects deform reversibly under stress. But that very same causal contribution is bestowed by the property of having polymer chains. Thus, by the right-to-left of the Causal Identity Principle, elasticity is identical to the property of having polymer chains. Since similar arguments may be run for all dispositional properties, we may identify dispositions and their categorical causal bases.

3 Distinct Realisation

The first two premises are vulnerable to attack. It has been argued that 1 is false since dispositions are not causally efficacious (Prior, Pargetter and Jackson 1982; Rundle 1997). It has been argued that 2 is false since some have no categorical grounds.[8] In this paper, though, I wish to focus on a different, familiar worry: dispositions admit of *multiple realisation*, or to be more precise:

> Distinct Realisation. A property P is distinctly realised just in case there exist two distinct entities, x, y, such that Px and the causal basis for Px is C_1, and Py and the causal basis for Py is C_2, such that $C_1 \neq C_2$.

Consider flammability. In safety matches the causal basis of the property of being flammable is the property of having potassium chlorate, but in

7 See Mumford (1998). See Lewis (1966) and Peacocke (1979) for analogues in the philosophy of mind.

8 Molnar (2003) gives as an example the decay of the supermassive tau lepton which, as he correctly points out, are thought by our best physics to be both simple but capable of decay.

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other matches the flammability is based by distinct chemicals. In non-safety matches, for example, phosphorus sesquisulfide is typically used.[9] Similarly, an elastic metal may be elastic in virtue of its possessing not polymer chains but atomic lattices.

From the existence of distinct realisation, the transitivity of identity, and the right-to-left of the CAUSAL IDENTITY PRINCIPLE, a *reductio* that threatens THE IDENTITY THEORY may be run. It takes the following form:

(A1) If P bestows R and P' bestows R, then $P = P'$
(A2) D bestows R, and R is bestowed by C_1
(A3) D bestows R, and R is bestowed by C_2
(A4) $C_1 \neq C_2$
(1) $D = C_1$ *(A1, A2)*
(2) $D = C_2$ *(A1, A3)*
(3) $C_1 = C_2$ *(1, 2, transitivity of "=")*
(4) $(C_1 = C_2) \wedge (C_1 \neq C_2)$ *(A4, 3)*

Let's walk it through.[10] We start with the right-to-left of the CAUSAL IDENTITY PRINCIPLE (A1). Next we consider two objects that possess the same type of disposition but distinct categorical realisers: perhaps an elastic band and an elastic metal rod. The causal basis of elasticity in the rubber band is its possession of polymer chains (A2), but in the rod the basis is its possession of an atomic lattices (A3). Moreover, we know that the possession of an atomic lattice is a distinct property from the possession of polymer chains (A4). Since two properties are identical if they bestow the same causal role, it follows that elasticity is identical to the possession of polymer chains (1). But it *also* follows that elasticity is identical to the possession of atomic lattices (2). By the transitivity of identity, the possession of polymer chains is identical to the possession of atomic lattices (3). But *ex hypothesi* the possession of polymer chains and the possession of atomic lattices are non-identical properties. Absurdity is now revealed: we have generated a contradiction (4).[11]

9 These examples are simplified for the purpose of clarity.

10 See Prior, Pargetter and Jackson (1982) for the original in the case of dispositions. See Putnam (1967) for the original in the philosophy of mind.

11 It might be worried that this argument is question-begging insofar as A3 has been assumed to be true. It could reasonably be argued that the two categorical properties are distinct given that their overall causal roles do not perfectly match. If no such properties can be identified, of course, the multiple realisability argument is a non-starter. For the purposes of evaluating the token

4 The Token Retreat

Faced with distinct realisation, what's an identity theorist to do? At first blush it is not tempting to reject any assumption. But since most are unwilling to deny A1, and A4 can hardly be doubted, A2 and A3 are the usual suspects. But on what grounds are they to be denied? In what follows I consider two options.

The *first* is to deny the datum: there is no distinct realisation. This will usually be motivated by the claim that such dispositions are not sufficiently sparse. One may, for instance, hold that there are identities between dispositions and their categorical bases only at the fundamental level (Bird 2007). Alternatively, one may accept macro-level dispositions but, like Heil (2004, 246–247), argue that the appearance of distinct realisation derives from the fact that we have a "*range of similar properties all satisfying a single, moderately imprecise predicate*".[12] Word making is not world making: there are many kinds of fragility, each of which is *not* distinctly realised.[13]

Consider how this affects A2 and A3. Since there are two similar though distinct causal roles we should reformulate the assumptions as follows:

(A2*) D bestows R_1, and R_1 is bestowed by C_1
(A3*) D bestows R_2, and R_2 is bestowed by C_2

But inconsistencies lurk. For now D bestows two distinct causal roles—by the Causal Identity Principle $D \neq D$! Thus *really* they should be formalised as:

(A2**) D_1 bestows R_1, and R_1 is bestowed by C_1
(A3**) D_2 bestows R_2, and R_2 is bestowed by C_2

and now the purported distinct realisation has been explained away. The elasticity of rubber bands is identical to the property of having polymer chains, the elasticity of metal rods is identical to the property of having atomic lattices. But since $\text{elasticity}_1 \neq \text{elasticity}_2$, contradiction is avoided.

Now, although I am sympathetic to this approach, in what follows I will assume that distinct realisation is no phoney phenomenon. And that is for the

retreat, then, I'll be assuming such properties can be found. Thanks to an anonymous referee for pressing me on this point.

12 See also Heil (1999).

13 No doubt, how plausible this seems will depend upon one's broader ontological commitments. For excellent discussion on the competing notions of sparseness, see Schaffer (2004).

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purpose of evaluating the *second* option, which takes multiple realisation at face value. This is taking the *token identity retreat*. Here are two philosophers doing just that:

> The monist wants to say that there is just one attribute of x, or state that x is in, that makes it true of x that Dx and that Cx. This requirement can be satisfied even if the extensions of D and C do not coincide. Thus there need not be an identity of universals for monism. [E]ach instance of a disposition is identical to some instance of a categorical base [this] amounts to a token-token identity theory. [...] This means that the argument from variable realization is disarmed [...] the same move, to token-token identities, is available for dispositions in response to the variable realization argument.[14] (Mumford 1998, 159–161)

> But I did miss something important, though. If the mental is nothing but that which plays a certain *causal role* [...] then there is the possibility, which may even be an *empirical* possibility that the total causal role of tokens of the same mental type should be filled by tokens of significantly different physical types. Instead of type-type identity, one might have no more than a mental type correlated with an indefinite disjunction of physical types [but] every mental token is a purely physical token.[15] (Armstrong 1968, xv)

As formulated, the argument requires that for all dispositional properties D, there is some unique type of categorical property C such that for any D-instance Dx, some C-instance Cx is responsible for the causal contributions of Dx. What cases of multiple realisability show is that, for many dispositions at least, there is no such type of categorical property. Different objects may bear the same dispositional property, despite the manifestations occurring in virtue of categorical properties of distinct types.[16]

14 Note that Mumford uses the term "variable realization" here to mean what I have called distinct realisation, and not what I will go on to call variable realisation.

15 Note that while Armstrong is speaking of mental and physical properties here, he identifies (at least non-occurrent) mental states with some dispositional properties. See Armstrong (1968, 88; 1973, 14).

16 The token identity theory in the philosophy of mind seems to be entailed by what Kim (1992, 18) dubbed the "Causal Inheritance Principle":

In contrast, a token identity theory makes no such demand. All that is required is that *each token* of a dispositional property Dx is identical to a token Cx of *some* property C. C need not take a unique value. The rubber band's elasticity is identical to its polymer chains, the metal rod's elasticity is identical to its atomic lattice. But there is no requirement that the property of having atomic lattices is identical to the property of having polymer chains. Thus, whilst A2 and A3 are both false, it matters not.

But if only tokens are identified, what of the types? Several alternative treatments are available. According to the *first* there are no types, only resemblance classes of individuals. All properties are particular; property "types" are merely classes of resembling property tokens. Categorical and dispositional properties, on this view, are simply distinct classes of property tokens or "tropes" individuated by the differing respects in which their members resemble. And so multiple realisability causes no sweat: a metal rod's elasticity may be similar to the elasticities of all elastic objects, and its atomic lattices may be similar to all other atomic lattices, even if all of the former class do not resemble all of the latter. A token may resemble one class in certain respects, and another class in other respects, with no pain of contradiction.

Again, although I am sympathetic to this approach the present arguments assume a different conception of tokens and types. Not for the reason that the conception is implausible, but simply because it is not relevant to the arguments that follow. For on this view there is in a sense no *bona fide* multiple realisability: the argument is avoided by banning types from our ontology. I have no doubt that an ontology which rejects universals but embraces tropes provides an alternative route to mere token identification. Let me be clear: if that is one's motivation, so be it. If they feature in a fruitful metaphysics, let tropes bloom. The present gripe is not with endorsement of token identities *per se*; I am interested only in the adoption of token identity in response to the problem of distinct realisation.

According to the *second*, which we saw Armstrong endorse above, the types are disjunctive. Elasticity is identical to the property of having *either* atomic lattices *or* polymer chains *or* so on and so on; possibly *ad infinitum*. According

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It is important to bear in mind that this principle only concerns the causal powers of *individual instances of M*; it does not identify the causal powers of mental property *M in general* with the causal powers of some physical property *P*; such identification is precluded by the multiple physical realizability of *M*.

For an analogous move, see Robb (1997, 188).

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to the *third* the types are higher-order. Not "higher-order" as in "property of property", but rather "the property of bearing a property of such-and-such sort". For instance, being fragile may be thought of as having a property that bestows a certain subset of a causal role.

With the disjunctive and higher-order views, though, a natural question may arise: wherein does motivation to endorse token identity lie? Answer: such views are notoriously difficult to square with the causal individuation of properties. Both higher-order and disjunctive properties appear entirely sterile: their causal powers seem preempted or excluded by the categorical properties that base them. And by the Eleatic principle, sterile properties are properties only in an abundant sense.

But by identifying tokens—so the story goes—dispositions appear powerful again.[17] If only dispositional types are shown to be sterile, what of it? It is property tokens that are standardly taken to be causally efficacious in any case (Campbell 1990). With identities maintained between token dispositions and their token categorical bases, no exclusion or preemption is achieved. And thus against the charge of inefficacy the identity theorist is in the clear.[18]

But the CAUSAL IDENTITY PRINCIPLE applies to types, not tokens. And the token retreat identifies tokens, not types. So how is identification to be achieved? Whilst properties are individuated in terms of their causal roles, property instances are typically not. There are, rather, two competing views on their individuation. According to the first property instances are individuated *spatiotemporally*. For instance, Schaffer (2001) argues that two property instances Px, $P'y$ are the same property instance just in case Px and $P'y$ are compresent and maximally resemble. Alternatively, tokens may be taken to admit of brute individuation.

This debate, though, largely takes place amongst those who embrace tropes, on whom there is an onus to provide individuation. With that in mind, there seems no reason why the friend of universals cannot maintain that property instances admit of causal individuation. Property instances do bestow causal roles: token causal roles. A token causal role is obtained by restriction. We

17 See Shoemaker (2013, 46). Strictly speaking, Shoemaker endorses a variant on the identity theory: the *subset* theory, according to which a dispositional property is identical to some part of its categorical base. For the original exposition of the subset theory, see Wilson (2011). The subset theory will be unaffected by the arguments that follow and is thereby corroborated by them.

18 Interestingly, Mellor (2000) embraces the possibility of disjunctive properties being causally efficacious, though to achieve that result he explicitly rejects the existence of dispositional properties, and thus the identification between them and their categorical bases.

look not at the set of cases of causal contributions of the property across all instantiations, but only given some particular instantiation. For example, we might look at the set of cases of causal contributions *this heat* from *this very stove* might confer.

But whilst appeal to causal roles may be *necessary* to individuate property instances it cannot be *sufficient*. For we must exclude scattered instances, such as a property instance of "red" belonging to both a ruby and a rose, and distinguish distinct property instances borne by the same object at distinct times, such as the distinct greens of a chameleon's skin before and after changing to a vibrant orange. None of this is troublesome. We must simply provide two supplements. The first is that the instances are *coinstantiated* (i.e., borne by the same object), the second that they are *concurrent* (i.e., instantiated at the same time). Putting all of this together, we have the following criterion of property instance individuation:

> Token Causal Roles. Two property instances Px, $P'y$, are the same property instance just in case $x = y$, Px is concurrent with $P'y$, and Px and $P'y$ bestow the same token causal role R.

With that to hand, an argument to the token identity theory can be run. Here it is:

(1) For all Dx, Dx bestows some token causal role R.
(2) For all Dx there exists some Cx, such that Cx is concurrent with Dx and Cx bestows R.
(3) If Dx is concurrent with Cx and both Cx and Dx bestow R, then $Dx = Cx$.
(C) For all Dx, there exists some Cx, such that $Dx = Cx$.

As before, the first two premises are vulnerable to attack. It has been argued that both are false, as property instances are not causally efficacious (Steward 1997). And if some dispositions have no categorical grounds, the second premise faces the same threat. But again, permit me to set these worries to one side. In what remains of this paper I will argue that the token retreat is ill-motivated. And that is because problematic multiple realisation is *not* a distinctively type-type phenomenon. There is problematic multiple realisation at the token level. The upshot is: if one is worried about multiple realisation, retreat to the token level is dialectically inert.

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5 Plural Realisation

Some dispositional properties are not based by a unique token of any causally efficacious property. I call these *plurally realised* dispositions. Plural realisation should be contrasted with

> VARIABLE REALISATION. A property P is variably realised just in case there exists an entity x, such that Px at t_1 and t_2, and the causal basis for Px at t_1 is C_1, but the causal basis for Px at t_2 is C_2, such that $C_1 \neq C_2$.

Variably realised properties are well discussed.[19] Pereboom (2002) considers the realisation of a statue by distinct lumps of clay across time, whilst Hurley and Noë (2003) consider cases of neural plasticity where mental properties are based by changing neurological complexes. Similar cases are constructible for patently dispositional properties. Consider a vial containing the poisonous chemical DEATH_1. Now let DEATH_1 decompose into DEATH_2 from t_1 to t_2. In such a case, the deadly disposition is variably realised across time.

How troublesome is variable realisation for one who takes the token retreat? Quite, though non-fatal. The purported worry is that the persistence conditions of the properties come apart from those of the bases. But time-indexing the identity relation is the standard counter-move.[20] Property tokens exist only at one moment, and so their identities hold only at one instant. DEATH_1 is identical to the poisonousness at t_1, and DEATH_2 to the poisonousness at t_2, but x's poisonousness at $t_1 \neq x$'s poisonousness at t_2. And without token persistence, no transitivity can be exploited. The upshot is: arguments from variable realisation lose their bite.

Not all will agree.[21] But even if one accepts property instance persistence, retreaters to token identity are still liable to balk. That properties maintain their identity through time does not rule out that in cases of variable realisation one property is lost, another gained. Consider a pill x composed of both some benign mixture and DEATH_1. Now remove the DEATH_1—x will lose its token disposition. Now consider x with the DEATH_1 removed and add to it DEATH_2. A token disposition (assuming no reactions take place) will be gained: it will become poisonous. Now put the cases together: let DEATH_1 and DEATH_2

19 See Horgan (1993), Endicott (1993), Pereboom (2002).
20 See Heil (2011, 44), Campbell (1990, 140), and Wilson (2011, 141).
21 See Shoemaker (2007, 3fn3).

be exchanged. Why should matters change? One token disposition should be lost, another gained. The identity theorist will maintain that no disposition outlasts the persistence of its base. Even granted that tokens persist, in cases of variable realisation it may be argued that the persistence conditions of disposition and base do not come apart.

But there are cases that cannot be so readily dispensed with. And that is because such cases involve *intra*-object multiple realisation accompanied by *no* change in properties. I called this

> Plural Realisation. A property P is plurally realised just in case there exists an entity x, such that Px, and Px has two causal bases, C_1, C_2, such that $C_1 \neq C_2$.[22]

Plurally realised properties are ones which have more than one causal basis in the same object at the same time. For clarity, we should make a (non-exclusive) distinction between properties that are *wholly* plurally based, and those that are *partially* plurally based. Consider a lighter's disposition to ignite once sparked. This disposition is based by both the fuel, the flint, and the sparker all at once. But each of these is individually insufficient to base the disposition. It is therefore partially but *not* wholly plurally based. If the disposition is to manifest, the three bases must act *holus bolus*.

A property is wholly plurally realised, in contrast, when it has two or more distinct sufficient causal bases. Consider Mackie:

> Even in the same material, the same disposition may have more than one ground. A piece of cloth may absorb water in two ways, by the water being taken into the individual fibres and by its being held in spaces between the fibres: its absorbency then has two different bases, the molecular structure of the fibres and the larger-scale structure in which those fibres are spun and woven. (1973, 148)

For another example, cigarette smoke has the disposition to damage the lungs once inhaled, but that disposition is based distinctly by a wide variety of chemicals present in the smoke's composition. In fact, cases are constructible with the following straightforward recipe. First, take two cases of *distinct*

22 I have restricted attention to doubly based dispositions, though evidently we could consider dispositions with any finite number of bases.

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realisation, where the properties are capable of being coinstantiated. Perhaps a poisonous vial y of DEATH_1, and a distinct poisonous vial z of DEATH_2. Next, simply coinstantiate the properties, as in:

> OVERKILL. A vial of poison x contains two deadly chemicals DEATH_1 and DEATH_2. Because of this x has the disposition to kill when ingested.

And *voilá*! A case of token multiple realisation has been constructed. In OVERKILL the mixture's poisonousness is based twice-over in the same object. As such the disposition is multiply realised at the token level. And, as I will now show, plurally realised dispositions with distinct whole bases, such as the vial's poisonousness in OVERKILL, are as problematic for the token identity theorist as distinctly realised dispositions are for the type identity theorist.

The argument now begins. From the existence of plural realisation, the right-to-left of TOKEN CAUSAL ROLES, and the transitivity of identity, a formally analogous *reductio* may be run. It takes the following form:

(A5) If Px and $P'x$ are concurrent and bestow the same token causal role R, then $Px = P'x$
(A6) Dx and C_1x are concurrent and bestow R
(A7) Dx and C_2x are concurrent and bestow R
(A8) $C_1x \neq C_2x$
(5) $Dx = C_1x$ (*A5, A6*)
(6) $Dx = C_2x$ (*A5, A7*)
(7) $C_1x = C_2x$ (*5, 6, transitivity of "="*)
(8) $(C_1x = C_2x) \wedge (C_1x \neq C_2x)$ (*A8, 7*)

Again we'll walk it through. We start with the right-to-left of TOKEN CAUSAL ROLES (A5). Then we note that x's poisonousness is concurrent with x's being composed of DEATH_1, and both occupy the same token causal role (A6). Next we note that x's poisonousness is concurrent with x's being composed of DEATH_2, and both occupy the same token causal role (A7). Finally, we know that $\text{DEATH}_1 \neq \text{DEATH}_2$ (A8). It follows that x's poisonousness = DEATH_1 (5). But it also follows that x's poisonousness = DEATH_2 (6). By the transitivity of identity, $\text{DEATH}_1 = \text{DEATH}_2$ (7). Absurdity is again revealed: we have generated a contradiction (8).

Crucially, the contradiction is derived from premises that involve token, not type identifications.

6 Responses and Replies

I have argued that the token retreat offers no solace from the problem of multiple realisability. How might the token identity theorist respond? In what remains I consider three responses. My strategy for dealing with them is as follows. I will argue that each faces an unpalatable disjunction: either (1) that response can be shown to fail, or (2) is available at the level of types.[23] The upshot of (1) is that multiple realisation has not been avoided. The upshot of (2) is that the token retreat is robbed of its dialectical force.

The *first*, and no doubt the most natural response, is that the basis in OVERKILL is complex. It may be thought, for example, that the disposition is identical to the conjunctional property (DEATH_1 & DEATH_2).[24] Why so? One reason would be that both DEATH_1 and DEATH_2 share the dirty work when the poisonousness manifests. They *together* occupy the relevant token causal role. They are causally efficacious both at once.

This line of thought is convincing, but misleadingly so. It seems to have force due to the mistaken assumption that the total causal role bestowed by the disposition must be identical to that bestowed by the conjunction of the chemicals. The assumption is false: there are some plurally realised dispositions where the conjunction of that disposition's bases bears a distinct token causal role from the disposition itself.

Consider what we may call *disjunctively realised* dispositions. A disposition Dx is disjunctively realised just in case it has two bases C_1x, C_2x, such that the manifestations of Dx in some cases occur in virtue of C_1x, and not C_2x, in other cases in virtue of C_2x and not C_1x, and in all other cases (if any remain) by $(C_1x \,\&\, C_2x)$. Disjunctive realisation is possible because distinct bases of the same dispositional property may differ in their conditions of *masking*, i.e., the conditions under which the basis is rendered inefficacious.[25]

For example, suppose that some humans are perfectly resistant to DEATH_1 but not DEATH_2, whilst others are perfectly resistant to DEATH_2 but not DEATH_1. Now consider:

23 The disjunction here is inclusive.

24 For clarity I'll be using "&" to denote the relevant property-theoretic notion of conjunction, whatever it may be, to distinguish it from the familiar, truth-functional notion (denoted by "∧").

25 See Bird (2007, 39). For more on masking, see Johnston (1992), Bird (1998), Molnar (2003), and Martin (2008).

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> RESISTANCE-1. Jones ingests x. Jones is perfectly resistant to DEATH_1. Unfortunately Jones is not at all resistant to DEATH_2, and thus as a result of ingesting x Jones dies.

> RESISTANCE-2. Smith ingests x. Smith is perfectly resistant to DEATH_2. Unfortunately, Smith is not at all resistant to DEATH_1, and thus as a result of ingesting x Smith dies.

Suppose, as our responder would have us believe, that in RESISTANCE-1 and RESISTANCE-2 the vial's poisonousness is identical to the conjunctional property (DEATH_1 & DEATH_2). From this we may show what we know to be false: that both chemicals are causally efficacious in the death of Smith and the death of Jones.

The conclusion is a consequence of two principles. The first is a straightforward consequence of TOKEN CAUSAL ROLES. I call this the

> IDENTITY OF CAUSES. If Px bestows a causal contribution c in α, and $Px = P'x$, then $P'x$ bestows c in α.

The principle follows because token causal roles are sets of possible causal contributions. If two properties share causal roles they must share all of their possible causal contributions. So if a property bestows a causal contribution c, and is identical to some other property, that other property must also bestow c.

The second is not a consequence of TOKEN CAUSAL ROLES but is independently plausible. I call this

> CONJUNCTIONAL CAUSES. If $(Px \,\&\, P'x)$ bestows a causal contribution c in α, then Px bestows part of c in α and $P'x$ bestows part of c in α.

This principle simply states that whenever a conjunctional property bestows a causal contribution c both conjuncts bestow some part of c. My reasons for accepting TOKEN CAUSAL ROLES are broadly Eleatic. We should accept that a conjunctional property bestowed a contribution only if both conjuncts had some causal stake in the game. Consider an object o with two properties: o is round and red. Now suppose the conjunction of the two properties is causally efficacious in some case α, perhaps by contributing to the opening of a door that has been designed to open only in the presence of round and red objects.

Now in such a case we should say, given that the conjunctional property bestows a causal contribution, each of the conjuncts bestows some part of that causal contribution. In contrast, now suppose the door is primed only to open in the presence of red objects, no matter their shape. If the roundness makes no causal contribution to its opening in α, then the conjunction of its roundness and redness *does not* bestow a causal contribution in α. The causal contribution is bestowed merely from one conjunct.

We are now in a position to reject the response. For suppose, as the respondent has claimed, that the vial's poisonousness is identical to the conjunctional property (DEATH_1 & DEATH_2). Since the vial's poisonousness is causally efficacious in both cases, by Conjunctional Causes it follows that both DEATH_1 bestows a causal contribution to the death of Jones, and DEATH_2 bestows a causal contribution to the death of Smith. But *ex hypothesi* Jones is perfectly resistant to DEATH_1, and Smith to DEATH_2, thus the chemicals *do not* bestow the relevant causal contributions. We have proven what we know to be false. The reply must be denied.[26]

Conjunctional won't work; might disjunctional do the trick? Not obviously, for even setting aside the shameful status of disjunctive properties, the problem of causal exclusion re-arises.[27] Just as with disjunctive types disjunctive tokens have nothing to contribute: their contributions are given by their disjuncts alone. And without causal efficacy no identification can be achieved, at least not by appeal to sameness of causal role.

And worse still, once disjunctive tokens have been admitted motivation to move to the token level is lost. For if one is prepared to accept disjunctive tokens, why not disjunctive types? If one is content to retreat to the disjunctive in the face of *plural* realisation, why not in the face of *distinct* realisation? Simply put: to maintain disjunctive tokens whilst denying disjunctive types creates a dissonance entirely unwarranted by the presence of multiple realisability.

The *second* response is that we should say that in Overkill there are two or more distinct tokens of the same dispositional type. This results in a

26 Could it be argued that the dispositions in such cases are merely borne by the mixture's parts, rather than the mixture taken as a whole? Possibly, though this will be more difficult to argue in other cases. Consider a disjunctively realised belief. It would be strange to deny that the belief is a property of an agent taken as a whole and to attribute instead the belief to parts of the agent. Thanks to an anonymous reviewer for raising this insightful objection.

27 See Putnam (1967), Armstrong (1978), Lewis (1986), Kim (1992), Shoemaker (2007) and Audi (2013). Heil (2003a, 40) goes so far as to say that "disjunctive property" is oxymoronic. For a defence of the disjunctive, though, see Skiles (2016).

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commitment to what Armstrong (1978, 86) has called *piling*.[28] Two property instances are piled just in case they (1) are of the same type and (2) are compresent (i.e., instantiated in the same object at the same time). Piling is standardly taken to be a serious bullet to bite. Those who embrace it do so tentatively, in accord only with the Eleatic principle.

Fortunately enough we may dodge the issue entirely. Consider again the vial containing the deadly chemicals. Could the vial's deadliness be piled? Not if the piled dispositions are identified with the distinct chemicals. This is due to what we may call the

> RELATA OF IDENTICALS. If $P = P'$, then P stands in some relation R iff. P' stands in R.

Since piling is a relation amongst properties, if there are two piled dispositions of the same type, one based by DEATH_1 and the other by DEATH_2, it should follow that DEATH_1 and DEATH_2 are piled. But the chemicals are *not* piled—they are of distinct types. By *modus tollens*, then, it cannot be said that the dispositions are of the same type.

The *third* response is that disjunctive realisation involves multiple property instances of *distinct* types. Perhaps in OVERKILL the mixture has two distinct dispositions (one identical to DEATH_1, the other to DEATH_2) or even three (the third being identical to the conjunction of the two). In response I offer an argument designed to show that there are at least some disjunctively realising bases that genuinely do base the same disposition. It runs as follows.

The first premise is that dispositions are wholly individuated by their manifestations.[29] Flammability is distinct from elasticity because flammability makes objects *burn* whilst elasticity makes objects *reversibly deform*.

The second premise is that plurally realised properties may bear bases that differ with respect to their masking conditions, but not with respect to their manifestations. This is possible because two distinct properties may share a subset of their causal role relevant to the manifestation of some disposition, whilst bearing a distinct subset relevant to their masking.

Perhaps the most vivid examples may be found not in deadly chemicals, but in deadly bacteria. E. coli (*Escherichia coli*) has a number of pathogenic strains including the shiga-toxin producing O104:H4. Like other co-evolved bacteria, E. coli strains change their properties of resistance over time—and thus the

28 See also Schaffer (2004)

29 For defence, see Molnar (2003), Lowe (2011), Mumford and Anjum (2011), and Vetter (2014).

conditions under which their deadly disposition is masked. This may be done in several distinct ways: bacteria may develop the capacity to "pump out" or neutralise antibiotics, or they may produce subtle changes in their binding sites. Consider now a vial containing several shiga-toxin producing strains that base a deadly disposition. The *manifestations* of the various strains may be identical (i.e., perfectly similar)—and thus by the criterion of manifestation individuation the vial has only one deadly disposition. Nevertheless, the masking conditions of the individual strains may vary.

The conclusion is that some distinct disjunctively realisable properties base the very same dispositional property.

I anticipate one final worry. Perhaps one will hold that dispositions are individuated in part by their stimulus conditions, and are thus of a finer grain (Martin 2008, 89–91). This would make the first premise false. In which case there will be two tokens of distinct types even in the case of E. coli. But to this worry I say: now you have liberalised your ontology with properties of a finer grain *why take the token retreat at all*? The dissonance faced by the proponent of disjunctive tokens re-emerges: if one accepts distinct properties *intra*-object, why not *inter*-object also? If one chooses to fine-grain dispositional property instances to avoid *plural* realisation, why not fine-grain dispositional types to avoid *distinct* realisation? If the properties are of a finer grain, and hence distinct, there is no need to move from type to token identifications, since the response holds *mutatis mutandis* for the proponent of the type identity theory. To maintain the retreat one must offer an independent reason not to fine-grain dispositional types. The point I am making is not that such reasons cannot be given. My point is that if there are reasons, multiple realisation is not amongst them.

In conclusion, I have argued that the token retreat offers no solace from the problem of multiple realisability. Whilst it may avoid *distinct* realisation, it cannot avoid *plural* realisation. Whilst there are responses to the latter that are not available to the former, each of those responses fails. The upshot is: there is no relevant difference between these types of multiple realisation *vis-à-vis* the identification of dispositions and their categorical bases. And as such, no ground is made by moving from the type to the token level.*

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In Defence of the Content-Priority View of Emotion

Jean Moritz Müller

A prominent version of emotional cognitivism has it that emotions are preceded by awareness of value. Jonathan Mitchell (2019) has recently attacked this view (which he calls the content-priority view) on the ground that extant suggestions for the relevant type of pre-emotional evaluative awareness are all problematic. Unless these problems can be overcome, he argues, the view does not represent a plausible competitor to rivalling cognitivist views. As Mitchell supposes, the content-priority view is not mandatory since its core motivations can be accommodated by competing views. I argue that Mitchell misconceives the view's principal motivation. Properly reconstructed, this motivation provides a strong case for its indispensability to an adequate cognitivist treatment of emotion. Moreover, Mitchell's survey of candidates for pre-emotional value awareness can be seen to rest on contestable assumptions.

According to a classical version of emotional cognitivism, emotions are preceded by a form of value awareness (e.g., Lyons 1980, chap. 3; DeSousa 1987, 122, 133; Kenny 2003, 143ff; Mulligan 2010, 485ff; Müller 2017, 288ff; 2019, chap. 4). For example, on this view, fear of an impending recession is preceded by awareness of this prospect as dangerous, anger towards someone by awareness of her as in some way provocative or offensive.

In a recent paper, Mitchell (2019) has challenged this account, which he calls the "content-priority view" (I will follow him in using this label). Mitchell takes issue with the view's commitment to a pre-emotional state with evaluative content.[1] According to him, the various candidates that have been proposed for this state are all problematic. Mitchell thus claims that there is at present no persuasive formulation of the view. Unless the problems he raises can be overcome, he proposes, the view does not represent a plausible

1 Mitchell's criticism considerably elaborates an objection to this view raised previously by Deonna and Teroni (2012, 93ff). Cf. also Teroni (2007, 407).

competitor to rivalling cognitivist views. As he argues, the content-priority view is by no means mandatory since the main considerations in support of it can be accommodated by its rivals, too.

Mitchell's paper is a significant contribution to an ongoing debate between opposing strands of emotional cognitivism and extends an important invitation to proponents of the content-priority view to clarify their core commitments. As I argue in this discussion, I do not think that Mitchell's case against the view is persuasive, though. Most importantly, Mitchell misconstrues the principal motivation for the view. Properly reconstructed, this motivation provides a strong case for the indispensability of the view to an adequate cognitivist treatment of emotion. That is, it shows the view to be entailed by any account that recognizes emotions as directed towards objects.

Moreover, Mitchell's critical survey of possible candidates for pre-emotional evaluative states rests on contestable premises. More specifically, his chief objection to what is often considered the most promising candidate depends on a questionable phenomenological constraint. I should stress, though, that, in contrast to Mitchell, I do not think that a successful case for the view must include a substantive account of pre-emotional evaluations. If the content-priority view alone can account for the intentionality of emotion, this itself makes it a rather strong contender among current cognitivist accounts.

In what follows, I develop these points. Before I do this, though, I shall explicate the view and note one respect in which Mitchell's own explication can seem misleading (section 1). I then consider Mitchell's discussion of the view's main motivation (section 2) and argue that, properly reconstructed, this motivation provides strong grounds to consider it indispensable (section 3). Finally, I turn to his considerations on specific candidates for pre-emotional value awareness (section 4).

1 The Content-Priority View and the Evaluative Content View

According to proponents of the content-priority view, emotions are preceded by awareness of value. This construal of the temporal relation between emotion and value awareness is a consequence of a specific conception of the connection between emotion and value properties themselves: emotions are conceived as responses to value properties of their intentional object. On the relevant use of "response", for someone's emotion to be a response to x is

for her emotion to be felt in light or on occasion of x or, equivalently, for x to be a reason for which she feels it.[2] Since reasons for which someone feels, thinks or acts some way (motivating reasons) are made psychologically available by mental states that are temporally prior to and distinct from the attitude or action they motivate, emotional responses to value are preceded by distinct states of value awareness. Compare: If Mary believes that it will rain for the reason that the sky is grey, the perception which makes this fact psychologically available as a reason for her belief is temporally prior to and distinct from this belief.

To be precise about how the link between emotions and values is conceived on this view, it is worth making explicit that the relevant use of "response" is one of at least two familiar uses. Consider the following examples:

> Maria moved her queen in response to Peter's moving his pawn.
>
> The court's sentence was a response to his offences.
>
> Jenny responded with pride to her son's achievements.

In each of these cases, "response" (or one of its grammatical variants) serves to ascribe a reason for which a certain action or attitude is performed or held. Accordingly, there is a cognitive requirement for the reason to have registered with its subject prior to her acting (feeling) for this reason.[3] On a different use, which has its home in scientific contexts, the term serves to ascribe a mere cause, rather than a motivating reason. Consider, for example, the statements:

2 On this use of "response", cf. Bittner (2001, chap. 4) and Müller (2019, 63f; 2021b).

3 This use of "response" comes with a view of motivating reasons as being (typically) non-psychological facts or aspects of situations. I take it to be common ground that, on this view, in order to act or feel in light of some aspect of a situation, one must have epistemic access to it. Cf. e.g., Bittner (2001, 71), Hornsby (2008, 251). There are other accounts of motivating reasons, which do not require them to be apprehended prior to the action or attitude they motivate. Thus, on traditional, psychologistic views, such as e.g., the view that motivating reasons for action are belief/desire pairs, there is no constraint for one to be aware of one's reasons prior to acting. However, psychologism has come under considerable pressure. For example, it is not clear that any sense can be made of the idea that we act *in light of* our beliefs and desires (cf. e.g., Dancy 2000, chaps. 5, 6). Also, when it comes to emotion, there are specific considerations in favour of non-psychologism. As I argue in section 2, there is an intimate link between the intentionality and motivating reasons of an emotion. What I am afraid of, for instance, seems also to be a reason for which I am afraid. This connection is lost if we think of reasons as psychological entities. For considerations on these lines in favour of non-psychologism about reasons for emotion, cf. also Dietz (2018), Littlejohn (2018, 533f, 536).

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Sensory pain is a response to tissue damage.

Sunburn is the skin's response to exposure to sunlight.

One might, in principle, formulate the view that emotions are responses to value in accordance with this second use of "response". This formulation does not entail that emotions are preceded by value awareness since causes are not subject to the cognitive requirement on motivating reasons: one's skin burns in response to high exposure to sunlight irrespective of whether one is aware of the sunlight. However, this is not how proponents of the content-priority view think of emotions. Their view is motivated by considerations on the ascription of motivating reasons to emotion.[4] (I elaborate on the view's principal motivation in the next section.)

Since the evaluative properties to which, on the content-priority view, emotions respond feature in the intentional content of a state distinct from the emotion, the view can seem unorthodox. That is, it can seem to contrast with the popular view that emotions themselves have evaluative content.[5] According to Mitchell's (2019, 772) explication, it in fact involves the explicit denial of this view and thus qualifies as its rival.

It seems to me that this explication has to be treated with care, though. This is because proponents of the content-priority view recognize emotions as directed at their objects *under a specific evaluative aspect* (cf. Lyons 1980, 77ff, 99ff; DeSousa 1987, 122; Kenny 2003, 143ff; Müller 2017, 288ff; 2019, 69ff).[6] As they suppose, to fear something is to fear it *as a danger*, to be angry with someone is to be angry with her *qua offensive*. According to an influential account of intentionality, this is precisely to accord evaluative content to emotions. For a state to have intentional content is, on this account, for it to be directed at something *under a specific aspect* (which is commonly called, following Searle 1992, 131, its "aspectual shape").

4 One might consider as exceptions theorists who subscribe to a "causal-evaluative" account of emotion. Cf. esp. Lyons (1980, chap. 3). Note, though, that Lyons thinks of emotions as caused by evaluative judgments, not by values per se. A plausible way of understanding why Lyons takes values to be mentally represented prior to emotion is because the link between emotions and value seems very different from responsiveness in the mere causal sense. This difference can be made more precise by conceiving of them as responses in the reason-ascribing sense.

5 On the dominant version of this view, emotions are perceptual experiences of value (e.g., Tappolet 2016).

6 Mitchell is explicitly concerned with the view as advocated by these authors.

The fact that, on the content-priority view, evaluative aspects are supplied by a distinct state should here not be taken to conflict with the claim that they qualify the intentional content *of the emotion* rather than exclusively of the preceding state. While, arguably, in the case of some intentional states, the aspect under which those states are directed at something is supplied by that very state, there is no presumption that this has to be so.[7] That an intentional state is directed at something under a certain aspect does not imply that it is this same state which presents that thing under this aspect. Indeed, it seems if the view required this, it would end up mischaracterizing paradigm cases of intentional attitudes as lacking content. On a common conception of belief and desire, what one believes or desires is believed or desired under a certain aspect which is supplied by another, preceding cognitive state. Consider my desire that the government acquire more covid vaccine. In desiring this, I desire something (a certain prospect) presented in a specific way, which is specified by the proposition *that the government acquire more covid vaccine*. I may not desire that same thing as characterized by the proposition *that the government acquire more tozinameran*. Here, the relevant aspectual shape is not made available by the desire itself, but by the state of entertaining or grasping this proposition, which is a necessary precondition of having this desire.[8] (The same goes mutatis mutandis for doxastic attitudes.) As my later considerations on the evaluative aspect qualifying objects of emotion suggest

7 A possible candidate for an intentional state whose aspectual shape is supplied by the state itself is perceptual experience. As Searle (1992, 157) characterizes visual experience, an experience of a car has an aspectual shape which is provided by certain features presented by this very experience (e.g., shape, colour, movement). This example may seem controversial, though, not least since it is a matter of debate whether perceptual experience has intentional content in the first place. Note, also, that I do not think there is any problem with a reading of Searle's view of intentionality as allowing that some mental states are self-standing intentional states while others depend for their intentional features on further intentional states. This reading is certainly congenial to its phenomenological predecessors. Cf. esp. Brentano's (1973, chaps. 7, 8) distinction between presentations and acts founded on presentation as well as Husserl's (2001, V) distinction between objectifying and non-objectifying acts. Further support for this point is provided by Naar in his (2020, 25) as well as in (2022).

8 One might think there is a further, evaluative dimension to the aspectual shape of desire. On a familiar Aristotelian picture, desire is directed at some prospect *under the guise of the good*. On this account, desire is similar to emotion as conceived on the content-priority view. One might want to resist this account of evaluative content if one sees a tension here with the fact that evaluative aspects are plausibly supplied by the respective type of attitude (desire, fear, anger etc.). In this connection, cf. Deonna and Teroni (2012, chap. 7). Cf. also Müller (2017). It is worth stressing, though, that this response is not available to Mitchell since it tells just as much against the rivalling view he favours, on which emotions are forms of value awareness. Cf. also Mitchell

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(section 2), the fact that the aspectual shapes of some intentional states are supplied by distinct states might plausibly be due to the specific way in which these states are directed.

If we suppose, then, that there is a plausible sense in which emotions have evaluative content on the content-priority view, Mitchell's way of contrasting the content-priority view with rivalling cognitivist accounts thus can seem a little puzzling. For Mitchell's explication to be intelligible as pointing to a genuine disagreement between cognitivists, it is therefore important to note that, for him, the attribution of evaluative content to emotion entails that emotions constitute awareness of their objects as having an evaluative property (cf. 2019, 771). This understanding, too, recognizes emotional objects as presented under evaluative aspects. But in conceiving of emotions as forms of awareness of value, it is committed to a different conception of the relation between emotion and value awareness than the content-priority view. While, according to the latter, we are already aware of the value of an emotion's object prior to the emotion, the former takes this awareness to be supplied by the emotion itself.

Admittedly, from what Mitchell writes, it is not entirely transparent to me why he supposes that the attribution of evaluative content to an emotion entails that it constitutes a form of value awareness. Perhaps Mitchell implicitly assumes that aspectual shapes are always supplied by the very state to which they are ascribed. Given this restriction, for an emotion to have evaluative content implies that the emotion itself (rather than some prior state) presents its object as (dis)valuable. It then seems that one comes to be aware of the value of an emotion's object only in having the emotion. If what I just said about aspectual shapes is correct, this requirement is by no means trivial, though, and there are reasons to resist it. Whether or not Mitchell is ultimately making this assumption, his understanding of evaluative content, in any case, strikes me as somewhat restrictive in that it precludes its attribution to states other than forms of value awareness. Although this, in turn, has certain ramifications for how we are to chart the territory of extant cognitivist views, I shall here not quibble further over Mitchell's take on emotional content, but instead focus on whether his attack on the content-priority view, as explicated here, is successful.

(2022) for a recent criticism of the idea that emotional attitudes do not contribute to emotional content.

2 The Intelligibility of Emotion

The content-priority view is motivated by the thought that evaluative properties make emotions intelligible.[9] More specifically, its motivating thought is that something intelligibly qualifies as the intentional object of an emotion only under a specific evaluative aspect. Properly spelled out, this is taken to imply that emotions are responses to value.

In discussing the motivations of the content-priority view, Mitchell clearly pays heed to considerations on the intelligibility of emotion. He explicitly states that the view aims to account for the observation that emotions "make sense" as responses to specific values (2019, 774). However, Mitchell does not get the relevant notion of intelligibility into focus.

One problem is that Mitchell's phrasing of this observation is ambiguous. On one reading, to say that an emotion makes sense is to claim that it is appropriate or justified. On this reading, Mary's fear of a meandering dog makes sense as a response to the dog's dangerousness insofar as what she responds to is a reason for her to be afraid (a normative reason for fear). On a different reading, to say this is to affirm the very cogency of its ascription to someone. On this further reading, Mary's fear of the dog makes sense as a response to danger insofar we can coherently conceive of her as being afraid of it given that her fear is motivated by danger. Unfortunately, Mitchell does not recognize the content-priority view as concerned specifically with the latter notion of intelligibility. Yet, as proponents of the view have variously stressed, they are interested in basic conceptual constraints on the proper ascription of emotions. As they argue, we can coherently conceive of someone as having a certain emotion directed at x only if we presume that her emotion is directed at x in response to the (real or apparent) value of x (cf. Lyons 1980, 78, 99ff; DeSousa 1987, 122, 133; Kenny 2003, 143ff, 51–52; Müller 2017, 288ff).[10]

A further problem is that Mitchell takes it that intelligibility in the primarily relevant sense is first-personal: it is about what makes sense *for the subject of the emotion* to feel. First-person intelligibility is moreover qualified by Mitchell as "experienced intelligibility", that is, a kind of intelligibility that is typically, though not always, conferred by emotional experiences themselves and does not rely on accompanying mental states (2019, 792). This is mislead-

9 While it has also been defended on phenomenological grounds, this is its main motivation. Cf. Lyons (1980, 78, 99ff), DeSousa (1987, 122, 133), Kenny (2003, 143ff), Müller (2017, 288ff).

10 Mitchell (2019, 774, fn.6) touches on the relevant understanding of intelligibility. Yet he does not engage with it in the paper.

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ing since proponents of the content-priority view are explicitly concerned with conceptual constraints on ascriptions of emotion. Their focus is thus on canonical ways of attributing emotions in thought and language rather than emotional experience. Also, as I read Mitchell (2019, 792), it is perfectly coherent to ascribe emotions to people that are not experientially intelligible to them. Experiential intelligibility thus clearly differs from intelligibility in the sense of coherent conceivability. Note further that, since adherents of the content-priority view are proposing a view of emotion in general, there is also good reason why their focus is not on the specific class of experientially intelligible emotions.[11]

The main problem with this failure to delineate the appropriate notion of intelligibility is that Mitchell ignores why the content-priority view has been considered indispensable to an adequate account of emotion. That is, Mitchell seems to be unaware of the main argument in its favour. To show this, let me consider Mitchell's take on the claim that the content-priority view alone can adequately account for the intelligibility of emotion.

To assess whether this claim is warranted, Mitchell considers a common form of reason explanation discussed by Mulligan (2010, 485–486). Consider, for example:

> Mary is afraid of the dog because it is dangerous.
>
> Tom is angry with his mother because she offended him.

Mulligan proposes that such explanations provide strong grounds for thinking that value awareness is, as he puts it, "outside of" emotion (2010, 486). In response, Mitchell makes little effort to reconstruct Mulligan's reasoning, but gives the proposal short shrift. As he comments, "such third-person reports are surely not decisive with respect to philosophical theories, or indeed how we frame the intelligibility of the relevant emotional episode *as experienced*" (2019, 792).

Now, in line with my above remarks, Mitchell's complaint seems unjustified inasmuch as he criticizes Mulligan's considerations as failing to speak to the experienced intelligibility of emotion. This is not Mulligan's concern, which is with constraints on the explicit ascription of emotions. And insofar as

11 Although experiential intelligibility is irrelevant to the principal motivation for the content-priority view, one might still wonder whether the view has some resources to accommodate for this idea. On this issue, cf. fn.29.

Mulligan is defending a view of emotion in general, it makes sense that he chooses a different focus.

It is also not clear why we should agree with Mitchell that such explanations are not decisive with respect to theories of emotion in the first place. While he considers this to be obvious, I think it requires explanation. After all, the content-priority view is a theory that explicitly assigns an explanatory role to values. According to this view, emotions are responses to evaluative properties and, as such, explained by motivating reasons provided by them. One should thus think that the view stands and falls with whether it is borne out by the way we do explain emotions. Looking more closely at the above form of explanation, we can see that it in fact confirms the view. To say that Mary is afraid of the dog because it is dangerous is to say that she is afraid of it for the reason that it is dangerous. Since motivating reasons are made available by states prior to and distinct from the motivated response, her emotion is preceded by a distinct state of value awareness.

I also do not think it is appropriate here to dismiss appeal to this type of reason explanation as a case of overemphasizing the philosophical significance of "folk reports". If this is what Mitchell has in mind, I think it is worth stressing that we are here concerned with reason explanation. The appropriate way to get clear on the structure and content of reason explanations of a given attitude or action is to look at common explanatory practice. It is not as though we will find a more "theoretical" form of reason explanation by consulting affective science. Nor it is obvious that we can read such explanations off first-person experience alone.[12] Inasmuch as the content-priority view is, fundamentally, a claim about motivating reasons for emotions, it thus seems perfectly warranted to consider reports on the lines investigated by Mulligan in assessing the view.[13]

As far as I can see, the most plausible way to understand Mitchell's scepticism about the dialectical import of such explanations is to think of him as calling attention to the fact that they are by no means mandatory. Note that we also often cite non-evaluative features as reasons for emotion:

12 Admittedly, as I suggest in section 4, fn.28 and fn.29, the type of explanation considered by Mulligan is plausibly mirrored by the phenomenology of emotion. Since an adequate account of reason explanations must cover third-person explanations, too, I do not think phenomenology can substitute for the role of common explanatory practice in this context, though.

13 I also do not think that we should be concerned here about the fallibility of such explanations. As I argue below, the reasons attributed by the type of explanation at issue have a special status in that they constrain our very grasp of the phenomena they explain. This considerably restricts the space for errors in connection with the role they assign to values.

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> Mary is afraid of the dog because it is aggressive and has sharp teeth.
>
> Tom is angry with his mother because she said that Tom has gained weight.

Hence, it can seem that, as far as common explanation goes, we are not committed to regarding emotions as responses to value (cf. Teroni 2007, 411; Deonna and Teroni 2012, 96ff).

However, while this may seem a discerning objection, it actually rests on a misunderstanding. It misses that reason explanations in terms of value contribute to the very coherence of emotion ascriptions. That is, since Mitchell does not get the relevant notion of emotional intelligibility into focus, he fails to appreciate that, far from being optional, such explanations constrain our very grasp of emotions qua directed. Yet, to ignore this is in fact to ignore the main consideration in favour of the content-priority view and, accordingly, what makes this view seem mandatory.[14]

To make this consideration explicit and show what Mitchell ignores, we must look more closely at the idea that emotions are directed. It is in fact uncontroversial among cognitivists that emotions rely for their objects on some prior awareness of them (known as their "cognitive base," see Mulligan 2010, 476; Mitchell 2019, 791; Milona and Naar 2020, among many others). For example, unless we suppose that Mary has perceived the dog, we cannot properly conceive of her fear as being *about* the dog. Similarly, it does not seem coherent to suppose that someone who is glad or angry *that p* has not apprehended *that p*. Consider how strange it would be to say that Sam is glad that he has won the race but that he has no idea that he has.

14 One might perhaps read Mitchell's dialectical complaint also as targeting the very import of considerations on this type of intelligibility: even if the content-priority view articulates a conceptual requirement on emotion qua directed, we are not therefore committed to it. Note, though, that if this is what Mitchell is after, he is opposing what has largely been methodological consensus in the cognitivist literature and beyond. In this case, he clearly needs to do more than assert that this methodological commitment is surely mistaken. Also, what tells against this reading is that Mitchell himself accepts several conceptual constraints on mental ascription as integral to philosophical accounts of the corresponding phenomena. Thus, he takes Evans' Generality Constraint to be integral to an adequate account of evaluative judgment (Mitchell 2019, 781). The Generality Constraint is a conceptual requirement on judgments qua states with conceptual content (cf. Evans 1982, 75). Moreover, Mitchell seems to accept that an adequate account of emotions conceives of them as having cognitive bases (2019, 791). This claim, too, articulates a conceptual constraint on emotion qua directed (see below).

A straightforward way to explain this requirement is by noting that emotions are responses to their object (cf. Kenny 2003, 51–52; Dietz 2018; Müller 2017, 287–288; 2019, 68–69). If Mary is afraid of the dog, it follows that she is afraid *in light of* or *on occasion of* the dog's presence. It sounds just as bizarre to say that Mary fears the dog but that she is not afraid in light of its presence. What Mary fears is what she responds to with fear, i.e., the reason for which she is afraid. Thus, she must have registered the dog.

If this is account is accurate, then ascriptions of emotions imply that they are felt because of their object (where "because" specifies a motivating reason). Although this explanation does not explicitly refer to value properties, it is crucial to note that it would not work if the reason specified were the emotion's object *simpliciter*. We fail to comprehend the dog as something that should upset Mary unless we suppose that she responds to a specific feature of it. For there to be a genuine explanatory relation Mary must respond to the dog *qua danger*. It is only if the dog is apprehended as being of concern to Mary in this respect that we can understand its presence to be a reason for which she is afraid. This is why emotion ascriptions support the content-priority view. Their coherence depends on the implied explanatory relation between the emotion and its intentional object. And this relation depends on the latter exemplifying a certain evaluative property.

To further support this account, note that it relies on a widely accepted general constraint on reason explanations. This constraint states that something qualifies as someone's motivating reason for an action or attitude only if it is taken by her as a reason to perform the action or hold the attitude. Thus, even if the reason for which someone feels an emotion is not actually a reason to feel it, the cogency of explanations in terms of this reason requires conceiving of her as responding to something that, to her, presents itself as a corresponding normative reason.[15] In this respect, the intelligibility conferred by such explanations can be conceived as a kind of rational intelligibility.

This constraint on motivating reasons nicely explains the connection between emotion ascriptions and explanations in terms of value. The evaluative property to which an emotion is a response, according to the content-priority

15 This point is made forcefully by Hornsby (2008, 258–259). Since the intelligibility of emotion ascriptions derives from the understanding imparted by reason explanations, it is ultimately derivative of the intelligibility conferred by normative reasons.

Plausibly, the intelligibility of emotion ascriptions is underwritten also by considerations on emotional valence. I develop this point in response to a possible reply to the argument I am presently developing in section 3.

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view, is a reason to feel it: danger is a reason to be afraid; a genuine offence speaks in favour of anger. Accordingly, if Mary fears the dog under the aspect of danger, she responds to (what she apprehends as) a reason to be afraid. In conceiving of her in these terms we secure the cogency of the explanation implicit in thinking of her as fearing the dog.

At this point, one might want to reply that this requirement is satisfied also if we think of emotions as responses to non-evaluative features of their object. After all, such features can be normative reasons, too. Thus, plausibly, the dog's being aggressive and sharp-toothed are reasons for Mary to be afraid of it (cf. Deonna and Teroni 2012, 96ff).

However, this reply won't do. While such features can clearly be reasons to feel emotions, too, their status as normative reasons depends on their connection to value. It is only *in their capacity as grounds of danger* that the dog's aggressiveness and sharp teeth speak in favour of fear. To appreciate this, note that these features may in principle be reasons for different emotions. For example, for someone who relies on the dog to protect her property, they might be reasons for contentment. In this case, they favour a different emotion in virtue of their relation to a different value (the importance of keeping the property safe). This suggests that, for non-evaluative features to qualify as normative reasons for emotions, they must be suitably linked to a specific value. The cogency of "Mary is afraid because of the dog's aggressiveness and sharp teeth" requires thinking of her as responding to these features *as grounds of danger* and thus as having apprehended the dog in evaluative terms.

In light of this argument, it seems that for us to so much as coherently think of emotions as taking objects, we are committed to the content-priority view. Since nowadays most philosophers, and certainly all cognitivists, recognize emotions as directed, Mitchell seems thus wrong to consider the view dispensable in favour of competing accounts.

In order to properly situate this view of emotional directedness, it is worth adding that it also sits well with further observations about the relevant type of reason explanation and that there are clear analogues in the case of other, familiar attitudes and actions. As DeSousa (2011, 72) notes, there is something trivial about reason explanations of emotion citing corresponding value properties. They seem vacuous, yet perfectly appropriate.[16] If the very coherence

16 This point is made most explicitly in connection with the explanatory role of truth and goodness in connection with ascriptions of belief and desire, respectively, in DeSousa (1974, 538).

of such ascriptions depends on our conceiving of the emotion as a response to the corresponding value, this is just what is to be expected. Such explanations are parallel to explanations that instantiate schemes like

> *S* avoids *x* because *x* is averse.
>
> *S* criticizes *x* because *x* has done something wrong.
>
> *S* thanks *x* because *x* has done something beneficial to *S*.

Such explanations seem vacuous because there is a conceptual requirement for the respective action to be motivated by a particular (dis)value.[17] Like these actions, emotions can be understood as conceptually committed to a specific reason. They form part of a familiar and rather large class of psychological phenomena that are united by their responsive character.[18] In this respect, the fact that emotion ascriptions are subject to a conceptual constraint involving values as reasons should not make them seem in any way peculiar. Note, further, that there are analogues to this kind of conceptual commitment in the case of responses in the mere causal sense. Consider, e.g., a property like sunburn, whose ascription is subject to conceptual constraints concerning its cause: we cannot coherently conceive of an inflammation of the skin as a sunburn unless we think of it as caused by exposure to sunlight (cf. Dardis 2008, 115).[19] Attitudes and actions that are conceptually committed to

17 As suggested by my considerations on the intelligibility of emotion, the conceptual requirement is, strictly speaking, that the respective attitude or action be a response to *what is apprehended as* an exemplification of this value, which can be a real exemplification or what is merely apprehended to be one. But I take it that this conceptual connection to the corresponding value qua motivating reason is sufficient to account for a certain air of vacuity of explanations even of the factive type "*S* Φs *x* because *x* is (dis)valuable". This is because there is a basic kind of intelligibility which is conferred both by explanations citing actual and those citing merely apparent exemplifications of value. Cf. Hornsby (2008) on the disjunctive character of this type of reason explanation.

18 For a thorough account of analogies between emotion and action cf. Naar (2020). Naar likewise argues that the connection to reasons, in particular to normative reasons, is a core aspect of both phenomena. This parallel is elaborated by him in the context of an exploratory defence of an account of the fittingness of emotions in terms of normative reasons provided by values in Naar (2021). In this connection, cf. also Müller (2017, 299ff). Much of Naar's discussion, too, focuses on the above types of action, albeit without explicitly conceiving of them as sharing with emotions a conceptual commitment to a particular motivating reason.

19 While I am not sure I agree with Dardis's substantive account of causally committed properties, he offers some very helpful general remarks on this category.

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certain reasons can plausibly be thought of as the reason-theoretic analogue of reactions that are committed to causes in this way.

3 The Indispensability of the Content-Priority View

Supposing these remarks are on the right track, I do not think that the credentials of the content-priority view as a plausible contender among cognitivist theories of emotion are contingent on further characterizing the prior value awareness. If emotions are intelligible as directed only as responses to value, this should in fact be sufficient to accept it.

This consideration in support of the content-priority view can be framed as an argument of a classical transcendental form: If we are to avoid making it unintelligible how emotions can be directed at something we must maintain that they are responses to this thing as (dis)valuable. This argument takes it as agreed that emotions are directed and proceeds to its conclusion via a constraint on the intelligibility of their directedness. Transcendental arguments of this sort are not uncommon in the theory of intentionality.[20] They differ from their traditional anti-sceptical cousins which start from a psychological premise and proceed to a conclusion about the mind-independent world. The type of argument in question, in contrast, both starts from a psychological premise and has a psychological conclusion. In accordance with a common dialectical purpose of transcendental arguments, the point of this transcendental argument for the content-priority view is to show that the value responsive-character of emotion is a condition on something that all cognitivists, including Mitchell, take for granted.

Maybe there will be some resistance to this inference in light of Mitchell's scepticism about pre-emotional value awareness. If a survey of the various candidates that one can think of in this context turns out not to yield a single viable option, one might think this should give us pause. The appropriate thing to do given Mitchell's charge, one might think, is to revisit the considerations offered in favour of the content-priority view and to try and find fault with the constraint on intelligibility which underwrites this inference.

20 For prominent exemplars of this cf. McDowell's (1996) and Brewer's (1999) principal argument for conceptualism about perceptual experience. This argument attempts to establish that perceptual experience has conceptual content by adverting to a constraint on the intelligibility of beliefs with empirical content. Both authors also offer a related, transcendental argument which is more similar to the one I outlined above. It invokes the same intelligibility constraint on empirical beliefs in order to show that they are responses to perceptual experiences.

Though this may seem a natural response, I don't think it is successful. To see why, it is important to be clear on the status of this constraint. Considering the close analogy between emotions and reason-committed actions made explicit at the end of section 2, this constraint seems no less integral to our understanding of emotions than the idea that in criticizing someone we respond to some purported wrongdoing or the idea that in thanking someone we respond to some purported benefit is to our understanding of these actions. If this is right, letting go of this constraint is not a palatable option. Consider, for instance, what would become of our grasp of criticizing someone if tokens of this action were no longer conceived as responses to a purported mistake? I don't think we need to be committed to a purely descriptive approach to the metaphysics of mind and action to find this prospect deeply dissatisfying.

To back up this point, let me elaborate somewhat on the place of this conceptual commitment within our understanding of the corresponding phenomena. As some further reflection suggests, in the case of many reason-committed actions as well as the emotions, the intelligibility constraint on their directedness is at the same time a constraint on their intelligibility as the kinds of psychological phenomena they are. A helpful way to see this is by considering joint explanations of emotions and actions such as e.g., "*S* responded with indignation and harsh criticism to *x*'s wrongdoing" or "*S* was grateful to *x* and thanked *x* for *x*'s beneficence." Such explanations are perfectly cogent. Moreover, it seems that part of their cogency is a matter of the respective emotion and action making sense as cognate responses to a specific (dis)value. To refer to them as cognate responses is not, or not merely, to refer to their common motivating reason, but also to call attention to the fact that they are similarly valenced: both action and emotion are *negative (positive)* responses.[21] I take it that this aspect is fundamental to our conception of each of these actions and attitudes. Intuitively, criticizing or thanking someone is essentially a valenced response. These actions are a form of sanction (in a suitably broad sense of "sanction" that includes forms of positive acknowledgment or appreciation). The same goes for the negative (positive) character of indignation (gratitude). While we may wish to reserve the term "sanction" for certain valenced actions, we can highlight this similarity by speaking of indignation (gratitude) as a case of taking a positive or negative stand or position on something or, perhaps more colloquially, as

21 This is all I mean to convey by using the term "valence". There is no commitment here to a substantive account of valence as being, e.g., a form of (dis)pleasure or action tendency.

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form of (dis)approval.[22] However, and crucially, our appreciation of these phenomena as sanctions or position-takings is contingent on their recognition as value responses. Criticism is coherently conceivable as a negative response only in virtue of the (purported) disvalue of its target. It seems very puzzling to suppose that this target is negatively sanctioned without being sanctioned for its (purported) negative import. (Mutatis mutandis for the act of thanking someone.) Similarly, indignation's character as a negative response depends on its character as a response to disvalue: it makes little sense to conceive of indignation as the taking of a negative stand on something without conceiving of this stand as being taken because of this object's (purported) negative import. (Mutatis mutandis for gratitude.) Now, if the intelligibility of emotions as position-takings hinges on our ability to conceive of them as responses to value, then we should be wary of dispensing with the intelligibility constraint I have made explicit. That is, what is at stake here is not the "mere" fact that emotions take objects, but their character *as the specific attitudes they are*. To ignore their commitment to particular values as motivating reasons is to crucially impoverish our grasp of them in the same way that ignoring this commitment in the case of valenced actions makes them unrecognizable as the actions they are.

I take this to provide strong warrant for thinking that this constraint is not really up for dispute. Accordingly, I doubt that the suggested response to Mitchell's survey is feasible.[23] In assessing this response, it is moreover worth pointing out that it also loses much of its initial force if we look to similar dialectical contexts outside the philosophy of emotion. Once we somewhat broaden the perspective, it is not at all evident that the apparent shortage of plausible candidates for a form of awareness to which we are committed by virtue of our core understanding of a certain phenomenon requires revisiting this understanding. Consider, for instance, the kinds of implicit cognition that have been posited by major contemporary accounts of conceptual or semantic competence in order to explain how someone may possess a word or concept

22 For this characterization, cf. also, e.g., Greenspan (1980, 229) and Mulligan (2010, 485). Cf. also Müller (2018; 2019, chap. 4), where I argue that it applies to all emotions.

23 As one referee noted, one might instead feel forced by Mitchell's critique to adopt a form of error theory about emotion. This view endorses the intelligibility constraint, but denies that emotion ascriptions pick out real psychological phenomena in the first place. For reasons I elaborate in the main text below, I do not think this option is actually forced on us. Note, also, that this line of response is not available to Mitchell. It involves conceding that rivalling cognitivist views cannot make sense of emotions as directed as well as rejecting the realist commitment shared by most cognitivists.

without having a fully articulate understanding of the principles governing its use (cf. e.g., Peacocke 1998; Toribio 1998). These forms of cognition are introduced in response to the recognition that extant philosophical conceptions of propositional knowledge do not account for our cognitive relation to these principles in accordance with this plausible restriction. In fact, one of the main explanatory purposes of introducing them is very much in line with the role played by pre-emotional value awareness on the content-priority view, i.e., to acknowledge certain types or linguistic or concept-involving behaviour as rationally intelligible (cf. Peacocke 1998; Toribio 1998).[24] This is not to say, of course, that they are posited without any concern for whether they actually form part of our psychology. But their point is first and foremost that of sustaining what is independently recognized as an adequate characterization of semantic or conceptual competence. This is normally not in and of itself seen as compromising the status of the respective account as a worthwhile contender in the field. And for a good reason: It seems misleading to be sceptical against an account that is founded on core features of our grasp of some phenomenon for the sole reason that it fails to fully align its psychological commitments with those of extant philosophical psychology. It may well turn out that, in the end, the apparent lack of candidates for the required cognition proves due to implicit theoretical strictures on our ontology of the mind that need loosening, rather to any fault with the account itself.[25]

While I thus remain unconvinced that the content-priority view should be deemed unpersuasive unless a more substantive account of pre-emotional value awareness is supplied, I still think it is worth finally taking a look also at Mitchell's main objection to what some authors see as the most promising way of elaborating the view. In this way, I hope to moreover show that Mitchell's survey of suggestions for this form of awareness does in fact not succeed in demonstrating that we are short of plausible candidates.

24 Perhaps it will be objected that this example exclusively concerns subpersonal forms of cognition, while the content-priority view is committed to a personal-level form of value awareness. However, this is disputable. Cf. Toribio (1998).

25 There are prominent cases of this sort of ontological expansion in the philosophy of emotion: When Greenspan (1988, pt. I) and Goldie (2000, chap. 3) first introduced the idea of an intentional emotional feeling in order to recover what they deemed a pre-theoretically adequate view of emotion, their accounts were claimed unorthodox for conflicting with the then unquestioned separation between phenomenal consciousness and intentionality. Cf. e.g., Morris (1992, 251). Today, this idea is widely accepted.

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4 The Phenomenology of Responding to Value

As the content-priority view is sometimes elaborated, emotions are preceded by states of evaluative "seeing-as" or axiological perceptions of their objects as (dis)valuable (Müller 2019, chap. 5).[26] Mitchell's objection to this proposal is based on the constraint that, in the case of paradigmatic emotional experiences, pre-emotional evaluations must be discernible phenomenologically from emotion (cf. 2019, 783).[27] For Mitchell this requires that, when undergoing such experiences, the evaluation be phenomenologically conspicuous as preceding the emotion. As he rightly notes, this requirement is not met. Consider common "quick-fire" emotions, such as a bout of terror felt in response to a suddenly approaching car when intending to cross the road (cf. Mitchell 2019, 785). Such emotions clearly purport to be immediate reactions rather than consequences of a prior perception of value. Mitchell takes this to undermine the proposal's phenomenological credentials.

While it is fair to enquire about the phenomenological plausibility of this formulation of the view, this objection is too quick, though. It is not obvious why we should follow Mitchell in requiring that evaluative perceptions be discernible from emotion in the throes of experience. A straightforward reason to reject this requirement might be that paradigmatic emotional reactions are often simply too quick for us to notice that they are preceded by prior evaluations at the time. That is to say that while the emotion follows upon the perception of a value property, this very fact may itself not be conspicuous to us. It may take some post hoc enquiry to properly discern its psychological antecedents and, accordingly, that it is motivated by a specific value property.

While my earlier remarks on the intelligibility of emotion might be adduced in support of this reply, I do not think that it is in fact necessary to advert to them. In keeping with Mitchell's concern with emotional phenomenology, we can also provide first-person grounds to take this line.

Note, first, that it is not uncommon for responses to occur too fast for us to be able to fully discern their mental antecedents and appreciate what they are motivated by. Consider reflex-like actions, such as automatically hitting the brakes when spotting an obstacle on the road or unreflectively backing away

26 As I read him, Pugmire (2006, 18–19) comes close to this view, too.

27 According to a further objection, due to Deonna and Teroni (2012, 55), this formulation is cognitively too demanding and does not accommodate for the emotions of cognitively less sophisticated creatures. I have responded to this charge in some detail elsewhere (Müller 2019, chap. 5.3).

from a close talker. As with quick-fire emotions, here we seem to respond without conscious prior perception of the situation in evaluative terms. As things seem first-personally there and then, we immediately act on the bare perception of its basic spatial layout. However, we can retrospectively check this impression. That is, we can probe the source of these responses, e.g., by recalling different features of the situation or by imaginatively modifying it, in order to find out what, as Pugmire (2006, 17) nicely puts it, "clicks". Such tests are likely to confirm, for example, that my inclination to back away from a close talker was motivated by her proximity. By imaginatively varying the talker's relative distance, I may even succeed in further specifying the motive: there is a certain invisible yet significant boundary (surrounding, perhaps, my peri-personal space) relative to which she was *too* close. To think of the action in these terms is to apprehend it as a response to an intrusion and hence to the situation construed in evaluative terms.

It seems that these same tests are applicable also in the case of quick-fire emotions. I can similarly probe, for example, the source of my terror at a suddenly approaching car. Thinking back to the incident and focusing on what emotionally resonates with me, I may find out that I was responding specifically to the suddenness of the car's appearance and its speed. Plausibly, there is room for even further precision. By imagining counterfactual variations concerning the car's relative distance, speed and direction, as well as by picturing the respective consequences, I may even come to see that I was frightened specifically by the car's being too fast for me to be confident in my ability to avoid collision and the corresponding anticipated injury. In realizing this, I apprehend my terror as a response to an impending adversity or threat. Crucially, since I apprehend the car qua threat as *motivating* my terror, I also understand the situation to be one in which the car was apprehended in evaluative terms prior to emotion.[28]

28 It seems that when I realize what ultimately motivated a reflex-like action or emotion in this way, this is usually accompanied also by a novel impression of what it was like first-personally to respond at the time. This is not to say we change our view as to what was phenomenologically conspicuous to us. Rather, we come to see what responding was like *pre-reflectively*. For examples of the kind of pre-reflective experience I have in mind, cf. the considerations on automatic action offered by Dreyfus and Kelly (2007, 52ff), Rietveld (2008), among others. Cf. also Müller (2021b; 2021a, 1068–1069). One might be skeptical here about how much work the appeal to pre-reflective experience can do by way of motivating the content-priority view on phenomenological grounds (cf. Mitchell 2019, 77). Considering these views of the phenomenology of automatic action, I am not sure, though, that there is anything problematic about the very idea that emotions can be pre-reflectively experienced as responses to value.

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There is, perhaps, a worry here that this type of procedure is prone to post hoc rationalization and self-deception. Thus, one might wonder how we are to be sure that what we determine to be a motivating reason in this way did actually motivate our response. Given this concern, one might then come to question its use in answering Mitchell's objection.

However, while this type of mnemonic-imaginative reconstruction of responses, like other forms of post hoc enquiry into motivating reasons, is clearly not immune to mistakes, liability to error is reduced in this case by the procedure deployed for validating candidate reasons. To say that the features to which I selectively attend must "click" is to hold hypotheses and judgments about my reasons subject to a specific kind of experiential confirmation. Whether some aspect of the situation plausibly constitutes a reason for which I feel an emotion is a matter of whether it *palpably resonates with* the emotion (or my memory of it).[29] This form of validation is not subject to direct voluntary control and also surprisingly impervious to attempts at rationally persuading myself of the (purported) plausibility of certain candidates. In this respect, the procedure is considerably more reliable than common ratiocinative forms of post hoc explanation which rely exclusively on cognitive forms of validation, such as considerations of coherence with other beliefs I may hold about the circumstances (or counterfactual variations of them). In consequence, I don't think we have strong grounds to think it too undependable to be of much help in defending the proposed formulation of the content-priority view against Mitchell's charge.

If we, then, assume that this procedure can aid us in probing the source of responses in these cases, we should insist that there is room to question

29 Accordingly, the intelligibility conferred on the emotion by attending to the right situational features is contingent upon validation by this same emotion. This to some extent echoes Mitchell's notion of experiential intelligibility: emotional experience itself is the arbiter of what makes sense of it. To be fair, in contrast to Mitchell's understanding, this type of intelligibility is post hoc rather than being conveyed by the original experience at the time. However, I think there may be some space here also to argue for a kind of intelligibility which is directly conveyed in having an emotional experience and which, arguably, underwrites the kind of understanding which can be achieved in this way after the fact. If we think of the content-priority priority view as characterizing what it is like, pre-reflectively, to feel an emotion, then, on this view, having an emotion involves experiencing oneself as feeling it for a certain reason. In this respect, one might argue, some minimal, pre-reflective understanding of the emotion is built into our very having it. While there is more to say by way of defending this account of emotional phenomenology and relating this further notion of experiential intelligibility to Mitchell's own view on this topic (cf. 2019, sec.2), it is perhaps fair to say, though, that the content-priority view may well have some resources to accommodate also for a form of understanding of the sort propounded by him.

whether phenomenologically immediate emotions threaten this proposal. That is, if my examples illustrating this procedure are cogent and we can retrospectively detect evaluative states that precede these reactions, it seems plausible that quick-fire emotions happen too quickly for us to discern the prior state in responding. This in turn casts doubt on Mitchell's requirement to this effect and hence his principal objection to this proposal.*

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Spacetime Functionalism

Marco Korstiaan Dees

We naturally think that the way things are arranged in space and time is a fundamental feature of the world. In this paper, however, I explore an attractive account of space and time on which this is false. According to what I will call *spacetime functionalism*, the spatiotemporal structure of the world is not fundamental but instead grounded in the role spacetime regions play in the laws of nature.

This is a radical claim, for the vast majority of philosophers at least implicitly accept what I will call *spacetime primitivism*, the claim that there are fundamental facts about the spatial and temporal arrangement of the world.[1] There are various contemporary *scientific* hypotheses on which space and time are not fundamental; this paper instead explores the *philosophical* case for denying spacetime primitivism.[2]

This paper presents three arguments in favor of the spacetime functionalism. First, I will argue that we don't need fundamental facts about space and time to make sense of the world—spacetime primitivism is committed to *explanatorily redundant* facts. Second, spacetime primitivism requires us give up a highly plausible minimality constraint on the fundamental. And third, spacetime primtivism is *explanatorily impoverished*, as the spacetime functionalist has an elegant explanation for why spatial and temporal relations behave the way they do—for example, why they obey constraints like the triangle inequality, whereas the spacetime primitivist must stipulate objectionably brute necessary connections among the fundamental properties and relations.

Here's the plan for the paper. section 1 describes the issue at stake between spacetime functionalism and spacetime primitivism. section 2 addresses what I take to be the most serious objection to spacetime functionalism. Then section 3, section 4 and section 5 present the arguments in favor of spacetime

1 I use the label "spacetime primitivism" for the claim that the spatiotemporal structure of the world is *fundamental*, not that it is *unanalysable*. So it is compatible with spacetime functionalism that the *concepts* of space and time are primitive and unanalyzable.

2 The end of this section explains in some detail how spacetime functionalism relates to these scientific claims.

primitivism from explanatory redundancy, from metaphysical redundancy, and from the explanatory superiority.

1 Spacetime Primitivism and Spacetime Functionalism

It is a familiar fact that how strongly things interact depends on how far apart they are. For example, whereas a nuclear explosion on the moon would leave me relatively unscathed, a nuclear explosion in my coffee mug would really ruin my day. According to spacetime functionalism, facts like these are constitutive of distance in space and time; it is *in virtue* of the fact that an explosion in my coffee mug would harm me, but one on the moon wouldn't, that I'm closer to my coffee mug than to the moon. In slogan form: *distance is as distance does*. On this view, the spatiotemporal structure of the world is not fundamental but is instead grounded in its nomic structure. The spacetime primitivist, on the other hand, holds that there are fundamental facts about how things are arranged in space and time—whether those facts concern distance relations among objects or the structure of substantival spacetime.

On the version of spacetime functionalism I will develop here, spacetime regions are fundamental, but their geometrical structure is derivative. Instead, there are fundamental facts about how regions of spacetime are disposed to interact, and the geometry of the world emerges from this basis. That is, there are no fundamental spatiotemporal relations among regions; in their place there are fundamental facts about physically necessary conditionals linking individual regions, of the form: *it is physically necessary that if region* r_1 *has qualitative profile* p_1*, then region* r_2 *has qualitative profile* p_2. As I will explain below, this is enough to capture the spatiotemporal structure of the world in its entirety.

The question at stake between the spacetime primitivist and the spacetime functionalist is independent of another debate about the metaphysics of spacetime: that between *substantivalism* and *relationism*.

Substantivalists hold that regions of spacetime exist independently of material objects.[3] Relationists, on the other hand, hold that claims about regions

3 What does it mean to say spacetime exists "independently"? Mere *modal* independence is arguably not sufficient for substantivalism since in principle a substantivalist could deny that facts about spacetime are modally independent of material bodies. Rather, we should understand substantivalism as the claim that spacetime points and regions exist independently in the sense they do not exist *in virtue of* material objects and the relations between them. See Sklar (1974) and Dasgupta (2013).

of spacetime are grounded in the spatiotemporal relations among material objects.

This is a dispute about which entities instantiate the fundamental spatiotemporal properties and relations: material objects, or spacetime regions?[4]

The issue I tackle in this paper is independent of substantivalism-relationalism debate, since it concerns the spatiotemporal relations themselves, not their relata. Spacetime primitivism is the claim that some spatiotemporal properties or relations are fundamental. A spacetime primitivist may be relationist (for example, by holding that there are fundamental distance relations among material objects) or a substantivalist (by holding that spacetime regions instantiate fundamental relations like *being two meters from* or properties like *having a length of two meters*.)[5]

The spacetime functionalist denies that there are any fundamental spatiotemporal properties or relations. Instead, the spatial and temporal distance between things is grounded facts about how they interact.

For the purpose of the paper I will assume that substantivalism is true, so that (some) regions of spacetime (or its parts) are fundamental entities.[6] A substantivalist spacetime functionalist holds that while spacetime points and regions are fundamental entities they do not instantiate any fundamental spatiotemporal properties. Instead, the spatial and temporal distance between two points is determined by how they interact; that is, how the properties instantiated at one location affects which properties are instantiated at the other location.[7]

4 The substantivalist *could* answer: *both*! But it is very natural for the substantivalist who is not a supersubstantivalist (see below) to regard the spatiotemporal properties of and relations between material objects to be inherited from the spacetime regions they occupy. That is, it is a fundamental fact that, say, spacetime points p_1 and p_2 are two meters apart, and it is in virtue of this, together with the fact that electrons e_1 and e_2 are located at p_1 and p_2 that the electrons are two meters apart. Similarly, on this inheritance picture, an object o is square in virtue of being located at a region r_o that is square. If both material objects and spacetime regions instantiate fundamental spatiotemporal properties and relations, it it mysterious that the two kinds of fundamental spacetime features march together, so that no round objects are located at square regions.

5 My use of "property" and "relation" is intended to be compatible with nominalism—the nominalist spacetime primitivist holds that some spatiotemporal predicates are fundamental.

6 Substantivalists of any stripe face a choice about *which* spacetime regions are fundamental. If the entire spacetime manifold is fundamental, there is some pressure to regard the regions and points that are its proper parts as existing in virtue of it. If, instead, it is spacetime points that are fundamental, then it is natural to regard spacetime regions as existing in virtue of the points of which they are composed. But I will put this issue aside.

7 The substantivalist faces a choice concerning the relationship between regions of substantival spacetime and material objects like trees and mountains. A "dualist" substantivalist holds

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One might object that it makes no sense to claim that there are *spacetime* regions that have no fundamental spatiotemporal structure. But this is not so, given that substantivalism and primitivism are independent. The central commitment of substantivalism is that there is an object—the spacetime manifold—which plays a distinctive metaphysical role. A central part of this role is that material objects are either *located at* (or, for the supersubstantivalist, *identical to*) parts of the spacetime manifold. If primitivism is correct then the structure of the spacetime manifold is determined by the distribution of the fundamental spatiotemporal properties or relations. The view I am proposing is that the spacetime manifold is fundamental, but has its structure determined by the functional roles of its parts, where these functional roles are explained in terms of physically necessity.[8]

Because the spacetime functionalist explains the world's spatiotemporal structure in terms of physical necessity, the spacetime functionalist cannot be a Humean reductionist. The Humean reductionist about laws of nature holds that the laws are grounded in the spatiotemporal distribution of the

that material objects are distinct from the spacetime regions they occupy. There is a tree, and there is a tree-shaped region, and the first bears the *location* relation to the second. A monist substantivalist—a *supersubstantivalist*—holds that material objects just are spacetime regions. God creates a tree by imbuing a tree-shaped region with suitably verdant properties. I will remain neutral about whether or not supersubstantivalism is true.

8 As I understand it, spacetime functionalism is an explanatory claim. To say that the A-facts are grounded in, reduce to, or emerge from the B-facts is to say the A-facts obtain *in virtue of*, *because of* the B-facts. I take this non-causal flavor of explanation to be familiar from a range of issues in philosophy. Socrates' challenge to Euthyphro was to say whether the pious acts are pious in virtue of the love of the gods or *vice versa*. A promising way of understanding physicalism is as the claim that everything obtains in virtue of physical facts. (See, e.g. Loewer 1996.) I take this sense of explanation to be familiar to common sense judgments too, as when one says that Mary has a headache because her brain is in a certain state *b*. For more explicit defenses of this notion see Fine (2001), Schaffer (2009), Rosen (2010), or Sider (2011). But I invite those who are skeptical about the notion of ground to understand my thesis to concern the *minimal supervenience base* for the world: the spacetime primitivist, but not the spacetime functionalist, holds that the minimal supervenience base includes facts about the worlds spatiotemporal structure. Note that we can make a distinction between two kinds of "in virtue of" claim. One kind consists of cases in which A-facts obtain in virtue of B-facts, although it is possible for the B-facts to obtain in virtue of other facts instead, or for there to be nothing in virtue of which the A-facts obtain. Another consists of cases in which A-facts obtain in virtue of B-facts in any world in which they obtain. One might think, for instance, that even if consciousness facts obtain in virtue of physical facts, there could have been worlds in which consciousness facts obtain in virtue of ectoplasm facts. But it is less plausible to think that while knowledge facts actually obtain in virtue of facts about reliable processes (say), they might have failed to obtain in virtue of anything. I won't take a stand on whether the spacetime functionalism belongs with the former or the latter cases.

fundamental properties.[9] Since facts about the *distribution* of properties are determined by the structure of space and time, the Humean must be a spacetime primitivist. The spacetime functionalist reverses the direction of explanation: the world's spatiotemporal structure is grounded in nomic facts.

The spacetime functionalist must therefore be a non-Humean. To be a non-Humean is to hold that a complete description of fundamental reality must mention facts about laws, causation, dispositions, or some related nomic notion.[10] While spacetime functionalism is compatible with any of the mainstream non-Humean accounts of laws, I will assume a fairly minimalist non-Humean account according to which it is a fundamental feature of the world that certain propositions are *physically necessary*. I will express these propositions in terms of a primitive sentence operator, "*L*...", to be read as "*it is physically necessary that* ...".

It is worth noting that the Humean and the spacetime functionalist both take something to be fundamental that the other regards as derivative. One of the upshots of this paper is that many of the Humean arguments against primitivism about laws—for example, that non-Humean facts are unnecessary, epistemically unreachable, or that there is no explanation of how they do the work they were posited to do—militate equally against the Humean commitment to spacetime primitivism.

If spacetime primitivism is correct then the world's spatiotemporal structure is independent of its causal structure, so that it is in principle possible for things to be arranged differently in space and time although they interact just like they actually do.

For example, consider a scenario that is *just like* the world, but in which everything is much smaller. Suppose the Earth were the size of a beach ball. The moon would be the size of a softball, orbiting 40 feet away. The sun, four school-bus-lengths across, would be three miles away. A tiny version of you, about the size a virus, is reading an even tinier paper.

9 Classical statements of regularity accounts of laws are Mill (1843), Ramsey (1928), and Lewis (1973).

10 Non-Humean accounts of laws are varied. According to Armstrong (1983) facts about laws are analyzed in terms of a second-order relation of *nomic necessitation*. According to the dispositional essentialism defended by Bird (2007), a regularity is a law if it is entailed by the dispositional essences of the fundamental properties. And on the primitivism defended by Maudlin (2007), the fact that a regularity is lawful is simply a further unanalyzable fact about the world. Bigelow and Pargetter (1988) defend a variant of primitivism that I will be adopting for the sake of the paper: there are fundamental facts about nomological possibility.

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Or instead, imagine a scenario, again just like the actual world, but in which everything is much larger than it actually is. Suppose protons were the size of beach balls. Hydrogen atoms would be about 5 miles across. You are a colossal giant, spanning the actual distance from the Earth to the Sun.

In order for these to be worlds in which things causally interact just like they actually do, the laws must be different: if insects were the size of cars and governed by our laws they would collapse under their own weight. But we can imagine larger insects that are *not made of any more molecules than they actually are*, governed by laws that result in them engaging in precisely the same behavior as in the actual world.

In the smaller and larger worlds described above, distance *ratios* are unchanged: the size of the earth *relative to the sun* is the same. The spacetime primitivist could hold that the fundamental distance facts concern distance ratios, and conclude that these these are merely a rediscriptions of the actual world.[11]

But if facts about distance are independent of facts about causal interaction then we can consider more radical worlds in which things interact just as they actually do but in which distance ratios are not preserved. Consider, for example, a world in which things shrink (or grow) over time, but in which the laws also change to compensate, so that things behave just like they actually do.[12]

We can also consider worlds with different temporal structure. Suppose the world were "sped up" but otherwise unchanged, so that exactly the same events occur as in the actual world, but the time separating corresponding events is half as long as it actually is. Or consider a "slowing down" world, so that the same causal processes occur but at slower and slower rates.

11 Dasgupta (2013) argues that since halving every distance would not make any detectable difference to the world, facts about absolute distances are "empirically redundant" and this is a reason only to regard facts about distance ratios as physically real. I will argue in section 2 that this argument extends to distance ratios—i.e. comparative facts about distance—as well.

12 From the perspective of someone who holds that the only fundamental distance facts are those involving distance ratios, these worlds are distinct from the actual world in virtue of having a different pattern of *cross-time* distance ratios. We can consider a sparser metaphysics of distance that recognizes only distance ratios among things *at a single time*. (Ignore, now, the question of how to make sense of this in the context of the relativity of simultaneity.) On this view, the shrinking world is no different from the actual world, since the worlds agree on all the instantaneous distance ratio facts. But there are more radical worlds, such as the worlds described below, in which things interact just like they actually do but that do not disagree about the instantaneous distance ratios.

If spacetime structure is truly independent of the world's causal structure then we can describe scenarios with the same causal facts in which even the world's *topological* structure is different. Suppose that I am actually a few meters from you, trying to persuade you of the truth pf spacetime functionalism. Now consider a world in which things causally interact just as they actually do but in which I am many light-years away. The region a few meters away, in which I appear to be located, in fact contains a nuclear explosion. But, happily, the region that contains the explosion interacts with other regions as if it had the location of the region that contains me, many light-years away, so you are unharmed. And conversely, the region *I* am in has the functional role of a region that it only a few meters from you. So, photons leaving my skin reach your retina, and the air vibrations caused by vocal chords cause the air inside your ear to vibrate too. More generally, even though this world has a drastically different spatiotemporal arrangement, things causally interact just like they actually do.[13]

These worlds disagree about how far apart things are in space and time. But they do not disagree about what causes what; in each world, smoking causes cancer, Hitler's invasion of Poland causes WWII, and Muhammad Ali delivers a knockout blow to George Foreman.[14] Of course, since these worlds have different spatial and temporal arrangements there is a clear sense in which things *don't* causally interact in the way they actually do. After all, although in each world I can cause there to be a fresh mug of coffee on my desk, the worlds disagree over the size of the mug of coffee that would result. But there is an equally intuitive sense in which they agree about what causes what.

This is because these worlds have something important in common concerning the roles space and time play in the laws. For example, each world contains a region that contains something that looks and behaves like my coffee mug. I will say that each world contains a region that plays the same *functional role* as the region that contains my coffee mug. More generally, there is a mapping between these worlds that maps regions to regions with the same functional role. I'll say these worlds have the same *causal structure*.

13 It is worth noting that this lets us distinguish two different senses in which a window can be said to be broken. In one sense (the spatial sense) a window is broken if and only if its proper parts are no longer in spatial contact. But in the other sense (the causal sense) a window is broken if and only if its parts no longer compose a causally cohesive object, so that, e.g. pushing one part causes the whole window to move. These senses can come apart—imagine a version of the world described, but in which a region that contains a section of an unbroken window swaps functional roles with another region. In this world the window is spatially but not causally broken.

14 Although note the caveat in the following paragraph.

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(Remember, however, that it is not *causation* but facts about *physical necessity* that are fundamental on the version of spacetime functionalism I will develop here.)

Since the spacetime functionalist claims that geometrical structure of the world is grounded in how things interact, if spacetime functionalism is correct these scenarios do not, after all, correspond to different possibilities: since the worlds have the same causal structure they therefore have the same spatiotemporal structure.

Is this a count in favor of spacetime functionalism, because these scenarios involve making distinctions without differences? Or does this count against the theory since it fails to recognize distinct possibilities? I'm not sure; I find my intuitions to pull in both directions. So one response is to say with David Armstrong, *spoils to the victor!* and conclude that we should let our intuitions be guided by theory, not *vice versa*. But I am happy to grant that this is the source of some weak intuitive pressure against spacetime functionalism. Intuitions about the nature of fundamental reality must sometimes be revised in the face of countervailing evidence, as with the appearance that the sun revolves around the Earth, or that some events are objectively simultaneous. Similarly, I will argue that the evidence from intuitions against spacetime functionalism is outweighed by the arguments in favor of the view.

I'll now explicate the notion of causal structure I have in mind by explaining what it takes for two worlds to have the same causal structure. What is shared across the radically different worlds I have described? Intuitively, one thing worlds with the same causal structure agree on is there is an object that looks and behaves like Barack Obama. But we can't capture this with the claim that the worlds all contain a *duplicate* of Obama, since duplication is standardly defined so that two objects are duplicates only if their parts stand in the same spatial relations.[15]

Let us use a slightly different notion instead. Say that a property or relation is *qualitative* iff it is non-spatiotemporal. Two objects are *qualitative duplicates* when they share all qualitative intrinsic properties and relations.[16] Objects can

15 For example, see Lewis (1986a, 60). Lewis requires that if objects are duplicates then their parts must stand in the same perfectly natural relations; for Lewis, distances were (perhaps the only) perfectly natural relations.

16 That is, x and y are qualitative duplicates if and only if there is a one-one mapping between parts of x and parts of y such that every part of x is mapped to a part of y with the same intrinsic qualitative properties, and every n-tuple of parts of x is mapped to an n-tuple of parts of y that instantiates the same intrinsic qualitative relations. Note that everything is a part of itself. The

be qualitative duplicates even though they are not duplicates; something may be a qualitative duplicate of Obama even though it's millions of times larger. Qualitative duplicates have the same *qualitative profile*, where the qualitative profile of an object is determined by the intrinsic qualitative properties and relations instantiated by its parts.

Armed with the notion of qualitative duplication, we can express one thing that is shared between worlds with the same causal structure: if two worlds w_1 and w_2 have the same causal structure then there is a one-one mapping between regions in the worlds that maps every region to a qualitative duplicate region.

But the worlds agree on more than this; they also agree about how things interact. In each world, for example, a nuclear explosion in my coffee mug would harm my dog.

The functional role of a region is determined by how it interacts with other regions; this in turn is determined by the physically necessary conditionals linking the pattern of properties in that region to the properties of other regions. For example, suppose that at time t the world is just like it actually is except that a nuclear explosion has just detonated inside my coffee mug. Let r_t be the time-slice of the world at t, and r_t be an instantaneous region a few moments later.[17] Let ϕ be a complete intrinsic description of r_t, and let ψ be a complete intrinsic description of r_t. Then if the laws are deterministic, the following physically necessary conditional will hold:

(1) $L(\phi(r_t) \rightarrow \psi(r_t))$.

(If the laws are chancy, then there will be physically necessary conditional whose consequent specifies the *probability* that r_t is ψ.)

However, because a region's functional role should not encode facts about its spatiotemporal structure, it should be characterized in terms of *qualitative* physically necessary conditionals. Let ϕ_q and psi_q be specifications of the qualitative profile of r_t and r_t. If (1) is true then so is:

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restriction to *intrinsic* properties is required so that objects can be qualitative duplicates even though they fail to share properties like *being exactly ten feet from President Obama*.

17 It is important to note that these are disjoint regions: spacetime is not made up of enduring points, but instantaneous points-at-a-time, *events*. Spacetime regions perdure: they exist at multiple times by having parts at those times. So the notion of location appealed to in a claim like "the ball started at l, bounced off the wall and returned to l" encodes information about the relation between two distinct regions that make up l: the spacetime region initially occupied by the ball, l_i, and the region occupied later l_f.

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(1_q) $L(\phi_q(r_t) \rightarrow \psi_q(r_t))$

I will say that qualitative conditionals like (1_q) describe *relations of lawful dependence* between regions. Since qualitative conditionals like (1_q) do not presuppose facts about the spatiotemporal arrangement of things in r_t and r_t, they offer a way to capture what functionally equivalent worlds have in common.[18]

Not all regions are alike; space and time are different. The laws of nature describe how the world evolves *over time*, not how it evolves from left to right. That is, a specification of what the world is like at a given *time*, together with the laws, provides a lot of information about what the world is like at other times.[19] But the laws together with a specification of what the world is like in a spatial region on its own tells us nothing about what the world is like outside that region.[20]

Because of the special role that time plays in the laws, I'll begin by saying what it takes for two regions that are time-slices to have the same functional role. Intuitively, two time-slices have the same functional role if and only if they exert similar influences on and are influenced similarly by other regions. That is, if two time-slices have the same functional role then they have same *forward-directed* and the same *backward-directed* functional role. The forward-directed functional role of a region concerns what is *entailed by* the laws together with a description of that region. The backward-directed functional

18 My case in favor of functionalism will be largely independent of details about what the laws of nature are like. Since spacetime functionalism can be formulated in the context of special and general relativity with only minor (and philosophically irrelevant) changes, when specificity matters I will for simplicity's sake assume the laws are those of Newtonian gravitational mechanics.

19 If the laws are deterministic, this determines the evolution of the world uniquely; if the laws are chancy, it provides complete information about the probabilities of the possible histories.

20 Some philosophers argue that this feature is what *makes* a dimension the time dimension. For example, see Skow (2007) and Loewer (2012). Note that it is not just that the laws govern evolution in time; the laws do so by governing the evolution of the *entire world* over time. That is, the laws alone typically say nothing at all about what follows if a certain subregion of the time-slice of the world at certain time is a certain way. For example, however unlikely or far-fetched it is, it is *consistent* with the laws that a nuclear-bomb-proof barrier is hurtling toward me in such a way as to shield me from any errant explosions. So the laws alone do not entail that if there is a nuclear explosion in my coffee mug then I will be harmed. Instead, the laws relate entire *time-slices*. In a relativistic context this is not quite true: specifying the nature of any time-like hypersurface inside the past light-cone of each point in r will, if the laws are deterministic, settle what r is like. Still, the general point holds that in general the laws say nothing about how regions smaller than time-slices constrain each other.

role of a region instead concerns what, together with the laws, entail that that region has various properties. (Here, "forward" and "backwards" mean *nomically* forward or backward, where this can be directly defined in terms of the laws; I am not assuming any connection to the direction of time).

Two time slices have the same forward directed functional role if they have qualitatively identical effects whenever they are qualitatively identical. Recall that two regions r_1 and r_2 are qualitatively identical if and only if there is a mapping M between points of r_1 and r_2 such that for any point p of r_1 and any property ϕ, $\phi(p)$ if and only if $\phi(M(p))$. Let us write the claim that two regions r_1, r_2 are qualitatively identical as $r_1 \approx r_2$.

Then we can say what it takes for two time-slices to have the same forward-looking functional role in the following way:

> FUNCTIONAL ROLE$_{timeslice(f)}$. Two time-slices r_1, r_2 have same forward-looking functional role if for any region r_3 and any qualitative profiles q_1 and q_2, if $L(q_1(r_1) \rightarrow q_2(r_3))$ then there is some region r_4 such that $L(r_1 \approx r_2 \rightarrow r_3 \approx r_4.)$[21]

Intuitively, this captures the fact that if detonating a nuclear bomb in my coffee mug would produce an explosion in my apartment, then for any timeslice with the same functional role, a detonation in my coffee mug would product a explosion in my apartment as well.

Backward-looking functional roles can be characterized in a similar way:

> FUNCTIONAL ROLE$_{timeslice(b)}$. Two time-slices r_1 and r_2 have same backward-looking functional role if for any region r_3 and any qualitative profiles q_1 and q_2, if $L(q_1(r_3) \rightarrow q_2(r_2))$ then there is some region r_4 such that $L(r_4 \approx r_3 \rightarrow r_1 \approx r_2.)$

When two regions are qualitatively identical, there may be more than one qualitative-property-preserving between their points, as in the case, for example, when both regions have two qualitatively identical subregions. Two regions play the same functional role only if there exists a mapping on which they have the same forward-looking and backward-looking functional role, and so it is important to keep track of which mapping is being appealed to; let

21 To incorporate chancy causation we need to require that if r_1 having q_1 lawfully entails that the chance that r_3 has p_2 is c, then r_2 being qualitatively identical physically entails that the chance that r_4 is qualitatively identical to r_3 is c.

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$r_1 \approx_M r_2$ mean that M is a qualitative-property-preserving mapping between r_1 and r_2.

Two regions have the same functional role if and only if there is a mapping M that satisfies the consequent of both Functional Role$_{ts(b)}$ and Functional Role$_{ts(f)}$.[22] Call such a mapping an *entailment-preserving* mapping; two regions have the same functional role if there is an entailment-preserving mapping between them.

One might worry that since the only physically necessary conditionals linking regions are those that concern time-slices, they don't give us the resources to capture the functional role of *spatial* regions. But the functional role of a spatial region can be characterized in terms of the functional role of the time-slice that contains it. For example, consider the spatial region that at time t contains my coffee mug, r_{mug}. Intuitively, the laws tell us *something* about the effects the qualitative profile of r_{mug} has on other regions, even if specifying the qualitative profile of r_{mug} alone entails nothing specific about other regions. We can cash this out by appeal to the *conditional* entailments associated with r_{mug}. In general:

> FUNCTIONAL ROLE($spatial$). Two spatial regions r_1 and r_2 have the same functional role if and only if there are time-slices ts_1 and ts_2 such that (a) r_1 is part of ts_1, r_2 is part of ts_2, and ts_1 and $ts2_1$ have the same functional role, and (b) any entailment-preserving mapping M between ts_1 and ts_2 maps r_1 to r_2.

We now have the resources to say what it takes for worlds to have the same causal structure:

> CAUSAL STRUCTURE. Two worlds w_1, w_2 have the same causal structure if and only if there is a one-one mapping M between regions of w_1 and regions of w_2 that maps every region to a region with the same functional role.

22 That is:

Functional Role$_{\text{timeslice}}$. Two regions r_1, r_2 have same forward-looking functional role if and only there is a mapping M between r_1 and r_2 such that (a) for any region r_3 and any qualitative profiles q_1 and q_2, if $L(q_1(r_1) \rightarrow q_2(r_3))$ then there is some region r_4 such that $L(r_1 \approx_M r_2 \rightarrow r_3 \approx r_4.)$ and (b) for any region r_3 and any qualitative profiles q_1 and q_2, if $L(q_1(r_3) \rightarrow q_2(r_2))$ then there is some region r_4 such that $L(r_4 \approx r_3 \rightarrow r_1 \approx_M r_2.)$.

This captures what is shared between the worlds we looked at above: in each scenario, for every region in the actual world we can find a region that plays the same functional role.[23]

The spacetime functionalist makes three distinctive claims. Two concern the nature of fundamental reality:

> Anti-Primitivism. There are no fundamental spatiotemporal properties or relations.

> Anti-Humeanism. There are fundamental facts about physical necessity.

The spacetime functionalist is not a *spatial nihilist*; rather, she holds an explanatory thesis about how facts about spacetime structure emerge from what is fundamental:

> Functionalism. The spatiotemporal arrangement of the world is grounded in its causal structure.

On this view, when God created the world He made the spacetime regions and determined the facts about physical necessity, and the structure of space and time emerged from this basis. Spacetime regions are fundamental, but their geometric structure is derivative.

I have not given a formula for calculating what spatiotemporal facts would emerge given arbitrary specifications of the world's causal structure. But a grounding claim can be substantive and interesting in the absence of such a formula: one can surely hold that phenomenal states are grounded in brain states without having to hand a formula that predicts which phenomenal states emerge under various brain states. Nevertheless, we can identify a substantive constraint governing the emergence of spacetime structure:

> Supervenient Spacetime. If there is a mapping M between regions in w_1 and w_2 that maps every region to a region that plays

23 So far, I have explained how to characterize the functional role of two kinds of regions: time slices and parts of time slices. Because of the distinctive roles space and time play in the laws, the full causal structure of space and time is captured by specifying the functional role of these regions. This is because in a classical setting the only distances that the laws "care about" are temporal distances and spatial distances among points on the same time slice; they are insensitive to spatial distances between points on different timeslices.

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> the same functional role, then M also maps regions to regions with the same spatiotemporal features.

Before moving on to argue for spacetime primitivism, I will first make clear that while the claim that spacetime is derivative or "emergent" is not new, spacetime functionalism differs in important ways from the theses that are typically discussed in the literature under this label.[24]

Some theories that hold that spacetime is emergent are much *weaker* than spacetime functionalism, since they hold that there *is* some kind of fundamental spatial or geometric structure, although the structure of familiar three-dimensional space and time are derivative.[25] I will treat these claims as versions of spacetime primitivism, since they posit fundamental spatial structure.

Other theories that hold spacetime is emergent are much *stronger* than spacetime functionalism, since they endorse novel physical theories governing the behavior of the fundamental ontology.[26] I will set these theories aside, since I want to focus on the *philosophical* rather than the physical arguments for denying spacetime primitivism.

One class of theories in particular that received a lot of attention with the advent of special relativity are *causal theories* of time or spacetime such as those developed by Reichenbach (1958), Grünbaum (1963), Winnie (1977) and van Fraassen (1970).[27] What these theories have in common is that they aim to recapture the geometry of spacetime from facts about a primitive notion of *causal connectability* among points, where to say two events are causally connectable means something like: it is physically possible for a signal (i.e. a

24 David Chalmers (2019) also argues for a thesis he calls "spatial functionalism". One crucial difference between Chalmers' claim and the one defended here is that Chalmers' concerns the *concepts* of space and time, whereas spacetime functoinalism as characterized here is a purely metaphysical claim: there are no fundamental spatiotemporal properties or relations. This is arguably independent of the claim about concepts.

25 For example, Albert (2015) defends an interpretation of Bohmian quantum mechanics on which the fundamental space is an extremely high-dimensional *configuration space*, and facts about four-dimensional spacetime are grounded in facts about the laws that govern the motion of a point through configuration space. Similarly, some versions of string theory hold that the familiar macroscopic spatial and temporal dimensions emerge from what is going on in the multitude of dimensions posited by the theory. See, for example, Huggett and Wüthrich (2013).

26 Huggett and Wüthrich (2013) contains a survey of theories of quantum gravity that have the consequence that spacetime is emergent.

27 Although the idea is probably much older: Leibniz arguably gave a causal theory of time in "The Metaphysical Foundations of Mathematics".

massive particle or a light pulse) to be sent from one to the other. This program is confronted by various technical problems. van Fraassen (1972) But crucially, the failure of causal theories of spacetime would not undermine spacetime functionalism because the reduction base of these theories is much sparser than that of spacetime functionalism. This is because there are many facts about physical necessity (for example, the fact that it is physically necessary that a world otherwise like this one but with a nuclear explosion in my coffee mug is one in which I die) that are not settled by the facts about causal connectability.

2 Is Spacetime Functionalism too Complicated?

A distinctive feature of the spacetime primitivist's account of fundamental reality is that the physically necessary conditionals linking regions are fundamental. This is opposed to a standard approach to laws and spacetime according to which these conditionals are derivative: on this standard view, God settled the arrangement of things in spacetime, and then settled the laws, and it is in virtue of these facts that it is physically necessary that if my coffee contains a nuclear explosion (and the world is otherwise unaltered) then I will die. The spacetime functionalist instead reverses the order of explanation by holding that physically necessary conditionals linking particular regions are fundamental.

This is an unfamiliar way of thinking about the fundamental nomic structure of the world. But are there good reasons to resist it?

One objection is that the spacetime functionalist's theory is *too complex*, for she must appeal to physical necessary conditionals linking incredibly many different individual regions.

The bare concern about complexity seems misplaced, however. After all, according to spacetime primitivists, it is a brute fact that some points but not others are close together; the spacetime functionalist merely replaces these individualistic facts with facts about direct dependence.

Perhaps a better way to make this objection is to appeal to the fact that complexity in the *laws* is much worse than complexity in contingent facts, and complain that the laws of the spacetime functionalist are incredibly complicated. In response, note that there is a clear sense in which there is much *less* structure in the fundamental facts about physical necessity according to the spacetime functionalist than there is for the spacetime primitivist! This is because the spacetime primitivist believes that the laws encode facts

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about spacetime structure: worlds with the same causal structure in general have different laws by the lights of the spacetime primitivist. The spacetime functionalist, on other hand, denies that the laws have enough structure to distinguish between these worlds.

A different way of developing this objection is to complain that the spacetime functionalist's fundamental nomic facts, which concern physically necessary conditionals linking individual regions, cannot be *stated* simply. The spacetime primitivist, on the other hand, can state her fundamental nomic facts (if she holds that there are any!) by appeal to a small number of general laws.

In response, the spacetime functionalist can grant that the laws of nature are precisely those laws found in physics journals. It's just that the laws, which are stated in terms of spatiotemporal structure, are not stated in fundamental terms. The familiar laws of nature that are stated in terms of spatiotemporal structure merely serve as simple and elegant ways of encoding the fundamental facts about physical necessity. In other words, the spacetime functionalist can hold that the standard laws are *scientifically* fundamental, while facts about physical possibility are *metaphysically* fundamental.

We should distinguish between *scientific* explanation and *metaphysical* explanation. For example, while the fact that a certain atom is ionized at t_2 might be scientifically explained by the fact that it absorbed some radiation at t_1. But the fact that it absorbed some radiation is not what *makes it true* that it is ionized. It is ionized in virtue of having a different number of protons and electrons.

Humeans about laws appeal to this distinction in response to the charge that their account of laws is circular. Humeans claim that the fact that some regularity R is a law obtains at least partially in virtue of the fact that R is a regularity. But laws are supposed to explain their instances. So that R is a law is explained by R (from Humeanism) and R is explained by the fact that R is a law (from the explanatoriness of laws). Armstrong (1983) claims that this makes the account circular. Humeans (like Loewer 2012) may respond by pointing out that the senses of explanation at issue are different. Laws are *metaphysically* explained by their instances, but instances are *scientifically* explained by the laws.[28]

28 Lange (2013) argues that while the two notions of explanation are distinct, scientific explanations are transmitted over metaphysical explanations, and that this means the Humean account of laws is circular after all. Hicks and Elswyk (2015) respond by arguing against bridge principles linking scientific and metaphysical explanation.

The spacetime functionalist can make a similar move; she can claim that the familiar laws that are framed in terms of spacetime are scientifically fundamental, while facts about physical necessity are nonetheless metaphysically fundamental.

There are independent, quite general reasons to think that the scientifically fundamental laws are not metaphysically fundamental—that is, not state in metaphysically fundamental terms.[29]

The fundamental physical laws are stated using *defined notions.* But defined notions are plausibly fundamental—they are less fundamental than the notions they are defined in terms of. For example, the fundamental scientific laws are differential equations; they say how the rate of change of one quantity relates to other quantities. But facts about rates of change, like acceleration, are not metaphysically fundamental. The acceleration of some body at time t is defined as the limit of the rate of change of velocity in successively smaller time periods containing t. Velocity is similarly defined in terms of position. But scientists feel no need to state laws about rates of change as very complicated claims about limits, and if they did the laws would become dramatically less simple.[30]

Another reason for thinking that the scientifically fundamental laws are not metaphysically fundamental is that scientific laws are *mathematical* claims. A very plausible explanation of this fact is that even though the world does not have fundamental mathematical structure itself—a two meter rod doesn't stand in the same relation to a three meter rod as the number 2 stands in to the number 3—we may usefully use mathematical structures to represent physical structures. But there are obvious reasons for physicists to describe the world mathematically even if the world has no fundamental mathematical structure: precisely because it is simpler and more elegant and easier to reason about the mathematical description.

The lesson, it seems, is that scientists deliberately state the laws in non-fundamental terms for the sake of the simplicity gained.

Of course this is perfectly compatible with there being a close connection between the scientifically fundamental and metaphysically fundamental laws, so that the fact that some property appears in the scientifically fundamental laws is defeasible evidence that it is metaphysically fundamental. But there are already independent compelling reasons to think that the metaphysically

29 Hicks and Schaffer (2017) argue for this claim in greater detail.

30 Moreover, if these claims about limits were themselves defined in the standard way, in epsilon-delta terms, the full statement of the laws would be even more complicated.

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fundamental laws are too complicated to be considered candidates for being scientific laws. So it is no objection to the spacetime functionalist that her view has this feature as well.

Perhaps what is really driving the objection is that the spacetime functionalist posits a vast number of *independent* fundamental nomic facts, whereas the spacetime primitivist can get by with positing only a small number of fundamental laws. This, we might think, is a serious cost for spacetime functionalism.

Simplicity is relevant to theory choice in a few different ways. Theories that attribute *less structure* (nomic or non-nomic) to the world are preferable. Since spacetime functionalism attributes less structure to the world than spacetime primitivism, this is not what drives this objection. A different principle concerning simplicity is that theories that can be *stated* simply and elegantly are better theories. Again, this principle does not count against spacetime functionalism because there *is* a perfectly simple way of stating the theory in terms of the scientifically fundamental laws. The principle that is required to drive the objection under discussion must be something like:

> NOMIC SPARSENESS (NS). All else equal, we should prefer a theory on which there are there are a small number of fundamental nomic facts.

If (NS) is a constraint on theory choice then this gives us some reason to resist spacetime functionalism. (Although I will also argue that all else is *not* equal.) However, it is unclear what the motivation for (NS) would be. The motivation does not come from an Occamist preference for theories that attribute less structure to the world. Nor does it come from a preference for theories that can be stated simply. Moreover, if (NS) were correct then it would count against much more than just spacetime primitivism. For example, according to dispositional essentialism, the fundamental nomic facts concern the essences of the fundamental properties. If there are uncountably many determinate mass properties, as many suppose, then the dispositional essentialist holds that there are a vast number of fundamental nomic facts. But however the merits of dispositional essentialism compare to other non-Humean accounts, it is odd to think—and no one has yet claimed—that *this* feature of the view makes the theory worse. This suggests that (NS) should not play a significant role in theory choice.

The mere fact that the scientifically fundamental laws are not metaphysically fundamental is not particular to spacetime functionalism. Moreover, there are independent reasons to think the laws, when stated in metaphysically fundamental terms, will be vastly more complicated than their canonical statements. Since the nomic facts that the spacetime functionalist recognizes are *logically weaker* than those posited by the spacetime primitivist (because they distinguish between fewer possibilities), the complaint that spacetime functionalism is overly complicated is mistaken. And the mere fact that the spacetime functionalist must recognize many independent fundamental facts about physical necessity is no reason to object to the view. So I conclude that none of the objections to positing fundamental facts about physical necessity are very compelling.

3 The Argument from Metaphysical Redundancy

David Lewis said of the perfectly natural properties and relations that "there are only just enough of them to characterize things completely and without redundancy" (Lewis 1986a, 60).[31] There is something very intuitive about this thought. When God created the world, we might imagine, he didn't do unnecessary work. The fundamental facts should plausibly form a *minimal supervenience base*, so that everything supervenes on the fundamental facts but not on any proper subset of them. If the fundamental facts failed to form a minimal supervenience base, then some of them wouldn't be needed to characterize the world. I'll say facts like this are *metaphysically redundant*.

According to the spacetime primitivist, spatiotemporal properties and relations are fundamental. But as I will argue, facts about them do not form a mimimal supervenience base. So there must be metaphysical redundancy in the spatiotemoral primivist's account of the world. This is a count against spacetime primitivism.

I'll first explain why this is the case for the most naïve version of spacetime primitivism, and then explain why any more sophisticated version fails to deliver a minimal supervenience base as well.

31 Lewis makes a similar remark in his (1983, 12): "The world's universals should comprise a minimal basis for characterizing the world completely." Lewis clearly means something modal by "characterizing reality": a collection of facts characterize a world w completely if and only if they are true only at w.

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Consider a spacetime primitivist who regiments the structure of spacetime by positing a family of external relations, the distance relations.[32] That is, the relations *one meter apart*, *two meters apart*, *seventeen meters apart* and so on are all fundamental.

On this view, in order for God to determine how things are arranged in space at a given time He must decide separately, for every material object, which distance relations it stands in. Suppose He starts with my fridge; it is two feet from my coffee maker, 200 miles from Obama, 4000 miles from Putin, and so on.[33] Next, He determines all the distances the Eiffel Tower stands in: it is 95,000 miles from the South Pole, 239,000 miles from the moon, and so on. Third and fourth, He determines for each object its distance from the center of the sun and its distance from the summit of mount Everest. If this way of thinking about distance is correct, God has not even completed a tiny fraction of the work he needs to do to settle the distance facts once he has settled which distances these four objects stand in. But any additional work he does is unnecessary, for the distance relations these four objects stand in is enough to determine the distance between any arbitrary objects in the universe.

Say we want to know how far apart Obama and Putin are. According to the spacetime primitivist this is to ask which fundamental distance relation holds between them. But how far apart they are is already determined by the relations we have specified! For if we know how far Obama and Putin are from my fridge, the Eiffel Tower, mount Everest and the Sun, then by trilateration we know how far apart they are.[34] So this fact about the distance between Obama and Putin is metaphysically redundant. The spacetime primitivist

32 Note that in a relativistic setting it is neither spatial nor temporal distance relations that will be primitive but rather spatiotemporal interval relations. But nothing hinges on this and for familiarity I will use spatial distance relations as my example.

33 Composite objects plausibly inherit their locations, and therefore the distances they stand in, from their parts: my toaster is two meters from my coffee mug in virtue of the fact that the atoms making up my toaster are two meters from the atoms making up my coffee mug. And if substantivalism is true then it is plausible that the distances between material objects are inherited from the distances between the regions at which they are located: my toaster is two meters from my coffee cup in virtue of the fact that my toaster is located at r_1, my coffee cup is located at r_2, and r_1 is two meters from r_2. But I will ignore all of these complications to keep the discussion simple.

34 If we know a point lies on the surfaces of three spheres, then this is enough sufficient information to narrow the possible locations down to no more than two (unless the centers lie on a straight line). Knowing the point's distance to a fourth object will identify it, as long as the fourth object is not equidistant from either location.

could claim that only some facts about distances are fundamental. But any choice of some distance relations over others will be implausibly arbitrary.

Rather than taking distance relations as fundamental, the spacetime primitivist could instead encode facts about distance in other terms. But however she regiments the structure of spacetime her account will entail that there are metaphysically redundandant fundamental facts.

For example, she could posit two fundamental relations, *betweenness* and *congruence*.[35] *Congruence* holds between four points p_1, p_2, p_3, p_4 just in case the distance between p_1 and p_2 is the same as the distance between p_3 and p_4. But this account suffers from the same problem: if my coffee mug and my toaster bear *congruence* to your coffee mug and toaster and also to Fred's coffee mug and toaster, then this entails that your and Fred's mugs and toasters stand in *congruence* too. So this last fact is redundant.

The primitivist could instead take facts about *path lengths* to be basic. The distance between two points can then be defined as the length of the shortest path between them.[36] This avoids the redundancy that arose with distance relations, since the length of the shortest path between Obama and Putin is not settled by the lengths of the paths between my fridge, the Eiffel tower and the Sun and everything else. But taking path lengths to be fundamental results in redundancy of another form. Let a path be a fusion of points, and suppose we assign each path a positive real number that represents its length in meters.[37] Since we are assuming that space is dense, every path p is composed of two subpaths p_1 and p_2. The length of a path is determined by the length of all the subpaths that compose it. So if the length of p_1 and p_2 is determined, there is no need to then go on to determine the length of p. So any fundamental fact about the length of p would be metaphysically redundant. But there was nothing special about p; and therefore every path length fact is metaphysically redundant.

35 David Hilbert's (1899) axiomatized Euclidean geometry in these terms. Field (1980) uses this axiomatization in his nominalization of Newtonian mechanics.

36 Tim Maudlin argues that we should take facts about distance to be defined in terms of path lengths on the grounds that this allows us to explain constraints like the *triangle inequality*: for any three objects, a, , b and c, the distance between a and b is no greater than the distance between a and c added to the distance between b and c. This following section argues that Maudlin is mistaken.

37 Construing regions as mereological fusions rather than sets has the advantage of entailing that they are concrete (since anything with only concrete parts is concrete, but sets of concreta are arguably abstract.) The fact that spacetime regions have physically interesting properties that stand in causal relations is, I take it, a good reason to think they are not abstract objects.

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Finally, the primitivist could posit a fundamental geometric property of spacetime points that is aptly described by a mathematical object called a *metric tensor*. In effect, the metric tensor of a point p encodes information about distances within an infinitesimal neighborhood of p.[38] The length of a path p can then be obtained by integrating along p.[39]

But since the metric tensor at p provides information about the distance structure *nearby* p, redundancy re-arises. I'll illustrate this point with another example of a neighborhood-dependent property, velocity. The velocity of some object at time t is a matter of what the object does *nearby* t: the velocity of o at t is the limit of the average velocity of o in smaller and smaller intervals of time containing t. This means that specifying the instantaneous velocity of an object at every time involves redundancy. Suppose o traveles on some smooth trajectory between t_1 and t_2, and that the velocity of o at every time between t_1 and t_2 is given except for some instant t_i. Because velocity is defined in terms of nearby instants, the velocity of o at t_i is already settled by velocities at other times. So specifying the velocity at t_i would be redundant. But there was nothing special about t_i, and so the same is true of every fact about o's velocity.[40] The situation with metric tensor facts is precisely analogous. Suppose the metric tensor at every point in some space except for p is given. Then it is determined exactly what the metric tensor at p is. So specifying the metric tensor at p in addition would be redundant.[41]

This problem does not arise for the spacetime functionalist. This is because xxx

38 More precisely, the metric tensor at a point is an inner product on the tangent space of that point. Note that this raises the question of the status of topological facts, for the metric tensor can be defined only on differentiable manifold with a baked-in topology.

39 Actually the primitivist can't simply start with a set of points and add metric tensor facts, for she must also provide an account of the topology of the manifold.

40 The stipulation that o traveled smoothly is doing some work here since the claim about redundancy only follows given that o *has* a velocity at t_i.

41 Bricker (1993) argues on this basis that we should invoke novel fundamental properties that behave like metric tensors but are intrinsic to points, and therefore which aren't defined in terms of their neighborhoods. These properties are analogous to the intrinsic velocities invoked by Tooley (1988). These properties would seem encode a lot of information, since they have the structure that metric tensors have. But in fact Bricker's metric tensors only provide this information given that the laws happen to tie them to the neighborhoods of points that instantiate them. But then encoding this structure in the properties themselves is doing no work, which is all by the laws. While this view may escape the argument from metaphysical redundancy it makes the argument from explanatory redundancy more pressing.

If spacetime primitivism is correct then there is no non-arbitrary, non-redundant supervenience base for the world. This is a reason to prefer spacetime functionalism, for which these problems do not arise since the world's minimal supervenience base doesn't include facts about spatial or temporal distance.

4 The Argument from Explanatory Power

The spatiotemporal primitivist holds that spatiotemporal properties and relations are fundamental. This makes it puzzling that spatiotemporal relations march in lockstep. For example, the fact that *a* is two meters from *b* and *b* is two meters from *c* imposes constraints on possible distances between *a* and *c*. Some will be willing to go as far as David Hume and insist that the basic building blocks of the world are "entirely loose and separate" (1975, 61). Even for those who doubt the fundamental world is entirely "loose", however, it hard to deny that a theory is better if it is able to explain constraints among the fundamental properties and relations instead of having to leave them as brute stipulations.

Necessary connections call out for explanation. For example, many philosophers infer from the fact that normative properties supervene on natural properties that normative properties are grounded in natural properties, precisely because this supervenience ought to be explained. If natural and normative properties were both fundamental, the thought goes, it would be mysterious why they were so nicely choreographed. We might imagine that God creates the world, one fundamental property at a time. Once he has settled the distribution of the natural properties, he goes on to specify the distribution of normative properties, but *necessarily* does so in precisely such a way that one class of properties supervenes on the other. But why? Why should God's creative powers have to follow this pattern?

One can hold that necessary connections should be explained whenever possible without being committed to the radical Humean doctrine that there are no necessary connections at the fundamental level. Consider David Lewis' complaint about David Armstrong's account of laws of nature. On Armstrong's account it is a law that anything with F has G if and only if F bears the second-order relation *nomic necessitation* (or *N*) to G. Lewis objects that no explanation has been given for why the fact that N(F,G) should entail that anything with F also has G:

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> Whatever N may be, I cannot see how it could be absolutely impossible to have N(F,G) and Fa without Ga […] The mystery is somewhat hidden by Armstrong's terminology […] who would be surprised to hear that if F "necessitates" G and a has F, then a must have G? But I say that N deserves the name of "necessitation" only if, somehow, it really can enter into the requisite necessary connections. It can't enter into them just by bearing a name, any more than one can have mighty biceps just by being called "Armstrong". (1983, 366)

Lewis seems to think that there is something especially problematic about Armstrong's theory. I don't think that's right. Armstrong posits a special second-order relation to make sense of laws. But it is a virtue, not a vice, of Armstrong's account that he does not merely posit and stop there. He says something about how his chosen machinery is supposed to behave. The phenomenon Lewis is objecting to is utterly mundane: any theory must have some entities or primitives that aren't explained in other terms, and any interesting theory will say something about how these primitive features behave.

Lewis is a spacetime primitivist. He recognizes a family of perfectly natural external relations, the distances. But for them to play the role of distances they must obey certain constraints, like the triangle inequality: it had better be the case that for any three points *a*, *b* and *c*, the distance between *a* and *b* added to the distance between *b* and *c* is not more than the distance between *a* and *c*. And it had also better be the case that a given pair of points only ever stand in one of these fundamental external relations: two points cannot stand in multiple distance relations. How does Lewis explain these constraints? He doesn't. That *a* is 1*m* from *b*, *b* is 1*m* from *c*, and *a* is 1*m* from *c* are all distinct, basic states of affairs. We might imagine Armstrong offering a parody of Lewis' complaint:

> Whatever these distance relations may be, I cannot see how it could be absolutely impossible to have *one-meter(a,b)*, *one-meter(b,c)* and *twenty-meters(a,c)*. I say that these relations deserve the name "distances" only if, somehow, they can really obey the necessary constraints. They cannot obey them just by bearing a name, any more than [etc.]

Still, Lewis does have a legitimate complaint against Armstrong. It is that Armstrong posits necessary connections where he doesn't need to. Armstrong must simply stipulate that *nomic necessitation* behaves in the way he claims it does. The Humean reductionist about laws need not make any such stipulation.

We can profitably think of Lewis's complaint as an appeal to a certain kind of parsimony.

Theories that make fewer assumptions are, all else equal, better theories. This principle takes on a few different guises in metaphysics. It's familiar to distinguish between the *ontology* of a theory (which things it says exist) and its *ideology* (those expressions of the theory which are unexplained, the primitives of the theory.) We can distinguish between varieties of simplicity correspondingly. Ontologically simpler theories posit fewer (types or tokens of) entities. Ideologically simpler theories use fewer primitive expressions.

But there is a further notion of simplicity that does not take either of these forms. Say that *axiomatically* simpler theories are those that contain fewer stipulations about how the primitives of the theory behave.

Suppose the spacetime primitivist accounts for the structure of space and time by positing a family of perfectly natural external relations, the distance relations. These relations must be stipulated to behave in certain ways if they are apt to play the role of *distance* relations. First, they exclude one another. It had better not be possible for two things to stand in hundreds of different distance relations. And second, they must obey broader constraints in their distribution, like the triangle inequality: it had better be true that for any three objects, o_1,o_2,o_3, the distance between o_1 and o_3 is at most the sum of the distances between o_1 and o_2 and o_2 and o_3.[42] This a cost that the spacetime functionalist avoids.

As we saw in the previous chapter a more sophisticated spacetime primitivist need not regard distance relations as fundamental. But however the spacetime primitivist accounts for the structure of space the same problems will reemerge for similar reasons.

For example, suppose that path lengths are fundamental and facts about the distance between two points obtain in virtue of facts about the length of the shortest path between them. Maudlin (2007) claims that the benefit of taking path length to be prior is that constraints like the triangle inequality emerge by definition instead of having to be stipulated. But as we saw in the

42 As Maudlin (2007) points out, there are many more constraints once we consider the distribution of distances for more than three objects.

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previous section there are still plenty of constraints on path lengths that must be postulated. For example, we must stipulate that the length of a path is always equal to the sum of the lengths of the subpaths composing it.[43]

These unexplained stipulations are theoretical costs. We should avoid positing necessary constraints whenever we can; all else equal they make a theory worse. Spacetime primitivists must simply postulate that their favored primitives obey certain constraints such as the triangle inequality. The spacetime functionalist, on the other hand, has no need to, since these constraints naturally emerge from the nomic facts to which spacetime reduces.

The spacetime functionalist theorist takes facts about nomic necessity to be fundamental. We saw that Armstrong must stipulate that *nomic-necessitation* behaves in a certain way. But there is nothing unique about Armstrong's account in this respect; *any* non-Humean must make an analogous claim.[44] So the spacetime functionalist should stipulate that $L(p)$ entails p.

But once this constraint is in place the spacetime functionalist has a ready explanation for the constraints that the primitivist must take for granted. Take the fact that no two points can stand in more than one distance relation. This would require that one point is associated with two different and incompatible sets of physically necessary conditionals. For example, suppose that p_1 and p_2 are both one meter and two meters apart. Then it is physically necessary that if there is a lonely object with mass m at p_1 then the gravitational field at p_2 will be g_1, and also physically necessary that it be g_2. But this would require the same point to have two gravitational field values, and this is impossible. More generally, physical magnitudes within a determinable family, like 1kg mass and 2kg mass, exclude one another. Given this fact and the fact that nomic necessity is alethic, it follows that it is impossible for two points to stand in more than one distance relation.

Of course, the spacetime functionalist is left with the unexplained incompatibility of physical magnitudes. But so too is the spacetime primitivist. The

43 Suppose instead that distances are encoded with the relations *congruence* and *betweenness*. It must be stipulated that *congruence* is transitive and *betweenness* is transitive. Finally, consider the view that facts about the metric tensor are basic. It must be stipulated that if the metric tensor at some point p represents a locally positively curved space then p is not surrounded by a locally negatively curved space, for example.

44 For example, the dispositionalist will leave principles like the following unexplained:
Dispositional Principle. If something is disposed to x given y, and y occurs, then (absent finks and masks) it y's.

spacetime functionalist has no need, unlike the primitivist, to *additionally* stipulate that constraints like the triangle inequality hold.[45]

Spacetime primitivists must posit brute necessary connections between the basic building blocks of the world, whereas these connections emerge naturally given spacetime functionalism of spacetime. This is another reason to prefer spacetime functionalism.

5 The Argument from Parsimony

The argument from parsimony is simple. Spacetime functionalism attributes less structure to the world than spacetime primitivism. All else equal, we should prefer theories that attribute less structure to the world. So, all else equal, we should prefer spacetime functionalism over spacetime primitivism.

Of course, all else is only equal if spacetime functionalism is able to explain our evidence just as well as spacetime primitivism. This section will present two arguments in favor of this claim. The first argument will pursue an analogy between absolute velocities and spacetime primitivism which gives us reasons to think primitive facts about space and time are *undetectable* and therefore *empirically redundant*. The second argument makes the perhaps surprising claim that our apparent evidence does not include facts about the world's spatiotemporal structure. Since we should believe the best explanation of our apparent evidence, we should adopt spacetime functionalism.

My first case against spacetime primitivism is analogous to the case against endorsing facts about absolute velocity in the context of Newtonian gravitational mechanics (NGM).

You are moving at different speeds relative to different things. You are stationary with respect to your armchair, moving at about 66,500 mph around the sun, and at about 515,000 mph around the center of the Milky Way. But how fast are you *really* going? Do you also have an *absolute* velocity in addition to all these relative velocities?

The consensus among philosophers of science is that we should think not. As Newton himself was aware, what the laws of NGM say about how things in a system interact is completely independent of how fast the system is moving. But this means that even if you have an absolute velocity, it is impossible to detect it. The fact that absolute velocities are undetectable shows that we don't

45 In other work I argue for an account of physical magnitudes that allows us to explain the incompatibility of magnitudes.

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need them to make sense of the world: they are *empirically redundant*. Since we should prefer theories that attribute less structure to the world, we should prefer an account of the world that does not recognize absolute velocities.[46]

Why aren't absolute velocities detectable? On a natural way of thinking about detectability, for a physical quantity q to be detectable requires that there is a *measuring procedure* for q: a process whose outputs (a) are reliably correlated with the value of q and (b) are accessible to us, so that the procedure allows us to form reliable beliefs about the value of q.[47] For example, a measurement procedure might correlate the value of q with the position of a dial in some measuring device, or what is displayed on a computer screen, or the arrangement of ink particles on a piece of paper, so that by observing the dial, computer screen or paper, we can form reliable beliefs about q.

If a quantity q is detectable by any means then we can argue that in particular there must be a measurement procedure that correlates the value of q with the *positions* of material bodies; for example, the positions of ink particles on a piece of paper. After all, if there is any measurement procedure for q that allows me to form reliable beliefs about q, then I could decide to write down the content of my beliefs on a piece of paper, and so the procedure that includes my recording the result on paper will itself be a reliable measurement procedure.[48]

But given NGM it is *impossible* for there to be a measurement procedure like this for absolute velocity! Suppose there were such a procedure and that it is carried out by Sally the scientist. Sally writes down the result on a piece of paper: *My absolute velocity is 5 mph.* Now imagine a world that is just like ours, except that everything is moving 1000 miles an hour faster in a certain direction. The two worlds agree on the relative motions and positions of every object, and Sally therefore writes down *My absolute velocity is 5 mph.* in this world too. But Sally's absolute velocity is different in the two worlds, and so

46 For discussion of this case see Earman (1989), Brading and Castellani (2003), Roberts (2008), North (2009), Baker (2010), and Belot (2011). Some philosophers (for example Dasgupta 2013; and Maudlin 2007) present the case against absolute velocities as revolving around the vice of positing undetectable structure rather than the vice of positing redundant structure.

47 This way of thinking about detectability comes from Albert (2015) and Roberts (2008).

48 This is at least this case for what is detectable *for us*. Perhaps there could be beings that have the ability to sense their absolute velocity directly, even though they would be in the bizarre position of being unable to communicate their sensations in the form of letters or in spoken conversation or in sign language. (Roberts 2008 discusses the possibility of such beings, and the implications this has for the claim that absolute velocities are undetectable.) But I take it that we are not like these beings.

the measurement procedure must have produced a false result in at least one of them. So the procedure can't have been reliable after all.

This suggests the following necessary condition for some quantity to be detectable:

> P1. A quantity q is detectable in w only if there is a measurement procedure for q in w.

Since there is no measurement procedure for absolute velocities in NGM, absolute velocities are undetectable.

However, for some quantity q to be detectable it is not sufficient for there to be a measurement procedure for q. Consider the hypothesis—(Stationary)—that there are facts about absolute velocities but the laws specify that the center of mass of the universe is stationary. There *is* an measurement procedure for absolute velocities given (Stationary): to find the absolute velocity of some body, simply find its motion relative to the center of mass of the universe.

But there is an important sense in which absolute velocities would still be undetectable given (Stationary). For the measurement procedure described above is only a reliable measurement procedure for absolute velocities if the laws are those of (Stationary). So our having evidence concerning the absolute velocities of things depends on our having evidence that the laws are those of (Stationary). But we don't have any such evidence, since the world according to (Stationary) is indiscernible from a world in which there are no absolute velocities and the laws are simply those of NGM.[49]

Consider the theory—(Goblin)—that consists of NGM together with the stipulation that it is physically necessary that there is an invisible, massless goblin collocated with each massive object. It's extremely natural to think that we should give (Goblin) lower credence because it posits things, goblins, that aren't needed to explain the data. But according to (P1), if (Goblin) were true then goblins would be detectable: simply locate the massive objects and infer the existence of goblins there. So if (P1) were correct then we could not argue against Goblin on the grounds that the theory contains redundant structure, since goblin-free theories fail to account for all the detectable facts. But this isn't right.

49 Dasgupta (2013) appeals to similar reasoning to argue that absolute mass facts, as opposed to merely mass ratios, are undetectable.

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The general point is that in order for something to be detectable, not only must there be laws that allow us to implement a measuring procedure, we must also know *what the laws are* that govern our measuring procedure. This suggests that we adopt a more general principle concerning detectability:

> P2. If there is a measurement procedure for some quantity q if the laws are L, but not if the laws are L, and we have no evidence that the laws are L rather than L, then q is undetectable.

This principle correctly predicts that even if (Stationary) is true, absolute velocities are undetectable, and that goblins are undetectable even if (Goblin) is true.

The fact that absolute velocities are empirically undetectable shows that we don't need facts about absolute velocities to make sense of the world; the extra spacetime structure required to make sense of them is superfluous structure.

The spacetime primitivist holds that there are primitive facts about the spatiotemporal arrangement of the world. I will now argue that facts like these are just like absolute velocities. Worlds that differ only in how things are arranged in spacetime are indiscernible, and so we don't need primitive spacetime facts to make sense of the world. Spacetime primitivism is committed to redundant structure, for the additional fundamental facts it requires perform no explanatory work.

The argument from redundancy against spacetime primitivism is analogous to the case against positing facts about absolute velocities:

(S1) Spacetime functionalism attributes less structure to the world than spacetime primitivism.
(S2) *Ceteris paribus*, if two theories are both empirically adequate we should prefer the theory that attributes the least structure to the world.
(S3) Spacetime primitivism and spacetime functionalism are both empirically adequate.
(S4) So, *ceteris paribus*, we should prefer spacetime functionalism to primitivism.

This argument is valid, and so it remains only to defend the premises.

As for (S1), we could appeal to a modal test for when one theory attributes more structure than another. The claim that endorsing absolute velocities requires extra structure is typically motivated in this way: if there are absolute velocities then there are possibilities that differ only in that everything is

moving at a different constant velocity. Similarly, if spacetime primitivism is correct then the actual world and the shrinking world are distinct possibilities. But this is not so according to the spacetime functionalist. Since spacetime functionalism ignores distinctions recognized by spacetime primitivism, spacetime primitivism contains extra structure.

But this modal test is at best a useful heuristic. For consider someone who believes that there are absolute velocities but denies the relevant claims about possibility. For example, as Dasgupta (2013) points out, she might believe that Spinoza was right and there is only one possibility, the actual one. Or she may just endorse (Stationary). A spacetime primitivist could deny that the shrinking world and the actual world are distinct possibilities on similar grounds. But surely these quirky modal beliefs are simply irrelevant to how much structure a theory attributes to the world. A better test is simply to look at the fundamental facts the theories posit. After all, attributing excess structure is a matter of what the world is actually like, not what it could have been like. The spacetime primitivist recognizes all the fundamental facts the functionalist does, and more besides: primitive facts about the spacetemporal arrangement of things. So spacetime primitivism attributes more structure to the world than spacetime functionalism.[50]

I take the principle expressed in (S2) to be ubiquitous in both scientific and common sense reasoning, and enshrined in inference to the best explanation. (S2) is not the claim that simpler hypotheses are always better; just that, faced with two hypotheses that are otherwise equally worthy of belief, we should prefer the one that attributes less structure to the world.

On to (S3). The case for thinking that spacetime functionalism is empirically adequate is analogous to the case of absolute velocity. Since absolute velocities are undetectable, an account of the world that doesn't recognize absolute velocities is alike in all detectable respects with an account that does, and so both theories are empirically adequate as long as one is.

I will argue that primitive spacetime facts are undetectable, and since spacetime functionalism agrees with spacetime primtivism on all the detectable facts, spacetime functionalism is empirically adequate if spacetime primitivism is.

Why think primitive spacetime facts are undetectable? Well, consider whether there is a measurement procedure for distance facts, for example.

50 Spacetime functionalism is the claim that facts about spacetime are not fundamental, not that they are false. So the principle appealed to is: attribute as little structure to *fundamental* reality as possible.

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There must be a procedure that, given two points p_1, p_2, results in a recording of "p_1 is x meters from p_2" only if p_1 is in fact x meters from p_2. Suppose that placing the end of some measuring tape next to one point, holding the tape taut so that it lies on the second point, and recording the number on the tape adjacent to the second point is such a measurement procedure.

Suppose we try to measure my height by this method. Now consider the halved or shrinking worlds described in the previous section, in which my height is different from what it actually is. Since these worlds have the same causal structure as the actual world, they agree about the output of the measurement procedure. So in order for the tape measure to give me evidence about my height I need to have evidence that the laws are those of the actual world and not those of the halved world or the shrinking world. But we don't have any such evidence. These worlds have the same causal structure, and so they are perfectly indiscernible. The same things happen, and for the same reasons. After all, suppose you actually form the belief that there is beer in the fridge on the basis of your perceptual evidence. Then in any world with the same causal structure as the actual world, a purely qualitative duplicate of you forms the same belief on the basis of seeing a purely qualitative duplicate of the beer (and drinks it for the same reason!)

So for every world recognized by the spacetime primitivist there is a an empirically equivalent world recognized by the spacetime functionalist. Thus spacetime primitivism is empirically adequate only if both theories are. This completes the defence of premise (S_3) in the argument. Even though spacetime functionalism attributes less structure to the world than spacetime primitivism it is still able to account for the data. The extra structure of spacetime primitivism is redundant structure.

So much for the argument from undetectability. I will now present a related but different argument for the claim that spacetime primitivism is committed to redundant structure. It is clear enough that the spacetime functionalist attributes less structure to the world than the spacetime primitivist. But the crucial question is whether she can get away with less. Can we explain our evidence with the sparser resources of spacetime functionalism?

Not, of course, if our evidence includes facts about how things are arranged in space and time. For according to the spacetime functionalist worlds with the same causal structure are the same world, but (at least, according to the spacetime primitivist) they disagree radically about how things are arranged in space and time. Since spacetime functionalism is only worthy of belief if it is capable of explaining our evidence, the spacetime functionalist must argue

that our evidence does *not* include facts about how things are arranged in space and time.

I'll now argue for for this claim. Well, not quite—I will argue that *in the sense of evidence that is relevant in metaphysics,* our evidence does not include facts about the spatiotemporal arrangement of the world.

There is a close connection between the concepts of *evidence* and *rationality*: to believe rationally is to accord credence in proportion to the evidence. So theories of evidence make predictions about rational belief.

Because of this many externalist theories of evidence apparently *undergenerate* predections of rational belief. Consider someone whose internal mental life is indistinguishable from your own but who, sadly, is a massively deceived brain in a vat. Many externalists insist that you have evidence your unhappily situated twin lacks (otherwise on what grounds do we believe we ourselves are not in the bad case?) For example, Williamson (2000) holds that our evidence just consists in what we know. If I know that I have hands, then my having hands is part of my evidence; my twin will clearly lack this evidence). But if part of what makes *my* belief that I have hands rational is something that my deceived twin lacks, it would seem that my twin's belief that he has hands is not rational (or at least, if it is, then the rationality of my own belief is oddly overdetermined.) But there is something very compelling about that the thought that if one of us is rational, we both are—after all, our mental lives are indiscernible, and we reason in identical ways.[51]

We should believe the propositions supported by our evidence. If externalism about evidence is right, then there is a sense that my twin *should not* believe he has hands. Perhaps there is a sense of "should", associated with a conception of evidence, on which this is right. But it seems extremely hard to deny that there is also a sense in which, if I ought to believe I have hands, then my twin ought to believe he has hands too. And associated with this notion of rationality there is a conception of evidence on which we have the same evidence. Denote this concept evidence$_{Int}$. (For a useful foil, call the Williamson notion of evidence$_{Ext}$.)[52]

While I'm happy to grant the existence of multiple conceptions of evidence, it also seems clear that only one of these conceptions can usefully inform

51 This puzzle for externalism about evidence resembles the New Evil Demon Problem presented for externalism about justification first discussed in Cohen (1984). For a discussion of the extension to evidence see Silins (2005).

52 I'll remain as neutral as I can about what, exactly, is part of our evidence$_{Int}$. According to Conee and Feldman's (2004) account of evidence, my twin and I have the same evidence.

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deliberation. Imagine my deceived twin deliberating about whether or not to believe he has hands. It does him little good to be told: *believe whatever is support by the things you know!*, for what he is deliberating about is exactly whether he knows the things that would be count in favor of believing he has hands.

The concept of evidence$_E$*xt* seems to *undergenerate* rational belief in the case of my deceived twin. But it also appears to *overgenerate* rational belief.

Recall (Goblin), the theory that the laws are those of NGM together with the stipulation that there is an invisible, massless goblin collocated with every massless object. Suppose that (Goblin) is true. Now consider Greta, who believes (Goblin.) Surely we think that Greta is being irrational—she should reflect on her beliefs and realize that there is a simpler theory that explains her evidence just as well as (Goblin)—namely, NGM.

But if we should believe whatever explains our evidence$_E$*xt*, Greta *should* believe there are goblins. This is because she does know where the goblins are—she is very good at locating massive objects, and very good a correctly inferring the existence of a goblin there. The whereabouts of goblins are therefore part of her evidence, and so she should reject the Goblin-free theory on the ground that it can't explain her evidence.

Similarly, consider Sid, who believes (Stationary) and is in a world where (Stationary) is true. Assuming he possesses the relevant astronomical information and makes the appropriate inferences, Sid *does* know about absolute velocities. If he is rational in rejecting theories that fail to account for her evidence, he is rational in maintaining his belief in Newtonian absolute space. But intuitively this isn't right; there is at least a sense of "ought" in which Sid ought not to believe in absolute velocities.[53]

Again, we can note that considerations about what our evidence$_E$*xt* consists of will not, in general, be very helpful in deliberation. Imagine Greta and Sid deliberating about whether or not to believe in the inflated or the simpler theories they are considering. It is no help to admonish them to believe what-

53 Suppose instead that our evidence consists of what we know *non-inferentially*, where a belief is non-inferential if we don't believe it on the basis of inference. (See Bird 2004.) Against the skeptic we can claim that we know non-inferentially that we have hands. But, we might think, we have plenty of non-inferential knowledge about the spatiotemporal arrangement of the world. Surely I can know where things are just by looking at them! But if (Stationary) were true, we arguably could also have non-inferential knowledge about absolute velocities. (As long as our true beliefs about the absolute velocities were caused by and sensitive to the absolute velocities, say.) So again, this principle has the incorrect result that the believer in absolute velocities would be justified in rejecting theories that failed to account for absolute velocity facts.

ever explains their evidence$_E$*xt*, for the theories themselves have different consequences for their evidence$_E$*xt* consists of.

This suggests the following moral. If you are unsure about what to believe, the best piece of useful advice that can inform your deliberation is: *believe the best explanation of your evidence$_I$nt*. This is precisely the situation with the debate between the spacetime primitivist and the spacetime functionalist. Which theory is correct will dictate which propositions are included in our evidence$_E$*xt*. But just as it was inappropriate for Greta to reject goblin-free theories of the world on the grounds that they fail to explain her evidence, it would be equally inappropriate for you, gentle reader, to reject spacetime functionalism on the grounds that it fails to account for all the facts about how things are arranged in space and time. What matters is that spacetime functionalism explains the appearances, and does so while attributing less structure to the world than spacetime primitivism. This is a count in favor of the theory.

Note that the dispute at issue between spacetime functionalism and the spacetime primitivist is about *what we ought to believe*, not about what we know, given the beliefs we have. Just as Greta knows where the goblins are, but still shouldn't believe in them, I grant that if spacetime primitivism *were* true then we would know how things are arranged in space and time. But this does not yet answer the question of whether or not to believe that spacetime primitivism *is* true.

A quite different response to the argument from redundancy is that while, all else equal, we should prefer theories that attribute less structure to the world, all else is not equal between spacetime primitivism and spacetime functionalism. By allowing the extra structure required by spacetime primitivism we obtain a theory that is much more explanatory, or otherwise superior, and so the extra structure earns its keep. Spacetime functionalism may attribute less structure to the world, but it is so unwieldy, or disjunctive, or ugly that it is overall unworthy of belief. However, the previous sections, which presented the arguments from explanatory power and metaphysical redundancy, argued that spacetime functionalism is not just theoretically on a par with spacetime primitivism, it is to be preferred precisely because it is explanatorily superior.

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6 Conclusion

I hope to have shown in this paper that spacetime functionalism deserves serious consideration as an alternative to spacetime primitivism. This has important implications elsewhere in metaphysics.

I'll close by mentioning one such issue. The debate over Humeanism is one of the most polarizing in metaphysics. Recall that the Humean reductionist about laws cannot be a spacetime functionalist. This means we are faced with the question of how the merits of non-Humean spacetime functionalism compares with the merits of Humean spacetime primitivism.

Each of these packages of views takes something as primitive that the other regards as reducible. Moreover, many of the traditional arguments against non-Humeanism are based on considerations that count similarly against spacetime primitivism as well.

For example, one argument against non-Humeanism involves the charge that we lack epistemic access to the non-Humean's extra machinery, since there are worlds with the same regularities as the actual world but in which this machinery is absent.[54] To the extent that one shouldn't argue for metaphysical conclusions from epistemic premises, we can reframe this concern as one that is really about redundant structure: we can make sense of the world without the non-Humean's extra machinery, claims the Humean, and so we have no reason to posit this extra structure.[55] I have argued that these kinds of considerations also form the basis of an argument against spacetime primitivism.

A distinct kind of concern about non-Humeanism is that it is *mysterious*. One way of presenting this worry is that while the Humean has a story to tell about why laws play the epistemic role they in fact do—for example, why they back explanations, counterfactuals, and induction—the non-Humean must simply stipulate that laws are fit to play these roles.[56] A related argument is that the non-Humean account is unduly mysterious because it is committed to unexplained necessary connections. This charge is based on the claim that it must be simply postulated that the non-Humean's laws entail the regular-

54 This argument is made in Earman and Roberts (2005).
55 Schaffer (2009) presents this argument in favor of Humeanism.
56 See Loewer (1996).

ities they are invoked to explain.[57] I have argued that precisely analogous considerations count equally against spacetime primitivism.

This suggests that the question of whether or not Humeanism is correct is left undecided by the arguments typically marshaled in favor of Humeanism. Proper way to assess the relative merits of Humeanism and non-Humeanism, it seems, must involve a comparison of the overall *packages* of views in metaphysics with which they may be combined. That, however, is a project for another day.

Note Added, by Eddy Keming Chen and Dean Zimmerman

Marco Dees wrote the first version of this paper in 2015, as part of his dissertation submitted for his Ph.D. in philosophy at Rutgers University, New Brunswick. This version of the paper was finished before his untimely death in 2018. We believe that it contains insights that will be of interest to the philosophical community, and we were pleased when Marco's family asked us to explore whether it would be possible for it to be published in an academic journal. Marco defends the idea that the spatiotemporal structure of the world is not fundamental, but is instead grounded in the role spacetime regions play in laws of nature. We are glad that the paper has been, after peer review, accepted by *dialectica*. Given the current state of the literature, it would have been better to call Marco's view "spacetime causal functionalism", in order to make clear the contrast between his theory and versions of spacetime functionalism as defended, for example, by Eleanor Knox in the context of general relativity and by Nick Huggett, Vincent Lam, and Christian Wüthrich in the context of quantum gravity. It is likely that, given the opportunity for revision, Marco would have taken the opportunity to compare his causal functionalism with these other forms of spacetime functionalism. In the end, we decided to leave the paper as Marco had written it, hoping that others will be inspired to work out the comparisons.*

Marco Korstiaan Dees

57 This is the basis of Lewis' famous argument against Armstrong in his (1983). As I explain in section 3, this feature is not specific to a version of non-Humeanism that takes laws to be basic: the same of true, for example, of primitive dispositions.

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