

# Disputatio

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# Dispositional Essentialism and the Nature of Powerful Properties

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## **Abstract**

Dispositional essentialism maintains that all sparse properties are essentially powerful. Two conceptions of sparse properties appear compatible with dispositional essentialism: sparse properties as pure powers or as powerful qualities. This paper compares the two views, criticizes the powerful qualities view, and then develops a new theory of pure powers, termed Point Theory. This theory neutralizes the main advantage powerful qualities appear to possess over pure powers—explaining the existence of powers during latency periods. The paper discusses the relation between powers and space-time points, whether pure powers need to occupy space, and how to account for the movement of pure powers through space-time. Given Point Theory, dispositional essentialists should maintain that sparse properties are pure powers.

## **Keywords**

Dispositions, Powers, Powerful Qualities, Essentialism, Sparse Properties.

## 1 Two theories of powerful sparse properties

Dispositional essentialism maintains that all sparse properties are essentially dispositional or powerful.<sup>1</sup> Sparse properties are the natural properties, including at least the fundamental properties, as Lewis (1986b: 59-61) conceives them. According to dispositional essentialism, every sparse property has its power (or powers) essentially; two or more sparse properties are distinguished by their powers. On this

<sup>1</sup> I use the terms 'powerful' and 'dispositional', and 'power' and 'disposition', interchangeably.

view, defended most prominently by Bird 2007 and Mumford 2004, sparse properties are non-categorical. If sparse properties are categorical as Armstrong 2004 and Lewis 1986a maintain, then their powers are non-essential and vary in accordance with the laws of nature operating at a given world.

Dispositional essentialism appears to require that sparse properties are *pure* powers. The Pure Powers Thesis claims that for any sparse property token, P, (i) P's nature consists entirely of its power and (ii) P has its power essentially. This implies that P's identity conditions consist of a *causal profile*—all the possible causal effects that P can produce—essential to P being the property it is and metaphysically distinguishing it from other properties. Bird 2007 and Mumford 2004, for instance, posit pure powers in their dispositional essentialist views.

Although the Pure Powers Thesis seems like an alternative formulation of dispositional essentialism,<sup>2</sup> the view that all properties (including sparse properties) are simultaneously qualitative and powerful also appears consistent with dispositional essentialism, as Jacobs (2011: 81-82) observes. This view originates in the work of C.B. Martin, and is developed by Martin and Heil 1999, Heil 2003, and Martin 2008 without explicitly endorsing dispositional essentialism. Martin and Heil (1999: 47) claim that 'A property just *is* a certain dispositionality that just *is* a certain qualitativity.' Heil (2003: 111) maintains that qualities are identical to powers, and Martin (2008: 51) states that the world consists 'of properties that are at once dispositional and qualitative.' So this view asserts the identity of powers and qualities. Following Heil 2010 and Jacobs 2011, I will call such properties *powerful qualities*. The Powerful Qualities Thesis claims that for any sparse property token, P, (i) P has a powerful nature, (ii) P has its powers essentially, (iii) P has a qualitative nature, and (iv) P's powerful nature = P's qualitative nature. The nature of a property token issues identity conditions specifying what distinguishes one property token from another. The nature of a pure power is de-

<sup>2</sup> Specifically, the Pure Powers Thesis may be another way to formulate a *strong* version of Dispositional Essentialism which maintains that *all* sparse properties have their powerful natures essentially (a *weak* version maintains that *some* but not all sparse properties have their powerful natures essentially).

defined entirely in terms of its causal profile, but for a powerful quality something else is involved.

The nature of powerful qualities will be explored more in section 2. It suffices for now to observe that powerful qualities have a constant manifest nature, making them substantial in a way pure powers are not (Heil 2003: 98, Martin 2008: 32)<sup>3</sup>. But powerful qualities are *not* what may be called *pure qualities* (i.e., categorical properties, which are intrinsically inert). Powerful qualities have the ‘just-there-ness’ (Armstrong 2004: 141) of pure qualities or categorical properties combined with the essential powerfulness of pure powers.

Although the Pure Powers Thesis and the Powerful Qualities Thesis understand the internal nature of sparse property tokens differently, both theories posit equally powerful properties with essentially dispositional natures. Thus, they should be viewed as rival ontological accounts of sparse properties within the metaphysics of dispositional essentialism.<sup>4</sup>

The rest of this essay proceeds as follows. In section 2, I discuss the nature of powerful qualities and critique the Powerful Qualities Thesis. I also take notice of a *prima facie* advantage it has over the Pure Powers Thesis: explaining the being or continuous existence of powers during non-manifesting periods. In section 3, I identify two levels of objections concerning pure powers, allowing a more exact specification of what it is about the basic nature of pure powers that makes them objectionable to some metaphysicians. In section 4, I formulate and develop the Point Theory of pure powers. This theory provides an explanation of the continuous existence of pure powers when they are latent, thereby neutralizing the most advantageous feature of powerful qualities and securing pure powers as the sparse properties which dispositional essentialists should posit. In developing Point Theory, I examine a problem concerning the relation be-

<sup>3</sup> Heil (2003: 98) says ‘If an object’s qualities are reduced to or replaced by pure powers, anything resembling substantial nature fades away.’

<sup>4</sup> See Block (forthcoming) for a discussion of the distinction between metaphysics and ontology, which Block applies to philosophy of mind: functionalism is a *metaphysics*, which can be satisfied by different *ontological* commitments (e.g., mental properties, physical properties). Similarly, dispositional essentialism is a metaphysics, which can be satisfied by different ontological commitments concerning sparse properties (powerful qualities or pure powers).

tween powers and space-time points, as well as a problem concerning spatial occupation. I also present an account of the movement of pure powers through space-time.

## 2 The dense nature of powerful qualities and why it is problematic

To further elucidate the nature of powerful qualities, I will focus on what makes pure powers different from powerful qualities. What does it mean for a property to be qualitative *and* powerful, not merely powerful? What are the metaphysical consequences of this view?

Assume the indiscernibility of identical objects,  $x$  and  $y$ . So, if  $x = y$ , then  $x$  and  $y$  share all the same properties. Now suppose that all the properties  $x$  and  $y$  share are powerful, and the powers completely and exclusively determine all the possible events  $x$  and  $y$  are involved in. So, it should make no causal or modal difference whether the powers are powerful qualities or pure powers. Call this No Causal Role Difference. There is no difference in their powers, so  $x$  and  $y$  will do all the same things in all the same circumstances. Yet the following idea—Qualitative Difference—also seems true: supposing  $x$  has pure powers and  $y$  has powerful qualities, although No Causal Role Difference is true,  $x$  and  $y$  cannot be identical. For the *quality* of  $y$  makes it metaphysically if not epistemologically distinguishable from  $x$ . This clarifies that, because the Powerful Qualities Thesis saturates every causal power with a qualitative nature, the identity conditions of a powerful quality consist of more than just a causal profile. That is, the *nature* of a powerful quality goes beyond its causal profile.

Martin and Heil (1999: 47) as well Jacobs (2011: 87) use the term ‘nature’ without explicitly characterizing it. The ‘nature’ of a property is not a further entity, but the way the property *is* which yields identity conditions for  $P$  that makes it metaphysically distinct from other property instances. It can provide a way of not only differentiating powerful qualities and pure powers, but differentiating the qualitative from the dispositional within powerful qualities. If it is true of powerful qualities that ‘Dispositionality and qualitativity are built into each property; indeed, they *are* the property’ (Martin and Heil 1999: 46), then we can, at least, *conceptually* distinguish these



two natures within a unified powerful quality.<sup>5</sup>

It is true that the Powerful Qualities Thesis *identifies* powers and qualities, so there are not *really* two natures, since that would imply two entities—properties, sub-properties, aspects, sides, or something else—within a powerful quality. However, powerful qualities do have an ever-manifest, substantial nature: they are ontologically *dense* compared to pure powers, with more being packed into one property token. The fact that they are dense is suggested by their being more conceptually complex than pure powers.<sup>6</sup> There should be something ontologically to answer to this conceptual complexity. If it were not logically possible to discern a complexity within the nature of powerful qualities, then there would be no way to distinguish powerful qualities (a more complex nature) from pure powers (a simpler nature). But we can distinguish between them; therefore, we must maintain that powerful qualities have a dense nature (made by their unified dispositionality and qualitativity) that grounds the conceptual complexity associated with them, which we attend to in so distinguishing pure powers from powerful qualities.

Advocates of powerful qualities typically recognize that a conception of sparse properties as pure powers is internally coherent and thus logically possible, although very implausible as contended by Heil 2003 and Jacobs 2011. Therefore, it is clear that the Powerful Qualities Thesis adds something to the nature of sparse properties—a qualitativity that makes them dense—that is not logically or metaphysically necessary. But it is possible, of course.

So, from the pure powers theorist's perspective, even though

<sup>5</sup> Heil (2003: 173) holds that a property is a way an object is: it is the nature of the object—although we can 'consider' objects and properties separately, they are inseparable. Similarly, we can consider the natures of powerful qualities—their qualitative and their powerful natures—separately but they are ontologically inseparable (because identical).

<sup>6</sup> Jacobs (2011: 90) holds that 'To be qualitative is to be identical with a thick quiddity (a quality or a quale)' such that properties differ from each other by their intrinsic nature, not just numerically. The thickness of qualities is similar to what I call their density; however, I want to avoid any phenomenological implications or ties to the term I am using to discuss the nature of powerful qualities, unlike the implications Jacobs (2011: 90-91) makes with the parenthetical inclusion of the term 'quale'.

powerful qualities are logically and metaphysically possible<sup>7</sup>, they face problems centered around conceptual and ontological simplicity that, *ceteris paribus*, make pure powers more attractive. This can be seen by applying what I call the causal effects test: if some theoretically posited entity has no possible causal effects, i.e., no causal profile, then it is not spatiotemporally real.<sup>8</sup> The qualitative nature of P—whatever P is that is not pure power—has no possible causal effects other than those given by its powerful nature. One might rejoin that since the qualitative and powerful natures are identical, the quality does have a causal profile. And this is true. Yet, for any sparse property, P, the Powerful Qualities Thesis adds something unnecessary but possible to P's nature, as discussed above: it makes the powerful nature of P *dense* by adding qualitativity to it.

Given the causal effects test, now consider this dilemma: either the qualitative nature that is identical to the powerful nature, given by its causal profile, adds something to P's causal profile, or it does not. If it does not, then it does not lead us past the Pure Powers Thesis, for it does not add anything beyond that given by the powerful nature. But if the qualitative nature adds something to the causal profile of P, then it is mysterious what it adds beyond the possible effects issued by the powerful nature. Thus, considerations of simplicity favor pure powers, not powerful qualities.

Both the Powerful Qualities Thesis and the Pure Powers Thesis posit, I presume, the same number of types and tokens of sparse properties within a dispositional essentialist framework. For example, both posit the sparse property charge, and both posit that all the electrons in the universe instantiate charge. All the same existent causal powers of the world are obtained on either view, and thus they are equivalent in terms of their possible manifestations. De-

<sup>7</sup> Suppose powerful qualities are metaphysically possible. What does this mean for dispositional essentialists if, for reasons given in this paper, they accept that sparse properties in the actual world are pure powers? Dispositional essentialists can admit that in *some* worlds *some* sparse properties are powerful qualities.

<sup>8</sup> Armstrong (2010: 2) points out that Oddie 1982 formalized the idea that entities we posit should play some causal role, an idea that has its roots in the Eleatic Stranger in Plato's *Sophist* 247D-E. Armstrong (2010: 2) claims 'if an entity plays no causal role at all, then that is a good argument, though perhaps not a conclusive one, for not postulating that entity.'

spite this, there remains an unnecessary ontological baggage—an extra bit of being—borne by powerful qualities that pure powers do not carry. Why posit powerful qualities when pure powers afford the same causal possibilities while getting by on something with less density? We should not unless powerful qualities offer some important explanatory advantage.

Because a qualitative nature adds nothing to a property in terms of causal powers, the Powerful Qualities Thesis offers no explanatory benefit over the Pure Powers Thesis regarding the metaphysics of events, processes, or the laws of nature within a dispositional essentialist framework. All these phenomena are explained by reference to causal powers, regardless of the underlying ontology of those causal powers. Nonetheless, it is *prima facie* plausible that powerful qualities offer one explanatory advantage over pure powers: powerful qualities are better suited as truth-makers for counterfactuals associated with powers, thus explaining the being of sparse properties through latency periods. So, this will be my focus in developing a theory of pure powers.

### 3 Two levels of problems for pure powers

Pure powers face two types of objections. Level 1 objections concern the intrinsic nature of pure powers, including worries about their continuous existence. Level 2 objections concern systems of two or more pure powers, including how substances and qualities can result from a pure powers foundation (Heil 2003: 114-15), how to individuate two or more pure powers with identical causal profiles as Hawthorne 2001 discusses, and the regress argument that nothing would ever get done in a world of pure powers because every power is merely for some manifestation which is simply another power (Martin and Heil 1999: 46).<sup>9</sup>

<sup>9</sup> Martin and Heil (1999: 46) state the regress worry like this: ‘Every disposition is a disposition for some manifestation. But if every manifestation is itself purely dispositional, then it will be for some further disposition for some manifestation, and this manifestation, in turn, nothing more than a disposition for some manifestation, . . . and so on. A world consisting of pure dispositions would seem to be a world whose inhabitants, although poised to act, never get around to doing anything.’

There is also a related Level 2 worry that any system of pure powers is completely relational, therefore implausible, because the identity conditions of pure powers must be understood solely in terms of their relation to other powers, as Heil (2003: 97-107, 114) and Jacobs 2011 argue.<sup>10, 11</sup> That is, as Jacobs (2011: 85) observes, the worry for a system of pure powers concerns *what* enters the various relations that hold between the powers. This ushers in Level 1 worries, but if these worries can be mitigated it could help alleviate some Level 2 concerns because reference can then be made to the intrinsic nature of the relata in a system of pure powers.

Indeed, it seems to me that any system or network of pure powers *must* have relata: the individual, quality-less, powers themselves. Even though a pure power's identity conditions might be understood in relation to other powers, its being is independent of them. I assume there is a possible world in which only a single pure power, P, is instantiated. P does *not* necessitate the existence of other powers; thus, genuine Level 1 concerns arise. What does it mean for P, if P is not a quality, to exist during non-manifestation periods such that counterfactuals associated with P are true? What, intrinsic to P, admits of P's being? Psillos (2006: 137) asks: If P consists entirely of potential to manifest power—and supposing that any P need *not* manifest its power—then what is P doing when it is not manifesting? Mumford (2006: 481) recognizes this as the 'question of *Being*'—although he accepts the actuality of pure powers (2006: 485). Ellis (2001: 114) also recognizes the issue, but accepts pure powers while contending that no explanation is needed for their continuous existence.

#### 4 The point theory of pure powers

In developing a response to Level 1 concerns about pure powers, I assume the following principle of ontological dependence: for any

<sup>10</sup> Holton 1999 argues that a purely relational world is coherent (even if implausible, as powerful qualities theorists hold).

<sup>11</sup> Heil (2003: 114) argues that denial of the Identity Thesis (the Powerful Qualities Thesis, as I have set it up) 'leads to a conception of properties of the fundamental things as pure powers' and this is 'prima facie implausible.'

non-object entities (property tokens, events, units of space-time, etc.), one entity,  $E_1$ , intrinsically ontologically depends on another entity,  $E_2$ , if and only if  $E_1$  cannot exist at  $t$  without  $E_2$  also existing at  $t$ , where  $E_1$  and  $E_2$  are both intrinsic to an object  $O$ , or a space-time location  $L$ , such that  $O$  or  $L$  instantiates both  $E_1$  and  $E_2$ . This excludes the possibility that  $P$  is an extrinsic property of  $O$  or  $L$ , which would require that  $P$  be grounded in properties of objects or locations other than  $O$  or  $L$ , because I aim for an account of  $P$ 's being that is consistent with its having a wholly intrinsic nature, for reasons given in section 3. The principle permits but does not require grounding in property-less objects or substrata; i.e., although  $E_1$  may be grounded in  $E_2$ , where they are both properties of  $O$ ,  $E_1$  need not be grounded by  $O$  itself, because property tokens may float free of objects as Schaffer 2003a argues.

The possibility of free-floating properties deserves some explanation. Schaffer (2003a: 125) specifically argues that 'lone properties such as free masses are metaphysically possible—the clustering of properties is merely a contingent fact.' He responds to various objections to this possibility, and then formulates a subtraction principle as the basis of his positive argument for free-floating properties: 'it seems that for any  $n$ -propertied object, it is possible for there to be an  $n-1$  propertied subduplicate' (Schaffer 2003a: 136).<sup>12</sup> That is, for any object, we can keep taking away properties one at a time until we are left with one property: 'no one specific property seems necessary for being an object,' so each is subtractable, all the way down to, for example, free mass (Schaffer 2003a: 136). This implies that, if one is a bundle theorist, there can be no objects with zero properties (Schaffer 2003a: 137). Given that properties might float free, it is not necessary that non-object entities like properties be grounded in objects.

Assuming the above principle of ontological dependence, my proposal is that  $P$ 's being consists of a causal profile at a space-time point. More precisely, here is my theory of pure powers:

**Point Theory:** Any pure power token,  $P$ , ontologically depends exclusively on (i) the existence of a space-time point,  $s$ , and (ii)

<sup>12</sup> Schaffer's inspiration for this argument comes from Armstrong (1989: 72).

and a causal profile at  $s$ —i.e.,  $C_s$ —consisting of a set of fundamental subjunctive facts that make counterfactuals true at  $s$ .

The idea that subjunctive facts are fundamental comes from Lange 2009 and is discussed in more detail below. Counterfactual statements characterize the subjunctive facts that constitute  $C_s$ . These primitive subjunctive facts are the truth-makers, and the counterfactuals are the truth-bearers.  $C_s$  consists of one or more subjunctive facts: one per power, if single-track powers are preferred, or many for each power, if multi-track powers are preferred.<sup>13</sup> Although the counterfactuals specifying  $C_s$  are true, this does not entail that all truths about  $P$  are counterfactual truths. Bostock (2008: 148) observes that ‘If powers are entities, there are many truths about the properties objects have (e.g.  $a$  has power  $P$ ), and these truths are not counterfactual.’ If the instantiation of  $P$  does not require an object—e.g., if properties can float free of objects as discussed above—then it will still be true that  $P$  is instantiated *at* a space-time point, which is not a counterfactual truth.

As mentioned, the proposal that subjunctive facts are fundamental is found in Lange 2009. Lange (2009: 136) ‘reverses the standard picture of laws “supporting” counterfactuals.’ The standard view (or, at least, one standard view) is that counterfactual truths are true in virtue of laws in conjunction with categorical facts or properties; so *if the glass were hit by a hammer, it would shatter* is made true by categorical properties of the glass plus laws of nature that govern relations between events. But Lange rejects this account. He argues instead that there are subjunctive facts—characterized by counterfactual truths which have objective truth-values (Lange 2009: 137)—that ground the laws’ necessity: ‘with these subjunctive facts, we have reached ontological bedrock’ (Lange 2009: 136).<sup>14</sup>

<sup>13</sup> Ryle 1949 introduced the idea of multi-track dispositions. For example, if fragility is a multi-track disposition, then an instance of fragility can manifest in multiple ways: cracking, breaking, shattering due to different causes such as a hammer blow, high-pitched singing, etc.

<sup>14</sup> In further detail, Lange (2009: 136) argues (i) that the necessity of the laws is ‘what *makes* them laws’ (setting them apart from accidents), (ii) that ‘necessity consists of membership in a nonmaximal sub-nomically stable set,’ and (iii) therefore that a law ‘is a law in virtue of belonging to a nonmaximal sub-nomically

Notice that dispositional essentialists agree that laws are not fundamental; they argue either that laws supervene on the dispositional essences of things, as in Bird 2007, or that the laws themselves are not ontologically real, as in Mumford 2004. So there is nothing too radical, for the dispositional essentialist, in Lange's proposal regarding laws of nature. But it is Lange's idea of fundamental subjunctive facts that opens up the possibility of Point Theory.

With the core of the Point Theory of pure powers established, I will now examine three aspects of it that are important to understanding its internal plausibility, mitigating Level 1 worries, and establishing the viability of pure powers over powerful qualities. The three aspects addressed below include: the relation between pure powers and space-time points (and thus locations as single points or sets of points), whether pure powers occupy space, and the movement of pure powers through space-time.

#### 4.1 Pure powers, locations, and space-time points

The properties typically cited as examples of pure powers by dispositional essentialists are fundamental physical properties, such as mass and charge. A fully complete physics may indicate that some other properties are fundamental: perhaps there will be proto-mass (the power of a particle to gain mass, if the Higgs mechanism in the Standard Model of quantum mechanics is real) and other proto-powers. But space-time points might be pure powers too, and this raises a problem to be discussed below. On Point Theory, what is the nature of the locations (to include either space-time points or sets of space-time points, i.e., regions) where a causal profile exists?

Locations are either categorical or dispositional properties (assuming they are properties). Ellis (2010: 109) maintains that locations are paradigm examples of categorical sparse properties (many

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stable set.' He holds that 'a set of sub-nomic truths is "sub-nomically stable" if and only if whatever the conversational context, the set's members would all still have held under every sub-nomic counterfactual (or subjunctive) supposition that is logically consistent with the set—even under however many such suppositions are nested' (Lange 2009: 29). So, then, the question is what makes true the subjunctives that make the set of laws sub-nomically stable? And the answer is *nothing*—because the subjunctive facts are fundamental.

other sparse properties are pure powers on Ellis' view). But a worry for this view is that points or sets of points do not seem to have any qualitative nature to them—it is not clear what their being categorical means. Furthermore, it is problematic if categorical locations ground powers, for this would violate the powers' purity.

If the Pure Powers Thesis and the Point Theory in support of it are correct, then it looks like space-time points must be dispositional. So what are their powers? I suggest that any space-time point will have at least one power (though many will have more, such as fundamental charge and mass) that is pure and fits the requirements of Point Theory: the power of that point to be occupied by some object or further property instance such as mass.<sup>15</sup> On this view, points are the most fundamental dispositions or powers.

The suggestion that locations possess powers to be occupied raises a worry: if locations are sparse powers, then when they are not manifesting, what are they doing or what does their being consist of?<sup>16</sup> If, on Point Theory, P consists of a causal profile at a point *s*, then since that location (point) is dispositional and has a causal profile, we would need a new *s*, thus generating an infinite series of points, along with an infinite series of causal profiles, necessary for P. I offer two possible responses to this objection that avoid positing pure qualities, categorical properties (if these are different from pure qualities), or powerful qualities.

First, to take the objection head on, an infinite series of points with corresponding causal profiles might be implausible, but it is not incoherent. And, it may not be as implausible as it first seems. There is reason to believe it is possible that reality consists of an infinite number of levels. For example, Schaffer (2003b: 505-506) claims there is no evidence for a fundamental level of reality. Reality might have a fundamental level or an 'infinite descent' of levels, but the 'empirical evidence to date is neutral as to which structure science

<sup>15</sup> If Point Theory is correct, and if we are to maintain the possibility of a one-power world, then there is a possible world with only one space-time point (it would be a point with a single pure power token). This is because for any additional point that exists, it would necessarily have some power (to be occupied), thus negating the possibility of a one-power world.

<sup>16</sup> Thanks to an anonymous reviewer for raising this objection.



is reflecting. And so, concerning the proposition that there exists a fundamental level of nature, one should withhold belief' (Schaffer 2003b: 505-506).<sup>17</sup> If this correct, then we should remain open to the possibility that there are infinite sub-locations—locations within locations, finer and finer space-time points, or points in descending sub-spaces—corresponding to each new sub-level of reality. If this is on the right track, then when power  $P_1$  at a higher level is not manifesting, its being resides in  $C_s$  at point  $s_1$ , but there is a power  $P_2$  (necessary and sufficient for  $P_1$ ) that is manifesting for  $P_1$ , and  $P_2$ 's being resides in a corresponding  $C_s$  at sub-point  $s_2$ , and so on. So there could be infinitely descending levels of power—some extra power does not hurt one's ontology. On this view, then, what is a pure power doing when not manifesting? Well, it is grounded in some further pure power—a causal profile at a point—that is manifesting, and so on.

Second, if one wants to do without infinite levels, it is possible that the *point* where  $P$  is instantiated just is identical to a causal profile  $C_s$  (which in turn constitutes the power to be occupied). However, this would imply that Point Theory is not fully comprehensive for sparse pure powers (since Point Theory postulates points *and* causal profiles as the basis of *all* pure powers); but, it does fit or account for sparse, non-point pure powers, even those powers like mass and charge whose causal profiles exist at space-time points that are themselves pure powers.

It might be contended that since the subjunctive facts that constitute  $C_s$  are fundamental, they do not ontologically need space-time points. Lange 2009 does not appear to require a connection between space-time points and fundamental subjunctive facts (although he is not primarily concerned with sparse properties, but with subjunctive facts grounding the laws of nature). Point Theory does not deny that subjunctive facts are fundamental, it just says that they are necessarily tied to space-time points as a spatiotemporal condition, or anchor, of their reality; points and subjunctive facts are co-fundamental, and this combination makes for pure powers (unless the second response to the worry is deemed more plausible, since then there is no com-

<sup>17</sup> Also see Dehmelt 1989, who postulates infinite sub-electronic levels of structure.

bination, there is just the point that is identical to the causal profile).

#### 4.2 Pure powers and spatial occupation

Point Theory implies that P is an actual, continuously instantiated property, consistent with other views about pure powers, e.g., Mumford (2006: 485) and Bostock (2008: 145). Martin (2008: 32) claims that the ‘readinesses’ of dispositions ‘are all actual’ and I agree, without adding as he does that this readiness needs qualitativity. Just as with a powerful quality, P is an actual property—ready to manifest—while latent. But P’s actuality requires a spatiotemporal condition of some sort. Point Theory provides that, but denies the claim that P requires spatial *occupation* as a quality might require.

I assume a distinction between *being instantiated at a point in space* versus *being instantiated in a region* of two or more points (thus *occupying* space by creating an extension or distance). P can be instantiated at a point which is not extended—per Point Theory—and thus does not occupy space in that sense. Consider a world with infinite space-time but no extended objects: space is empty or non-occupied. Yet infinite counterfactuals might be true of a single point in space, and through infinite levels if the first response to the objection in section 4.1 is correct, yet nothing *occupies* space.

This is important because a possible objection is that if P is instantiated, then during non-manifestation periods P should occupy a spatial region *R*, where *R* consists of a set of two or more simultaneous points immediately neighboring each other.<sup>18</sup> If this conditional is true, the problem for pure powers seems to be that there is nothing to occupy *R* in the way that an object or a structural property token (like shape) occupies space; thus, P ceases to exist when latent. This worry about spatial occupation is a manifestation of worries about P’s continuous existence when latent. But if Point Theory is accurate, then the spatial occupation objection is a pseudo-problem because P can be instantiated at a point, and a point with a causal profile does not need to be extended in, or occupy, space. Spatial occupation is, perhaps, a condition for powerful qualities or pure

<sup>18</sup> I assume that during manifesting periods, P might present itself qualitatively or be involved in some spatially occupying event.

qualities (i.e., categorical properties), but not for pure powers.

Suppose, however, it is true that if a stimulus  $S$  occurs in  $R$ , then manifestation  $M$  will occur. Thus, it appears  $P$  is spatially extended because it is instantiated throughout  $R$ . However, at any point in  $R$ , all the counterfactuals specifying  $C_s$  will be true because  $C_s$  holds at every point  $s$  in  $R$ . Therefore, what appears to be a single pure power spread throughout  $R$  consists of a set of many tokens of pure powers instantiated at all the points in  $R$ .

Williams (2009: 17-18) objects to pure powers based on concerns about spatial occupation. But he is mainly interested in showing that if a sub-atomic particle  $x$  has pure powers, then  $x$  must still be some ‘way’ at all times, which involves spatial occupation and requires some categoricalness (or, qualitativity); therefore, since purportedly pure powers appear to be grounded in categoricalness, they are not really pure. Precedent for this type of worry is found, for instance, in Blackburn 1990. But these specific concerns are somewhat tangential to my discussion, since I’m assuming that any pure power,  $P$ , can float free of and thus exist (i.e., remain instantiated) independently of objects, as discussed at the beginning of section 4 in formulating a principle of ontological dependence; therefore  $P$ ’s occupation of space, via its object bearer in some way, is not necessary. Besides, subatomic particles (objects) might be *point* particles which instantiate pure powers.

Molnar (2003: 133-134), in defending pure powers, contends that fundamental particles are simple and completely lacking structure, which suggests the possibility of point particles (to be physically extended is to have some structure). So, assuming point particles count as objects and pure powers can be properties of point particles, if  $P$  is borne by an object this does not necessitate  $P$ ’s occupying space. That would only be true if particles necessarily occupied space. Therefore, on Point Theory, the instantiation of  $P$  by a particle can avoid any of the qualitative or categorical nature that arguably comes along with spatial occupation.

### 4.3 The movement of pure powers through space-time

Although space-time points do not move,  $P$  can move or shift between points, thus accounting for the movement of pure powers, and

the objects bearing them, through space-time. This occurs either (i) as P's bearer moves (e.g., a particle with mass moving through space-time), or (ii) if property tokens can 'float free' of their bearers as Schaffer 2003a argues, then as P itself moves. On either option, as P moves between points,  $C_s$  shifts between those points. Causal processes involving multiple powers can be accounted for this way, by a series of shifts in the location of  $C_s$ .

These contentions can be developed along lines consistent with one of the axiomatic systems for topology and physics developed by Carnap 1958.<sup>19</sup> An extensive development of this is worthwhile, but my modest aim here is to point out the basic features most relevant to Point Theory.

Carnap (1958: 197) uses a logic of relations 'to treat topological properties of space and time by a *purely topological method*' and thus with no use of concepts with a 'metric (non-topological) character.' He provides three distinct logical systems for describing the nature of world-points within the framework of Einstein's general theory of relativity. One of these systems, the *Wlin*-System (Carnap 1958: 207-9), appears tailor-made for the conception of pure powers given by Point Theory. In the *Wlin*-System, 'world-points are again [as with Carnap's *C-T* System (1958: 197-207)] taken as individuals—however, world-points not as particle slices [as with the *C-T* System], but as the space-time points corresponding thereto' (1958: 207). That is, the world-points that make up a world-line of an individual (e.g., a particle) just are space-time points. The world-line of a particle consists of a class of time relations (Carnap 1958: 207) that specify the temporal moments of the particle along its path. Coincident world-points are identical (Carnap 1958: 207).

If world-points are space-time points per Carnap's *Wlin*-System, and these are fundamental individuals or 'particles', then they should possess some fundamental or sparse properties. If these sparse properties are pure powers, then it follows that they are pure powers of world-points. That is, particles bearing pure powers just are space-time points (the world-points) on the *Wlin*-System, consistent with Point Theory. These particles need not be substrata existing independently of their properties, for they might be just bundles of pow-

<sup>19</sup> Thanks to Gary Merrill for suggesting this.

er tokens existing at space-time points; alternatively, perhaps the individuals or world-points are simply property tokens.

On the *Wlin*-System, as with the other axiomatic systems Carnap develops for physics, a signal relation holds between points: ‘An effect reaches from a world-point  $x$  to a world-point  $y$  if and only if  $x$  is connected to  $y$  by a signal’ (Carnap 1958: 201). A signal can occur between a single individual (a world-point on the *Wlin*-System) at an earlier time and a later time on its world-line, or a signal can occur between distinct world-points, thus linking ‘particles’ or individuals by linking their world lines, as when one particle’s momentum or energy is transferred to another. The signal relation is comparable to the relation of a power to its manifestation. So, the relevance of this to P, on Point Theory, is this: in the case of a single world-point,  $s$ , the status (as defined by  $C_s$ ) of  $s$  at  $t_1$  affects its later status at  $t_2$  (i.e., this is just a relation between spatiotemporal stages of P). In the case of signals between two world-points,  $s^1$  and  $s^2$ ,  $s^2$  may receive the stimulus from  $s^1$  and thus manifest, connecting the two world-points by the manifestation relation (by analogy, consider one billiard ball striking another, causing it to accelerate, thus a signal relation obtains).

If these contentions are correct, the *Wlin*-System provides an axiomatic system for fundamental physics that is consistent with, and bolsters, Point Theory. P’s movement is a shifting of  $C_s$  between points along a world-line. Since  $C_s$  holds consecutively along the points of a particular world-line, this accounts for P’s identity along its world-line.

#### 4.4 Concluding remarks

As a theory of pure powers, Point Theory does without mysterious qualities, powerless natures that are somehow identical to powerful natures. Point Theory maintains that sparse properties are simply, purely, powerful: they consist of causal profiles at space-time points.

For any given pure power, when it is not manifesting, it exists or is instantiated *qua* power because there remains an actual causal profile—a set of fundamental subjunctive facts—and an actual space-time point that stands in being. These space-time points might themselves be powers, perhaps with an infinite series of grounding

causal profiles at sub-points (as discussed in section 4.1). On Point Theory, pure powers need not occupy space in the sense of being extended like a quality is expected to be (as discussed in section 4.2), and they can move (or shift) through space-time per the mechanisms detailed in Carnap's *Wlin*-System (as discussed in section 4.3).

How do qualities come to be, at *non*-sparse levels of reality, out of pure powers? That is a Level 2 issue. But notice that unless we contend that all properties at *all* levels are pure powers, nothing prevents us from maintaining that some manifestations of some pure powers are qualities or have a qualitative nature.

Based on these considerations, I conclude that Point Theory mitigates Level 1 worries about pure powers, effectively neutralizing the explanatory advantage that the Powerful Qualities Thesis appeared to have over the Pure Powers Thesis. Therefore, dispositional essentialists should posit pure powers.<sup>20</sup>

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# Pre-Socratic Discrete Kinematics

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## Abstract

We present a neglected heterodox version of Zeno's paradox of the Stadium, underlining some problems that a discrete kinematics would have to account for. Building on our reconstruction of the Stadium argument we provide new arguments to show that a discrete kinematics cannot uphold three independently plausible assumptions about motion, that we label *No Switching*, *Granular Continuity* and *Different Velocities*, and hence it should drop at least one.

## Keywords

Zeno's Paradoxes, Discreteness, Space and Time, Motion, Velocity.

There exists a somewhat heterodox and neglected version of Zeno's paradox of the Stadium, which was first presented by Tannery (1885: 394) and then developed by Evellin 1893. This version was supposed to overcome the apparently evident flaw in the argument presented in Aristotle's reconstruction of the paradox in *Phys.* 239b 33 – 240a 19. Indeed, this flaw was thought to have been much too great a mistake for Zeno, the very inventor of dialectics according to Diogenes Laertius, not to have noticed<sup>1</sup>. In the first half of the twentieth century this heterodox version received a great deal of attention, whereas nowadays it is thought to be ungrounded due to a lack of textual evidence. However, despite its historical merit, or lack thereof, it has a certain theoretical value of its own.

Here is a slightly revised account of such a version. Let  $(x_1, x_2, x_3)$  and  $(y_1, y_2, y_3)$  be two sets of equal masses displaced in such a way that, at time  $t_1$ ,  $x_1$  is vertically aligned with  $y_1$ ,  $x_2$  with  $y_2$ , and  $x_3$  with

<sup>1</sup> See Davey 2007.



$y_3$  (Fig. 1a). Suppose that both space and time are discrete. Let us call an atomic unit of time an “instant” and an atomic unit of space a “region”. Now suppose that all the  $x$  masses move to the left with velocity  $v_x$  of one region per instant and that the  $y$  masses move to the right with a velocity  $v_y$  of the same magnitude. After an instant, at  $t_2$ ,  $y_1$  will be vertically aligned with  $x_3$  (Fig. 1b). Zeno concludes that this is paradoxical, for there has to be an intervening instant between  $t_1$  and  $t_2$  at which  $y_1$  is vertically aligned with  $x_2$ .

Evellin (1893: 385-387), Russell (1903: 352) and Whitrow (1961: 136-137) argued that Zeno’s argument fails because to require the existence of an intervening instant between  $t_1$  and  $t_2$  is illicit, as it amounts to reintroducing if not the continuity, at least the denseness of time, which is ruled out by the discreteness assumption.

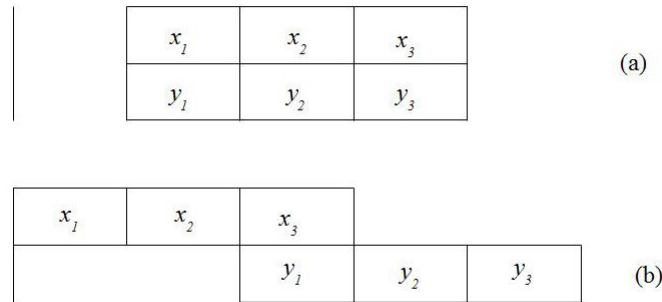


Fig. 1a, 1b.

According to their reading, if space and time really are discrete,  $y_1$  is never aligned with  $x_2$ . Hugget 2010 explains the point by suggesting that it is better to think of quantized space as a matrix of lights that holds some pattern of illuminated lights for each instant, rather than a chessboard where each piece is frozen in one particular region at one particular instant. If so, he urges, we should not be misled into thinking that the lights on in some regions at  $t_1$  move to other regions at  $t_2$ .

Grünbaum (1968: 118-120) points out that the vertical alignment

of  $y_1$  and  $x_2$  is in fact possible depending on the relative velocity of the  $x$ s and  $y$ s. For example let the  $x$  and  $y$  masses be displaced in the same way they were at  $t_1$  (Fig. 1a); but now let the  $x$  masses be at rest<sup>2</sup> and let the  $y$  masses move with velocity  $v_y$  of one instant per region towards the right. In this case, at  $t_2$ ,  $y_1$  is indeed vertically aligned with  $x_2$  (Fig. 1c).

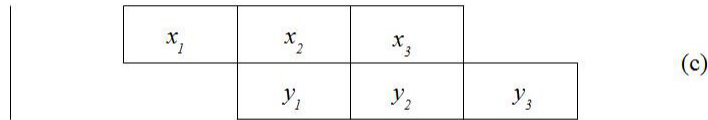


Fig. 1c.

Let us stipulate that a happening or a fact<sup>3</sup>  $e_i$  is *actual* iff there exists an instant  $t$  at which  $e_i$  takes place. Moreover two happenings  $e_1$ ,  $e_2$  are *coactual* iff there is an instant  $t$  at which they are both actual. So, in the first case we presented, the facts that  $y_1$  occupies  $R_y$  and  $x_2$  occupies  $R_x$ , where  $R_y$  and  $R_x$  are vertically aligned, are not coactual<sup>4</sup> and thus, the alignment of  $y_1$  with  $x_2$  is not actual, i.e. does not have *event status* in Grünbaum's terminology, whereas in the second case it is. Thus, whether a vertical alignment qualifies as actual at all depends upon the magnitude of the relative velocity between the two sets of masses. Grünbaum then calls our attention to this consequence of the argument that reveals a kinematic problem for discrete space and time. Let us quote him directly:

‘This consequence has the significance of a *caveat* for the following reason: as far as I am aware, none of our present-day kinematic knowledge even gives a hint of the possibility of the aforementioned dependence of event-status [coactuality] on relative motion’. (Grünbaum 1968: 119-

<sup>2</sup> With respect to a particular rest frame, which, in the original case, is the stadium.

<sup>3</sup> We are using these terms very broadly.

<sup>4</sup> For the very simple reason that each of them is never actual in our terminology.

120, italics in the original)

First of all let us notice that, as it stands, Grünbaum's remark seems quite puzzling. There seem to be in fact lots of cases<sup>5</sup> in which there is some dependence of event-status on relative motion. Suppose two masses, Achilles and the turtle, are moving on a straight line along the same direction, say to the right, and suppose furthermore that they are located at different points on the line, Achilles being to the left of the turtle. Then, whether Achilles will catch up with the turtle, i.e. whether the catching up of the turtle by Achilles has an *event status* in Grünbaum's terminology<sup>6</sup>, will depend on their relative motion. Let  $V_A$  and  $V_t$  be their velocities. If  $V_A = V_t$ , Achilles will never catch up with the turtle and their spatial separation will be unchanged. If  $V_A > V_t$ , Achilles will eventually catch up with the turtle (pace Zeno), and if  $V_A < V_t$  not only Achilles will never catch up with the turtle but their spatial separation will increase. Therefore it seems that Grünbaum's observation is not correct after all, at least when taken at face value.

These considerations notwithstanding there is something deeply relevant about Grünbaum's recognition of the important role of relative motion in a discrete kinematics. He was the first one to acknowledge that the possibility of relative motion raises a metaphysical problem for discrete kinematics. He took this problem to be the dependence of event status on relative velocity. We already argued that this is not, at first sight, a problem after all. But this does not mean that the original observation about the tension between relative motion and discrete space and time was off the track. In the rest of the paper we will argue that this tension reveals that the conjunction of three independently very plausible<sup>7</sup> assumptions about motion is inconsistent<sup>8</sup>. Hence a discrete kinematics should drop at least one

<sup>5</sup> At first sight this holds both for continuous and discrete space and times. We will see that the situation is slightly more complicated when space and time are discrete.

<sup>6</sup> Or it is *actual* in the terminology we have introduced.

<sup>7</sup> We will return on the issue of the plausibility later on.

<sup>8</sup> This is something similar in its logical structure to Diodorus' so called *master argument*.

of them. Let us label these assumptions *No Switching (NS)*, *Granular Continuity (GC)* and *Different Velocities (DV)* respectively.

Before giving a rough formulation of the assumptions, let us note that in a discrete kinematics there cannot be particles smaller than a region, for, if it were the case, the locations of such particles would have to be subregions of the alleged region. And this is impossible because regions are supposed to be atomic<sup>9</sup>.

Here is our formulation of the assumptions:

(NS) Let  $x$  and  $y$  be two impenetrable<sup>10</sup> particles moving on the same straight<sup>11</sup> line in opposite directions. Then they cannot switch their position;

(GC) Let  $x$  be a particle and let  $(R_1, R_2, \dots, R_n)$  be  $n$  distinct adjacent regions such that there is no missing region in between<sup>12</sup>. Then if  $x$  moves from  $R_1$  to  $R_n$  it has to pass through each  $R_i$  in between  $R_1, R_n$ <sup>13</sup>

(DV) Each and every particle can have different velocities.

Let us spend a few words on these assumptions. Their initial plausibility seems to stem out from simply looking at the world around us. Many forms of matter<sup>14</sup> seem to be characterized by impenetrability. Hence they cannot switch positions without clashing. Just think of two trains on the same railroad track. Also, walk from the desk in your office to the door following a straight line (don't cheat, don't jump). You would have passed through all the spatial regions in be-

<sup>9</sup> Thus, from now on, when we say that a particle is located at a region, we mean that it has the same size, shape and dimensions of the region.

<sup>10</sup> Also, we are assuming that two distinct particles cannot be located at the same region at the same instant. Whether this follows from impenetrability already or it has to be assumed independently is controversial.

<sup>11</sup> That is, the particles move along the same geodetic and the metric structure does not change over time.

<sup>12</sup> Our formulation is inspired by White (1992: 273).

<sup>13</sup> We take this to mean it has to occupy all the regions, the  $i$ th region after the  $i$ -th region in subsequent instants.

<sup>14</sup> Not so for photons.

tween the desk and the door. Finally, things seem to move at different velocities. It will not take the same time to get to your office if you're walking rather than driving. Moreover note that if  $DV$  does not hold, two distinct particles could not have different velocities.

We want to argue that a discrete kinematics cannot have them all. First we argue that  $GC$  entails not  $DV$ , i.e.:

$$(1) GC \rightarrow \sim DV$$

Our argument for (1) is the following. Let us call the velocity = 1 region per instant  $V_a$  for "allowed velocity". Then suppose (1) does not hold. There could be two cases, either there is some velocity  $V_- < V_a$  or there is some velocity  $V_+ > V_a$ . In either case, given discrete space and time, there should be a number  $k \in \mathbb{N}^{15}$  such that:

$$(2) V_{./+} = kV_a$$

But clearly there is no such natural number  $k$  that solves equation (2) and such that  $V_- < V_a$ . This argument establishes that there cannot be any velocity that is smaller than what we called the "allowed velocity". Can there be a greater one? Then at each instant the alleged material particle would have crossed a spatial distance of  $k$  regions. But, given the discreteness assumption, there could not be any instant at which the particle would have passed through the  $k$  parts of that distance.  $GC$  entails that the particle *has passed*<sup>16</sup> through each of the  $k$  parts of that distance, yet it is not even reasonable to ask *when* it has passed there, given  $DV$ . This argument seems to establish that there is no possible velocity that is greater than the "allowed velocity"  $V_a$ . This yields, together with the previous argument, that (1) does indeed hold. *A-fortiori*  $GC$  entails that two distinct particles cannot have different velocities.

Next, we want to argue that  $DV$  entails not  $NS$ , i.e.:

$$(3) DV \rightarrow \sim NS$$

We argue in favor of (3) by contraposition. First we show that  $NS$  entails that all particles have velocity = 1 region per instant, i.e. what

<sup>15</sup> The fact that  $k$  is a natural number follows from the discreteness assumption.

<sup>16</sup> Though it has never exactly occupied any of them.

we labeled  $V_a$  in the previous argument.

Suppose that it is not so. Let  $x$  and  $y$  be two particles and let  $R_x$ ,  $R$  and  $R_y$  be three regions such that they are adjacent,  $R$  lying between  $R_x$  and  $R_y$  and  $R_x$  being the first region on the left (Fig. 2a). Suppose now that at instant  $t_1$ ,  $x$  occupies  $R_x$  and  $y$  occupies  $R_y$ . Let  $x$  move with velocity  $v_x > V_a$ , for instance  $v_x = 2$  regions per instant towards the right, and let  $y$ , instead, move with  $v_y = 2$  regions per instant towards the left. It follows that at instant  $t_2$  we will have the following displacement:  $x$  will occupy  $R_y$  and  $y$  will occupy  $R_x$ , i.e.  $x$  and  $y$ , the two particles, will have switched their positions (Fig. 2b). This is because it is never actual that  $x$  has occupied  $R$  for there is no intervening instant between  $t_1$  and  $t_2$ . The same goes for  $y$ . And the “banging and bouncing” of  $x$  and  $y$  is thus never actual, as this could only have taken place at  $R$ , in the way we have set things up. And we have just argued that it is never actual that either  $x$  or  $y$  occupy  $R$ . We have already argued that there cannot be a velocity  $v < V_a$ , so this argument establishes that  $NS$  entails  $\sim DV$ . Claim (3) now follows straightforwardly by contraposition.

It seems that the intuition  $DV$  brings about in a discrete framework is that motion is a sort of appearing/disappearing (perhaps at non adjacent regions) phenomenon. Thus it should not be surprising that it does not seat well with either  $GC$  or  $NS$ .

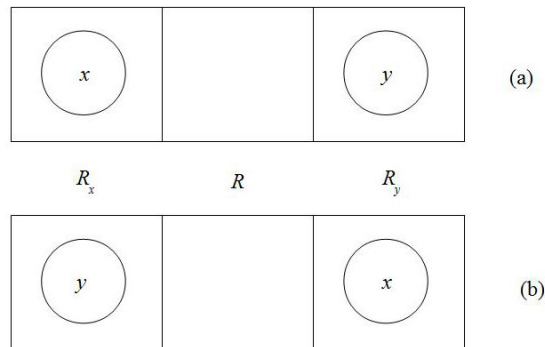


Fig. 2a, 2b.

It might occur to someone to block this argument invoking exactly *GC*, for *GC* would ensure that *x* and *y* will have to pass through *R* whatever their velocities are, thus having a chance of colliding after all. This objection is however mistaken. This is simply because by simple contraposition (1) will yield:

$$(4) DV \rightarrow \sim GC$$

So that you cannot invoke *GC* in presence of *DV*. Now, claims (1) and (3) together entail that a discrete kinematics cannot uphold all of the assumptions we started with. That their conjunction is inconsistent is easily seen for we have that:

$$(5) NS \wedge GC \wedge DV \rightarrow \sim DV,$$

by (1), and that:

$$(6) NS \wedge GC \wedge DV \rightarrow \sim NS,$$

by (3).

Our arguments raise a natural question. Even if it is not possible to have all the three assumptions, is it possible to have at least two of them?

On the one hand claim (1) and its converse, establish that it is not possible to have both *GC* and *DV*. On the other hand claim (3) and its converse establish that it is not possible to have both *DV* and *NS*. This leaves open only one possibility, namely that of retaining both *NS* and *GC*.

But finally, we want to argue that

$$(7) GC \rightarrow \sim NS$$

Thus leaving with a three-fold exclusion. The argument for (7)<sup>17</sup> goes roughly as follows. Take two particles *x* and *y* moving in opposite directions with velocity<sup>18</sup>  $V_a$  along a series of adjacent regions  $R_1, \dots, R_n$ . Given *GC* they will have to pass through each region in the series. Then there will be an instant  $t_1$  such that the particles will be exactly located at two adjacent regions in the series at  $t_1$ . And it follows from the velocities they have that at the next instant  $t_2$  the two

<sup>17</sup> This argument was suggested to us by an anonymous referee of this journal.

<sup>18</sup> This follows from our argument in favor of claim (1).

particles will have switched their positions<sup>19</sup>.

From claims (1), (3), (4), (7) and their converses it then follows:

$$(8) \text{ NS} \rightarrow \sim \text{GC}; \text{ NS} \rightarrow \sim \text{DV}$$

$$\text{GC} \rightarrow \sim \text{NS}; \text{GC} \rightarrow \sim \text{DV}$$

$$\text{DV} \rightarrow \sim \text{NS}; \text{DV} \rightarrow \sim \text{GC}$$

That is, the endorsement of one of the assumptions we started with entails that we should drop the other two. Now, which way to go?

Note that *NS* is violated upon very weak conditions. In fact even if the argument for (7) mentions explicitly *GC*, it does not need to do so. Given *GC*, and its entailment of  $V_a$  as the only permissible velocity, we are guaranteed that there will be an instant in which the particles will find themselves at adjacent regions. However we just need to add this possibility independently of *GC* and the argument would still go through. So, all that it takes for *NS* to be violated is the possibility of moving particles at adjacent regions at the same instant.

*GC*, as plausible as it might seem, entails that there is only one allowed velocity. But we seem to have an overwhelming body of experiences in favor of the contrary. Things seem to move at different velocities around us.

And in fact, *DV* seems a difficult assumption to drop. There are indeed weird ways in which *DV* could be salvaged on the face of our arguments. Sorabji (1983: 384) for example points out<sup>20</sup> that a particle may linger for several instants in the same region and then move

<sup>19</sup> There is a possible reply to this argument, and it is to contend that, given impenetrability, which we have assumed in our formulation of *NS*, the particles will not switch their position at  $t_2$  but rather remain where they were at  $t_1$ . This way of resisting the argument however rests upon a very strong reading of impenetrability, namely one that rules out the possibility of switching between adjacent positions. But this reading will render *NS* utterly unproblematic. And then its incompatibility with *DV* will be difficult to see. On a weaker reading of impenetrability, one that only precludes spatial overlapping, it becomes compatible with switching between adjacent positions, and the argument goes through. We are indebted to an anonymous referee of this journal for having pointed out to us these possibilities.

<sup>20</sup> Sorabji attributes this solution in turn to an Arabic atomist of the IX century, Abū l-Hudhayl al-'Allāf.



on. Its average velocity could then be smaller than what we label “allowed velocity”<sup>21</sup>. But these attempts of salvaging  $DV$  sound extremely *ad hoc*. We should not need to resort to them. We did not intend these remarks as exhausting the pros and cons of retaining and dropping different assumptions, but rather as suggesting different possibilities open to further investigations.

Following Grünbaum’s lead on the tension between relative motion and discrete kinematics we have shown that within that framework it is not possible to uphold different assumptions about motion that seem at first sight overwhelmingly plausible. But this plausibility probably stems out from the endorsement of a paradigm of continuity for motion established already in Aristotle’s physics.

However different programs in contemporary physics attempt at quantizing spacetime (if not space *and* time) thus endorsing discreteness. One of the most promising is the so called *Loop Quantum Gravity*. However, according to one of its main proponents, namely Carlo Rovelli, ‘this discreteness of geometry [...] is very different from the naïve idea that the world is made by discrete bits of something’ (Rovelli 2001: 110).

It thus remains to be assessed how such programs would resolve the sort of “*metaphysical trilemma*” we have envisaged for our Pre-Socratic discrete kinematics. It could very well be the case that it does not even arise in those contexts. In this case the trilemma would not be *solved* but rather *dissolved*. And then it would have to be assessed whether some other dilemmas are lurking.<sup>22</sup>

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<sup>21</sup> This proposal raises interesting questions. We could push the point that the arguments go through only for the average velocity of the particle. Its instantaneous velocity would still be constrained to be  $= V_a$ . However in this proposal there is no guarantee that particle trajectories would turn out to be differentiable, so that the usual notion of instantaneous velocity defined as the first derivative of the position function would not be applicable.

<sup>22</sup> We would like to thank an anonymous referee for extremely helpful comments and insightful suggestions.

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# Figurative Language in Explanation

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## Abstract

Yablo argued that some metaphors are representationally essential: they enable us to express contents that we would not be able to express without them. He defended a fictionalist view of mathematical language by making the case that it similarly serves as a representational aid. Against this, Colyvan argued that metaphorical/figurative language can never play an essential role in explanation and that mathematical language often does, hence concluding that Yablo's fictionalism is untenable. I show that Colyvan's thesis about explanation is highly implausible in the absence of a challenge to Yablo's position on representationally essential metaphors, which Colyvan does not attempt. I also briefly discuss other attempts to produce a simple knock-out argument against fictionalism and show them wanting.

## Keywords

Explanation, metaphor, figurative language, fictionalism, ontology, belief, make-believe, acceptance, fictionalist attitude, fictionalist acceptance, literal use, figurative use, paraphrase, Stephen Yablo, Mark Colyvan.

## 1

In a number of influential papers Stephen Yablo argued that quantification over mathematical entities should not be seen as ontologically committing.<sup>1</sup> He argued that mathematical discourse is of a piece with metaphorical/figurative discourse, and that, therefore, its posits should be regarded as representational aids. Even though we should not expect to be able to eliminate mathematical language from our theories, there is no need to regard ourselves as committed to the existence of mathematical objects, as far as Yablo is concerned. Against this, Colyvan 2010 argues that (i) metaphorical/figurative

<sup>1</sup> Yablo 1998, 2002a, 2002b, 2005, 2008.

language can never play an essential role in explanation and that (ii) mathematical language often does. If these claims are true, then references to mathematical objects in science cannot be taken lightly as mere representational aids. This would spell the end of the Yablo-style fictionalist programme and its promise of an ‘easy way’ out of philosophical preoccupation with ontology.

I am interested in the first of these two claims. If true, this claim about explanation would be an interesting discovery in its own right, apart from any connection to fictionalism. Being a key premise in a possible knock-down argument against fictionalism makes it even more interesting. Thus, I propose to discuss Colyvan’s thesis:

(C) There are no genuine explanations essentially invoking metaphors.

First, the meaning of this claim must be clarified. I start by noting that its *prima facie* plausibility might stem from a trivializing reading (Section 2). Then, in Section 3, I clarify that (C) is supposed to be a weaker claim than the claim that metaphors’ ‘real-world content’ can always be paraphrased into literal language. This is important if (C) is to have a dialectical punch against Yablo, who holds that sometimes metaphors cannot be paraphrased. Colyvan’s idea is to defend (C) while granting this to Yablo. I will argue that, with this granted, there is no reason to expect (C) to be true. (Sections 4 and 5, with some additional comments in Section 6). I will conclude by discussing whether Colyvan could improve his argument by narrowing the scope of (C) to explanations in *science*. (No.) (Section 7.) This will lead into a few broad-brush comments about arguments against fictionalism, to put the present discussion into a wider context.

## 2

What is meant by ‘essentially’ in (C)? Colyvan freely admits that we do often meet with metaphors and figurative language in explanatory contexts. But, he says, figurative explanation always *stands proxy* for some ‘real explanation’ which is non-figurative.

My suggestion is that when some piece of language is delivering an explanation, either that piece of language must be interpreted literally or the non-literal reading of the language in question stands proxy for the

real explanation. Moreover, in the latter case, the metaphor in question must clearly deliver and identify the real explanation. It is important to note that I am not denying that explanations invoking metaphors abound. What is at issue is whether there can be genuine explanations essentially invoking metaphors — that is, where the metaphor is not standing proxy for the real explanation. (Colyvan 2010: 300)

We must now ask: what does it mean to *stand proxy* for the real explanation? ‘Stands proxy’ is itself a metaphor that needs *cashing out*.

There is a trivializing reading lurking nearby that we need to discard out of hand. Sometimes we use ‘explanation’, ‘explains’, etc., without reference to any linguistic product or performance, but rather to refer to things/facts/events *themselves*, to whatever it is *in the world* that ‘explains’ what is to be explained. We say: ‘The explanation of this strange phenomenon will likely remain forever hidden from us.’ ‘Lower atmospheric pressure at higher altitudes explains the lower boiling point of water.’ ‘Repeated beatings he suffered in childhood explain his nervous attitude.’ We often refer in this way to salient items in the causal process that issued in the event, and sometimes, perhaps, to other salient features of the situation ‘on the ground’. It may be that this way of talking is an oblique way of talking about what we *would say* in explanation, but that doesn’t matter: the point is that this usage is sufficiently pervasive to potentially cause confusion. Call this ‘kind’ of explanation (i.e., what we *seem* to be talking about when we talk of things/facts/events as *themselves* explaining something) ‘explanation *in rebus*’.

It is *self-evident* that what does not exist cannot be part of any explanation *in rebus*. It can be neither a part of any causal process, nor of anything in actuality that conditions the event/phenomenon we explain. So, if the claim that every metaphorical explanation *stands proxy for the real explanation* merely means that any metaphorical explanation (a linguistic item) stands for an explanation *in rebus* which contains nothing unreal, it is hardly worth making. If the metaphorical explanation is proxying for something, it better be for an explanation as a linguistic production.

This trivializing reading must be set aside. We must be vigilant, however, because it has a subtle way of insinuating itself into our thinking about this matter. For example, Colyvan remarks that in using the metaphor ‘the coach is unhinged’ as something that ex-

plains why the coach ought to be replaced, we do not expect to find actual hinges within the coach (299). But we already know that if we understand what a metaphor is. From this he concludes that ‘the hinges carry no explanatory load’ (300). Another metaphor – not that there is anything wrong with that – but the trouble is, this metaphorical conclusion does not follow. It is, indeed, clear that no hinges carry any load *literally*. (There are no hinges within the coach, literally speaking.) However, it does not follow that the purported reference to hinges carries *no explanatory load* (as we say metaphorically). Perhaps it does not, but that is not a mere consequence of the observation that there is no such hardware literally present.

Are we then to understand (C) as saying that a figurative explanation can always be replaced by a non-figurative one? It seems we have to, but this starts to look less plausible. Now we have to focus on ‘can’. Is it ‘can’ by the same speaker, with some further thought maybe? Or by someone smarter, or with a greater knowledge base? By someone of entirely different computational capacities? As we move ‘outwards’, the claim becomes less interesting and less useful for the purposes Colyvan wants to press it to in an argument against Yablo. (That is, as a sufficient condition of literalness.)

Fortunately, Colyvan makes it clear that he has a bold and interesting claim in mind. (‘The metaphor in question must clearly deliver and identify the real explanation.’ (300)) The figurative explanation should, apparently, be replaceable by the explainer herself if she is really in possession of the understanding engendered by it.

In short, a counterexample to (C) would have to be (i) a genuine explanation, which (ii) invokes a metaphor or other figurative language, and where (iii) the metaphor’s entire contribution to explanation cannot be paraphrased into literal language by the speaker who is in full possession of the explanation. (Let such a speaker be an idealized construct if the relevant knowledge is distributed within the community.)

### 3

The debate is shaping up to be one that won’t lend itself to an easy resolution. Any proposed counterexample will be met with either the charge that it is not a genuine explanation, or that there is no

metaphor there, or that the metaphor's explanatory contribution could be paraphrased away. Such issues are hard to adjudicate. But, curiously, Colyvan apparently wants to press (C) against Yablo-style fictionalism without objecting to Yablo's views on how metaphors can be *essential* for, e.g., expressing certain truths. The question whether (C) is plausible *given* those views is much more tractable. The answer is 'no'.

According to Yablo, metaphors can serve as *representational aids*. And the reason they may be *essential* is that there may be no other way to get at what they allow us to get at: '. . . the language might have no more to offer in the way of a unifying principle for the worlds in a given content than that *they* are the ones making the relevant sentence fictional.' (Yablo 1998: 250) One of the metaphors Yablo uses to explain this is 'warped lines of semantic projection' (1998: 249). According to Yablo, a metaphor, as it were, *projects onto* a different region of logical space than the same statement construed literally. A crucial part of Yablo's position is that there may be *nothing else available* (within the relevant constraints) that projects 'directly' onto the region in question. This is one way in which, according to him, metaphors may be *essential*: hence, 'representationally essential metaphors' (henceforth, 'RE-metaphors').<sup>2</sup>

Our question was whether there are explanations essentially invoking metaphors. Now, if a metaphorical explanation can involve, by way of such a projection, what we would not otherwise be able to represent, or would not be able to represent easily or perspicuously, that would be a perfectly good way for it to involve a metaphor essentially.

Colyvan ignores this aspect of Yablo's view. His summary of Yablo's 1998 argument represents as its core the claim that we cannot pry apart the literal and the figurative in discourse (Colyvan 2010: 298-299).

Clearly we should only read off our ontological commitments from literal parts of our scientific theories, but if these theories are shot through with figurative language, we need to be able to separate the literal from the figurative, before we can begin ontology. But here is

<sup>2</sup> Yablo 1998 also discusses 'presentationally' and 'procedurally' essential metaphors. I think it can be shown that (C) is likely false sticking only to representationally essential ones, if such there be.

the kicker: according to Yablo, there is no way of separating the literal from the figurative. (299)

This rendition leaves Yablo's centerpiece idea out of the picture.

For someone who denies that there are RE-metaphors it would be natural to accept (C). But Colyvan does not address the question whether there are RE-metaphors. On the contrary, he wants to grant Yablo's claims as far as they go, and *then* to press his point about explanation. I take this to be the combined import of the following remarks: 'So let us grant that metaphorical language (and figurative language generally) can be used for purposes of true description, as Walton and Yablo argue' (299). 'Yablo argues for a number of different ways in which metaphors are essential, but one way he does not consider is: metaphors essential for explanation' (300). 'I am not suggesting that metaphors can be completely cashed out in non-metaphorical language; I take it that accepted wisdom on this issue is that they cannot, and I am inclined to go along with this accepted wisdom' (301).

At one point Colyvan seems to indicate that he believes there are no RE-metaphors (perhaps similar concerns can be raised about metaphors in descriptive roles' (301, n. 20)), but repeats the contention that the focus on explanation is more dialectically effective. However, there is no indication of what the case against RE-metaphors is supposed to be, and it is hard to be optimistic when the case for explanation basically came down to intuitions: 'This is not an argument, I know, but I just cannot see how—on any account of explanation—metaphors can explain without at least some understanding of the literal meaning of the metaphor' (300). Notice how the assumption creeps in here that to understand is, so to speak, 'to understand literally', i.e., to be in possession of a literal representation. But this assumes what is at issue. That makes one wonder whether the hinted-at case against RE-metaphors would suffer from a similar defect.

#### 4

*If* Yablo is right about there being RE-metaphors, then it would be very strange if there were no counterexamples to (C). That would mean that whenever a metaphor picks out a property, or a type of



event or process that cannot be otherwise specified, then either this property, event, or process is never relevant to explanation or picking it out in this way fails to give us the right kind of access to it. But neither of these two options is in the least plausible. Someone who is prepared to believe in RE-metaphors should think that (C) is likely false.

We saw that the reason Yablo denies that metaphors are always paraphraseable is not that some emotional coloring might fail to be captured by the paraphrase, but that a metaphor could express a truth that could not otherwise be expressed. Now, some such truths might be irrelevant or redundant for any explanatory purpose. Perhaps truths involving emergent properties are of this kind. But there is no reason to think that metaphors can pick out only such properties. On the contrary, it is clear that metaphors *can* pick out perfectly ordinary, causally efficacious, etc., properties. So, unless you thought that in all cases where a metaphor picks out a relevant property, it is possible to paraphrase into literal language, why would you think metaphors can't ever be essential to explanation? (This is independent of what account of explanation one endorses. RE-metaphors, if they exist, might be essential for referring to some properties, events or processes, or expressing some laws.)

This brings up the second possibility: that while a metaphor *can* pick out a potentially relevant property, that property can only 'come into' an explanation if referred to literally. The metaphor does not give us the right kind of access to it. So, if it cannot be referred to literally, that is just that: no explanation referring to it is to be had.

It can indeed happen that the way we refer to something makes it unuseable in an explanation. One problem, for example, can occur if the reference is via the explanatory relation itself. 'Why did Mary quit her job?—She did because of the events and circumstances that explain her quitting her job.' ('Explain' is used in the 'in rebus' sense here.) It is clear why this fails as an explanation: it provides no additional information at all. We asked '*What* explains?' and received an answer '*That* which explains.' Cf: '*What* is in your pocket?'—'The contents of my pocket.' Answers fail when they carry no information beyond what was assumed in the question. Hence, the following explanations are worthless for the linguistically competent: 'Why is he a bachelor?'—'Because he is unmarried.' 'Why does opium put

people to sleep?’—‘Because it is soporific.’ (If you hear ‘because it has dormative power’ as similarly vacuous, it is for the same reason.) Certainly, a metaphorical explanation might suffer from the same defect, but there is no reason to think that this is generally the case.

For the subject who does not know of some co-referring expressions that they are co-referring, the explanation in terms of one of them, not informing of identity, may be defective. Intuitively, such an explanation does not tell enough; the expression used does not *give* the subject what a co-referring expression would have given. Do metaphorical explanations suffer from a similar defect? They could, of course: if the situation is exactly as described, except that one of the co-referring expressions is a metaphor. But why think that this *must* be so, unless you discard (question-beggingly) the possibility of explanatory relevance of the content accessed through the metaphor?

Is there some other model that could help us understand how, e.g., a metaphorical reference to a property could vitiate an explanation where a literal reference to the very same property would not? I can’t think of any, and there is not enough in Colyvan’s text to profitably discuss this further.

A few more words about paraphrase. I take it that semantic ascent won’t do the trick, and that replacing a metaphor with a corresponding simile does not count either. It is clear that this is not what Colyvan means when, for example, he says there is always a partial paraphrase that carries the explanatory load. We can leave it at that, but I would add that in my view the whole discussion is better conducted in terms of cognitive attitudes rather than on the level of language. In terms of attitudes, we can draw the line between those cases where the attitude of make-believe is required for reaping the statement’s full benefits and those where it isn’t. On Yablo’s analysis (as on Walton’s) understanding metaphors requires make-believe. It is obvious that semantic ascent doesn’t change that. Replacing a metaphor by some such verbiage as ‘the feature of the world that makes the metaphor “. . .” appropriate’ still requires that you engage in make-believe to latch onto that feature. Now, the same seems to be often true of a simile. For these reasons it is better to think about belief versus make-believe rather than about literal versus metaphoric language. But I will continue, as far as I can, to stick to the way the issue has been framed by Colyvan.

Among Yablo's examples of RE-metaphors are 'the pieces of computer code called *viruses*, the markings on a page called *tangled* or *loopy*, the glances called *piercing*, or the topographical features called *basins*, *funnels*, and *brows*' (1998: 250). If he is right about these being non-paraphrasable, and if they can enter into explanations, there seems to be no reason to expect their contribution to explanation to be nevertheless always paraphraseable.

## 5

If Yablo is right about 'computer virus' being an RE-metaphor, then it may well be that there is no way to paraphrase it out of an explanation like this one: 'Why is the company's network so often down lately?'—'There were a lot of virus attacks recently, and the new operating system is vulnerable to viruses.' Let us try a few more: 'Why is he so disliked by everybody?—Because of his venomous tongue.' (Perhaps paraphraseable as 'He says hurtful things'—but is 'hurtful' a metaphor?) 'Why do oppressive governments often abet xenophobia?'—'It is a safety-valve for the people's frustrations.' 'Why did they divorce?'—'He was jealous, and jealousy is poison to relationships.'

A metaphor might be found either in an explanans or in an explanandum. I suspect that by 'explanation' in (C) Colyvan means only the explanans. However, picking the right explananda is also important for understanding. In fact, if mathematics is figurative, the scientific explananda are metaphoric too: the transformation of 'raw' phenomena into mathematical form had to take place before the explanation began. I set this aside.

I am not eager to defend any particular example as a metaphor, unparaphraseable, or truly explanatory: I have conceded that these matters are murky. But, remember, it has been granted that RE-metaphors exist. I am only trying to show that metaphors do not strike us as out of place in the context of explanation; we take them in stride. Here is a good one, actually:

There is a tide in the affairs of men  
 Which, taken at the flood, leads on to fortune;  
 Omitted, all the voyage of their life  
 Is bound in shallows and in miseries.

In Shakespeare's *Julius Caesar* this is offered as an explanation of the need for prompt action. If we want rather an 'explanation why' as our example, the same could be used to explain somebody's success or failure in life (e.g., along the lines of 'he missed the tide'), and could be apt or not, depending on the circumstances. (Apt when success/failure depended significantly on global societal processes, especially those that can be thought of as having a direction.)

Colyvan discusses a purported counterexample to (C): 'the stock market crashed' offered as an explanation of why 'someone changed his or her career' (300). He tries to analyze it in a way that supports his contention. He acknowledges that a 'stock market crash' is a figurative expression which cannot be paraphrased. Nevertheless, he maintains, 'some partial, literal translation of the metaphor is carrying the explanatory load'. In the case at hand he proposes the following:

It might be that the person in question changed their career because the particular industry they worked in found itself in financial difficulties. As a result, most companies in the sector were unlikely to be hiring or offering career advancement opportunities in the near future. (301)<sup>3</sup>

Adverting to the 'stock market crash' does strike us as a kind of hand-waving towards the *real explanation*. But that is not because 'stock market crash' is metaphorical. Rather, this is because in this example we have a mismatch between the explanandum and the explanans: the latter is too general for the former. We get the sense that there is a better *more specific* explanation for why this particular person made these particular changes to her life plans. Compare: 'Why did Tatiana come to the United States?' — (i) 'Because her country collapsed' vs. (ii) 'Because her country ceased to exist as a

<sup>3</sup> He goes on to make a remark that suggests a confusion of the kind which I had warned against earlier: 'Indeed, it is crucial to the explanation here in terms of the stock market crash that we have some idea of what a stock market crash involves, even though none of us has a full (literal) understanding of stock market crashes in their full detail.' (301).

political entity'. Although only the first explanation is metaphorical, both strike us as about equally mediocre. We think there is a more specific story to be told, giving us insight into this particular event. 'What's the *real* story?' we might ask.

Returning to the stock market example, a more suitable modification might be: 'Because of the stock market crash there was a spike in suicides.' This doesn't engender the same intuition that there is a better more specific explanation. If we had a machine that would kill a cat when the suicide statistics goes over a certain threshold, then the stock market crash could also enter essentially into the explanation of the cat's demise.

It is to be understood that a partial paraphrase must preserve *all* that is relevant in explanation, without remainder. The mere fact that we can say some things to *go towards* a literal explanation is not good enough. That is because if something is left out, how can we be sure that it is never relevant? The obligation to show that the paraphrase is always without relevant remainder is on Colyvan. (And if one grants there is a remainder, how would one even approach showing it isn't relevant?)

## 6

To accept that there are non-paraphraseable metaphorical explanations is not to deny that sometimes what superficially looks like an explanation is not explanatory. Metaphors seem to turn up in bromides and *clichés* which fail to strike us as explanatory: 'Why did he not turn in his brother? – Well, you know, blood is thicker than water.' (Even here there *is some* explanatory work being done: the event is placed within a broader phenomenon; we are told to expect that sort of thing, where the 'sort of thing' is indicated via a metaphor. This might be a bad explanation principally because it suggest a general principle which is not true: people do not always act in preference for blood kin.)

Perhaps metaphorical explanations can be bad in ways in which literal ones cannot, or are more liable to be bad in some ways in which literal ones are less so. Mixing metaphors in explanation is perhaps *ceteris paribus* a bad thing not merely for aesthetic reasons, but also because it is likely to obscure the explanatory nexus. A met-

aphor could box us into a set of options that is more limited than our options really are, if we only turn an unprejudiced glance to the nature of things. Or a metaphor can create an illusion of understanding where we have none. Surely, a large part of what we do as philosophers is try to point out and put pressure on metaphors that insinuate themselves into philosophical thought. (I have tried to do so here for ‘proxying’ and ‘carrying the explanatory load’.)

Is it the case then that, although metaphorical explanations might sometimes be the best we can do, the literal ones are always better? We have seen no reason to think so. And this claim, even if true, would not do the job Colyvan intends it to do: blocking fictionalism about mathematical objects as an option in philosophical ontology. The issue isn’t what would be *better*, but what we can *have*.

## 7

You might worry that the examples we have discussed are not from science. However, Colyvan proposes (C) as a *general* claim about explanation. The examples to which Colyvan himself appeals in defending (C) are taken from everyday discourse. His argument, recall, is as follows: (C), but mathematics can play an essential role in (scientific) explanations, so mathematics is not figurative. We saw that (C) is implausible. What if Colyvan were to restrict his claim to *scientific* explanations? Its dialectical effectiveness would decline precipitously. The claim would then be as follows:

(CR) There are no genuine *scientific* explanations essentially invoking metaphors.

How could (CR) be argued for? Presumably, by challenging its opponents to provide counterexamples. Yablo’s response to this should be ‘I just did that. The use of mathematics in science is a counterexample.’ Although he could respond in the same way to (C), his position would be much stronger vis-à-vis (CR) if the latter is advanced as a stand-alone thesis, especially if (C) is seen as false. If there were no other counterexamples to (C), then the alleged figurative nature of mathematics would look so much more like an anomaly than it would were it the only counterexample to (CR). A compelling argument would be needed to overcome suspicion in the former case.

Suppose no other counterexamples to (CR) could be found, however, while (C) is taken to be false. It is hard to see how this could be very damaging to the fictionalist's project.

Furthermore, recall that, for Yablo, the figurative nature of mathematics is something that had to be *exposed*: it wasn't obvious on the surface. So it shouldn't be surprising if other *uncontroversial* examples aren't leaping out at us. And controversial ones shouldn't be too hard to come by. (Perhaps a case could be made that regarding the same thing as both a particle and a wave is metaphoric. Or one can press van Fraassen's views into this mold, by regarding his 'models' as metaphors of sorts, or as akin to metaphors in relevant ways.)

It hardly needs to be said that in supporting (CR) one shouldn't beg the question by holding that the *true* meaning of 'scientific' entails 'literal'. 'Scientific' explanations, against which we are to assess the claim, must be identified sociologically. But there is something else of which we should be mindful. We tend to take it for granted that when a principle becomes a part of a scientific theory that is used by scientists without reservation, *that in itself* is evidence that it is non-figurative. But a fictionalist disagrees. It wouldn't be fair to beg the question against the fictionalist by *taking it for granted* that anything which is used in this way by scientists is taken literally and seriously.

This is a potential problem for inductive arguments for (CR). However, we must see that only the *taking for granted* is objectionable. The claim itself may well be true. That is, the claim that unreserved, unquarantined, etc., use by scientists is evidence that the claim is taken by them literally and in full seriousness, i.e., believed. If the case can be made for this, then at least hermeneutic fictionalism<sup>4</sup> is overturned. The question is how to argue for this.

One approach stems from the idea that such use is as good as it gets, and just *is* what it is *fully* to *accept*, i.e., to believe. Horwich 1991 is a good example of this line being pressed against fictionalism. Such objections could be silenced once and for all by showing

<sup>4</sup> In the customary terminology, 'hermeneutic' fictionalism holds that the actual attitude of scientists is make-believe, in contradistinction to 'revolutionary' fictionalism which advances a proposal to *replace* the current attitude by make-believe.

that the distinction between belief and make-believe is clear enough *in those cases where the fictionalist invokes it* (i.e., mathematics, etc.). I don't think this has been done yet, *pace* Daly 2008, Yablo 2002b: 98. I have no space to defend this contention here.

Although the fictionalist can't dismiss it, this position is not very strong. It is buoyed mainly by a certain kind of intuition, along the lines of 'What *more* could you ask for (to count an acceptance as belief)?' But that is not decisive, and leads to a standoff with the fictionalist. This gives rise to another approach. To gain an upper hand, the objector tries to discover some simple and neat principle — either a sufficient condition of literal or a necessary condition of figurative use. For example, Rosen and Burgess 2005 offer the following:

(BR) . . . whenever a bit of language is used nonliterally, it is possible for an interlocutor to misconstrue it by taking it literally, and for the competent speaker to recognize this misunderstanding and correct it by pointing out that the remark was not meant literally. (Rosen and Burgess 2005: 533)

They maintain that mathematical discourse fails this test for non-literality (533). Without delving too deeply into this, we can note that this objection is dialectically weak. It can be countered by denying the validity of the test, by denying that mathematics fails it, or by insisting that, even if mathematics is not *strictly speaking* figurative, it is figurative in some extended sense. The last option shows a systematic dialectical weakness of using generalizations arrived at by extrapolation from central cases. Eventually, perhaps, the ensuing debate could be settled by the cumulative weight of countervailing considerations, but not easily. It would be illusion to think 'Aha, I found this distinguishing mark! Now I can quickly dispatch fictionalism for good.'

As a brief aside, it would be interesting to consider the prospects of denying the validity of the test. At first blush, the proposal seems to have more plausibility than (C). But here is a counterexample, which points to a general problem. *Homo homini lupus est*. This does not say that human beings *are* wolves, but that they are wolves *in relation* to each other. *Not* that they appear to be as wolves, but that they *are* (despite appearances).<sup>5</sup> How does one go about misconstru-

<sup>5</sup> Of course, there is any number of ways for someone to misunderstand some-



ing this saying as literal? ‘Mommy, but this makes *no sense!* Being a wolf is not a relation to somebody.’ There must be more examples of this kind: where an attempt at literal construal fails because it produces something ungrammatical or conceptually incoherent. In response it would be natural to insist that there was still a distinct mental *effort* to construe literally, and to amend (BR) along the lines that an *attempt* at literal construal must be *possible*, although such an attempt might nevertheless *fail*. But such a revision is devastating to (BR)’s effectiveness against fictionalism. The fictionalist will gladly say that practitioners of philosophical ontology are trying to understand mathematics literally, *trying and failing*.

Similar attempts to bolster the anti-fictionalist case can be extracted from Stanley (2004: 14-18). One stems from the idea that being engaged in make-believe is always cognitively accessible to the subject, and that mathematics fails this test. Another is that figurative discourse cannot be engaged in by autistic children, while mathematics can be.

Now, (C) serves in a similar manner for Colyvan. It is a generalization to the effect that whenever a statement is used in a certain way (i.e., as essential in explanation) it is used literally. From this, if we connect a few more dots, we are to conclude that scientists’ unreserved acceptance is belief as opposed to make-believe. However, I hope that the previous discussion has shown that (C) has nothing to recommend it.

Colyvan faults Yablo for taking an easy road to nominalism, but (C) is, in its way, also an attempt to find an easy road: an easy road to the dismissal of fictionalism. There are reasons to doubt that such a road exists. Even if a principle could be found that fits well with the central cases, an appeal to it as to a brute fact would be dialectically weak against fictionalism. The question whether our attitude to mathematical propositions, *such as it is*, is best classified with paradigmatic belief or with paradigmatic make-believe for the purpose of determining its ontological commitments does not seem to lend itself to this kind of resolution. The attitude seems different from

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thing. But misunderstanding it in some random way wouldn’t be simply taking figurative for literal. It wouldn’t be analogous to misconstruing ‘butterflies in the stomach’ as literal — the example Rosen and Burgess use.

paradigmatic cases of either.

The way to advance this debate is to look squarely at the concepts of belief and make-believe, and try to think where we can ‘carve them at the joints’. That’s a *hard* road, but it can perhaps lead somewhere. I do not think it would lead to a vindication of traditional ontology, but it might lead to a gain in insight into the issues involved here sufficient to move beyond this debate.<sup>6</sup>

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<sup>6</sup> I am grateful to the anonymous referees whose comments led me to expand the scope of the paper and to address objections that haven’t occurred to me. I would also like to thank John Heil and Paul Benacerraf for being so generous with their time and for advice that helped improve this.

# Yet Another Confusion About Time Travel

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## **Abstract**

I argue that, contrary to an idea to be found in popularizations of time travel, one cannot more easily multiply oneself by taking younger versions of oneself back in time than by travelling back in time on one's own. The reason is that the suggested multiplication of the traveller is, from a global perspective, only apparent.

## **Keywords**

Time-travel, duplication, identity, space-time, fallacious reasoning

## 1

Most philosophers think that travelling back in time is at least logically possible, because it does not entail changing the past<sup>1</sup> and because other arguments against self-consistent time travel are not compelling<sup>2</sup>. I am with the majority on this issue. However, travelling into the past can have strange consequences. One is outlined by P. Davies:

Travel into the past takes an air of absurdity when the time traveller meets his younger self, for then there will be two of him. [...] And it needn't stop there. You could invite your (slightly) younger self to accompany you in a similar trip back another day, when there will be three of you. Nothing prevents this process being repeated again and again. By making successive hops back in time, the time traveller could accumulate many copies of himself in one place (Davies 2002: 111).

<sup>1</sup> An exception is (Goddu 2003).

<sup>2</sup> See, for instance, the arguments in (Grey 1999), and the reply in (Dowe 2000).

This suggests that by taking more and more versions of yourself (or of any other object around) back in time with you, you could multiply yourself (or any other object around) effortlessly. Indeed, right after this passage, Davis suggests that in this way you could get very rich very easily using this strategy. Suppose that at 10 o'clock you own a gold bar and you have a time machine. You could then take the gold bar back in time with you to 9.55. Here, you take the (slightly) younger instance of the gold bar along with the older instance of it that is already in your hands on a trip back to 9.50. When you arrive there will be three gold bars.....and so on.....by hopping back in time along with more and more gold bars each hop, you can accumulate an enormous quantity of gold.

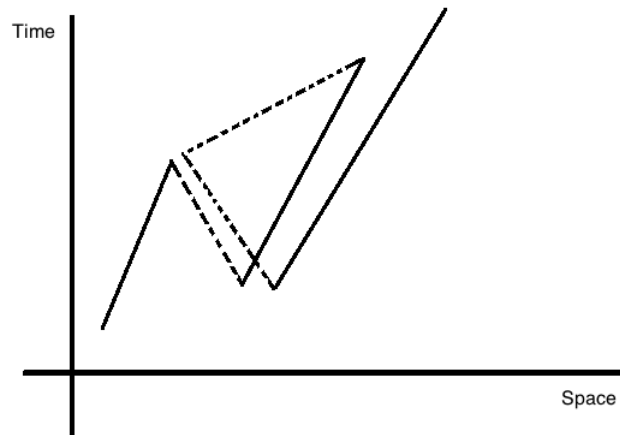
It is tempting to follow this line of reasoning. However, it is fallacious. In order to see it, focus on 9.55, when an older version of yourself exits from the time machine with a gold bar and *takes* the gold bar that a younger version of yourself is holding in her hand in order to travel a further five minutes into the past with two gold bars. If the gold bar that she takes from her younger self is the same one that she takes with her back in time at 10 o'clock, then at 9.55 it *cannot* have been taken by her to a trip back to 9.50 (unless she brought it back). That this is so is because if she had taken it in the past (and not brought it back), the gold bar would have not been there at 10 o'clock! And the same, of course, goes for Davies' original example: at 9.55 your younger self cannot go into the past, if she will enter the time machine at 10 o'clock. Time travel without contradictions entails that the events that a time traveller encounters in her personal time are the very same that everybody else encounters in external time; it is just that they are ordered differently<sup>3</sup>. Thus, if you did not (external time) enter a time machine with your older self, you will not (personal time) do it. (And what if you try anyway? The standard answer is that something would prevent you from doing it: you slip on a banana peel before getting to it, or you change your mind, or ... ).

<sup>3</sup> Personal time is that which is measured by a clock attached to the traveller, such as her heart-beats or her wrist-watch; external time is that measured by a clock attached to any object that is at rest with respect to the system of reference

This does not mean that you cannot ever take younger or older versions of yourself back in time. If you *did* it (external time), then you *will* do it (personal time). However, taking one or more versions of yourself into the past would not get you many versions of yourself in (roughly) the same place any more easily than coming back many times near the same event without any version of you by your side. Kidnapping or sharing a time machine with a former instance of yourself does not lead to further extravagances in time travelling. To see that, consider a simplified spacetime diagram (fig. 1) that represents the world-line of the time traveller in external time by means of one spatial coordinate and one temporal coordinate along two Cartesian axes<sup>†</sup>. Travelling with a younger version of yourself into the past means simply that in your personal time you have already travelled into the past, and the fact that you have done it with an older version of yourself means simply that your time-line bends over very close to a previous part of itself. Your world-line as a time traveller is *one* continuous line in the diagram, which cannot bifurcate when you take a younger version of yourself into the past with you.

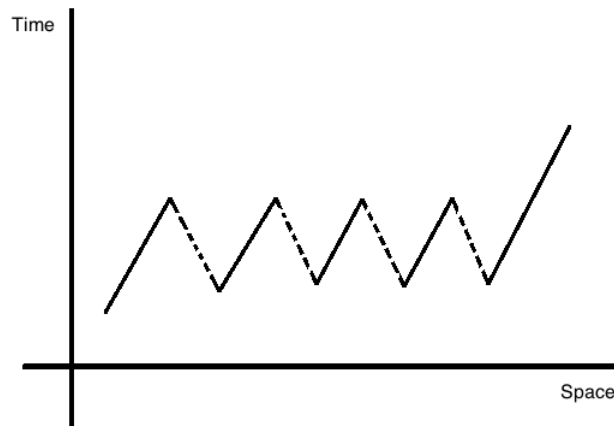
that the non-travellers share (typically, the Earth). If no time travel takes place, the distinction between personal time and external collapses (apart from tiny relativistic corrections). See Lewis 1976, and MacBeath 1982 for a generalized version.

<sup>†</sup> Such a diagram is simplified, not only because it represents one spatial dimension out of three, but also because it represents spacetime as flat and simply connected, which implies local backwards causation if there is to be time travel into the past, see Earman (1995: chap. 6). If there is no local backward causation, and travelling backwards in time is achieved by means of wormholes or other anomalies in a non-simply connected (curved) spacetime, then representing our ordinary coordinate time would be more difficult. However, nothing substantial hinges on this complication in my argument.



[FIG. 1: World-line of a time travel who 'kidnaps' a younger version of herself into the past. The dotted parts represent backwards movement in public time.]

The only way to get many versions of yourself in (roughly) the same place is to bend your world-line so that segments of it will have exactly the same temporal coordinate and nearly the same spatial coordinate, regardless whether you share a time machine with a younger version of yourself (as in fig. 1) or not (as in fig. 2).



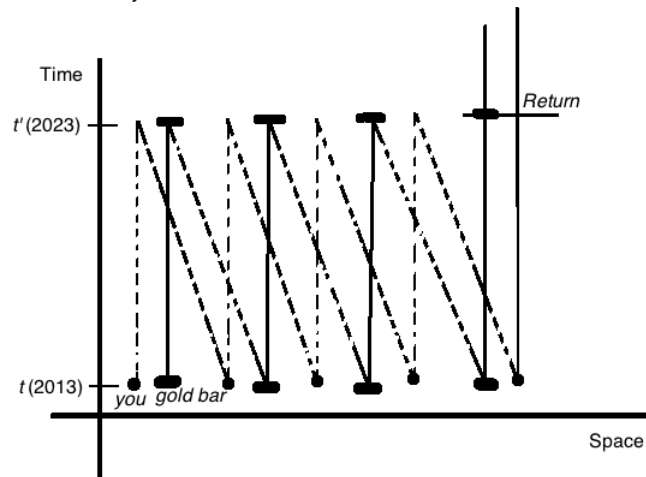
[FIG. 2: World-line of a time travel who goes back several times to (roughly) the same place and meets many versions of herself. Also here the dotted parts represent backwards movement in public time.]

The situation does not change substantially if time travel is instantaneous, such as if it is achieved by a ‘jump drive’ or something similar. It is true that in that case, the time traveller’s world-line will not be continuous. The world-line of such a time traveller would look as that in fig. 1 or fig. 2 but without the backward traits (i.e. the dotted parts). However, if we connect in the diagram each departure event with its correlate arrival event (according to the personal time of the traveller) by a dotted line, and we call the sum of her normal world-line segments of the time travel and the dotted segments in the diagram her quasi-world-line, we end up with one continuous quasi-world-line, which will not bifurcate in the event that a time traveller from the future takes a younger self with her into the past or future (it will look exactly as those in fig. 1 and fig. 2). The same goes, of course, for any objects a time traveller takes along with her.

## 2

Even if the only ‘multiplication’ of objects and people allowed by self-consistent backwards time travel in one temporal dimension is that implied by the bends of a traveller’s world-line, one may argue that that is good enough to multiply things without much effort, and thus to get rich easily. One cannot multiply her investment by making successive hops back in time with more and more versions of a gold bar with her, but one can take a gold bar back and forth in time in order to have many versions of it all gathered at the same time roughly in the same place. This is true, but it does not mean that time travel would give you free copies of your gold bar. What looks like a multiplication from a local perspective is just a bent world-line from a global point of view. The best that time travel can get you is a (zero rate) *loan* from a future self of yours. To see the point, consider the following story (with the help of Fig. 3). You own a gold bar and a time machine. At time  $t$ , you put your gold bar on a table in front of the time machine and enter the time machine for a 10-year trip into the future, at time  $t'$ . There, you find the gold bar that you left on the table 10 years before, pick it up and take it with you on a trip back to time  $t$ . Then you put the older version of the bar on the table, and you return – empty handed – to  $t'$ . Here, you take a still older version of the bar and you take it with you to  $t$ ... Do that  $n$  times, stop

at  $t$ , and you will have  $n + 1$  gold bars that you can spend however you like. Or can you?



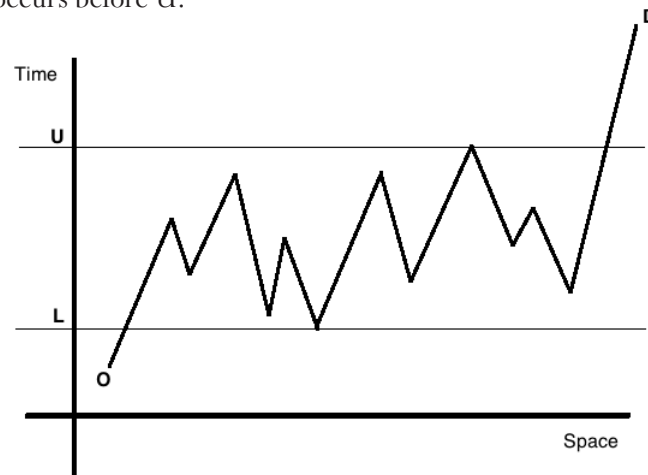
[FIG. 3: World-line of a time traveller (you) who travel back and forth between  $t$  and  $t'$  leaving each time on the table at  $t$  a version of a gold bar that he has taken from the same table at  $t'$ . Dotted segments stand both for backward and forward time travel.  $t'$  is the 'Return' time, when all but one gold bar has to be given back.]

To see whether the story is coherent, and its consequences, think of it as told by someone witnessing the events at  $t$  and a  $t'$ . In external time, all the arrivals and the departures are simultaneous. At  $t$ ,  $n$  versions of the traveller arrive from the future, leave a gold bar on the table, and  $n - 1$  of them embark on a travel to the future with nothing in their hands. The only version of the traveller who stays there (the older one) is indeed left with  $n + 1$  gold bars for her to spend however she likes. Yet the story is not over. At  $t'$ ,  $n - 1$  versions of the travellers will arrive from the past to *take* with them a gold bar each. *If the gold bars weren't there at  $t'$ , at  $t$  the traveller could not have received them at  $t$ .* The moral, then, is that the time traveller cannot change the  $n$  gold bars into currency, spend it all, and forget about it. After  $t'$  there will be only one gold bar around. The extra riches she received has to be given back. (What if the time travel tries to not give back the extra bars? Again, she will fail, or else she would have not received them.) The reason is that from a global perspective, no multiplication has taken place. If we look at the interval



between  $t$  and  $t'$  only, it seems there is more gold than if we had not taken the bar to and fro in time. Yet in spacetime as a whole, we find as much gold as if the bar had not travelled in time at all. And the same goes for persons, of course. If someone's life span is 75 years in personal time, then in spacetime as a whole we find the events composing those 75 years; and that is what we find both in the case in which one is a frantic time traveller and in the case in which one does not travel in time at all.

One may be puzzled by the fact that all departures and arrivals happen at the same time. However, it is easy to see that nothing hinges on this simplification. Draw (as in Fig. 4) the world-line (or quasi-world-line) of a time travelling object  $O$ . Call  $B$  the event of  $O$ 's coming into being, and  $D$  the event of  $O$ 's extinction. Now call  $L$  the lower arrival from the future of  $O$  in the diagram, which occurs at a date before which (in external time)  $O$  never arrives via backwards time travel, and  $U$  the upper arrival from the past, which occurs at a date after which (in external time)  $O$  never arrives via forward time travel. It is easy to see that before  $L$ , there can exist at most one version of  $O$ ; more precisely, there is one if  $B$  occurs before  $L$ , none if it occurs after. Similarly, after  $U$  there can exist at most one version of  $O$ ; more precisely, there is only one if  $D$  occurs after  $U$  and none if it occurs before  $U$ .



[FIG. 4]

We now have sufficient information to draw the conclusion. We cannot find instances of the gold bar around after the upper limit  $U$  at which the last (in external time) of our younger selves comes to take what has previously been lent to us<sup>5</sup>. This situation makes all the riches we receive from the future a loan, and not a gift, and in general the ‘multiplication’ of persons and objects obtained by time travelling is, from a global perspective, just an illusion<sup>6</sup>.

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<sup>5</sup> Note that if the upper limit of the time travel of the bar is after *our* death, we have to take care that when we die,  $n$  bars will stay in the place where our former self has found them before taking them back in time; if we do not manage to do that, we will not have managed to provide the loan to ourselves either.

<sup>6</sup> Thanks to two anonymous referees for useful comments. I acknowledge financial supports from the projects FFI2011-29560-C02-01 and FFI2011- 25626 of the Spanish Ministerio de Ciencia e Innovacion (MICINN).

# On the Truth-Conditional Relevance of Modes of Presentation

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## **Abstract**

Anne Bezuidenhout 1996 presents an argument for the claim that modes of presentation associated with referential terms are truth-conditionally relevant. I argue that her argument is flawed in light of the very same view on the interplay between reference and pragmatics she endorses.

## **Keywords**

Modes of Presentation, Reference, Pragmatics, Truth Conditions.

## 1 Introduction

Referential terms contribute their referents to the truth conditional content of the propositions expressed. Many theorists hold that referential terms are associated with modes of presentation, which are ways of thinking of their referents. Modes of presentation serve to explain (i) the meaningfulness of sentences containing referential terms lacking a referent, (ii) the difference in informativeness of sentences containing co-referring terms and (iii) the truth-conditions of propositional attitude reports. For example an utterance of 'he is F' is meaningful even if the pronoun 'he' has no referent in the context of utterance, say because the speaker is having a hallucination. In that context no proposition is expressed but the utterance is not meaningless since competent speakers know the linguistic mode of presentation – the character – associated with the pronoun 'he'. Consider another example: 'this boy' and 'that boy' might have the same referent, say in a context in which 'this boy' refers to a boy currently visually presented to the speaker and the hearer and 'that boy' refers to the same boy under a different guise the speaker and

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the hearer met the day before. In such context the following two sentences:

- (a) This boy is this boy.
- (b) This boy is that boy.

might differ in informativeness, because one might not realize that the boy currently visually presented to him is the same boy as the boy one met the day before. Similarly, it might be true that John believes that this boy is this boy and false that John believes that this boy is that boy.

Modes of presentation might be linguistic or psychological. In order to explain the meaningfulness of the sentence 'he is F' in the context in which the speaker is hallucinating a referent it is sufficient to invoke the linguistic mode of presentation associated with 'he', i.e. *the salient male*. On the other hand, in order to explain the difference in informativeness between utterances of (a) and (b) it is necessary to invoke psychological modes of presentation, i.e. the current visual appearance of the boy and the memory of the boy the speaker and the hearer met the day before in different circumstances. According to Anne Bezuidenhout's view (1996) on the interplay between reference and pragmatics, psychological modes of presentation are associated with referential terms like 'this boy' and 'that boy' through pragmatic processes that exploit contextually available information.

Most theorists hold that modes of presentation are truth conditionally irrelevant. Their conceptual content does not affect the truth-conditions of the propositions expressed. For example, if John says 'I am F' the fact that John is the speaker of the token 'I' is not part of the truth-conditions of what John says. What John says is true in all possible worlds in which John is F independently of whether John is speaking or not. Likewise (a) and (b) have the same truth-conditional content although they differ in assertability conditions and informativeness.

There are at least two ways of implementing the truth-conditional irrelevance of modes of presentation into a semantic theory. Some theorists identify the proposition expressed with the truth-conditional content and then distinguish the proposition expressed from the complete content of an utterance, which is taken to include

modes of presentation. Other theorists distinguish the proposition expressed, which includes modes of presentation, from the truth-conditional content. Nothing substantive derives from the choice of one version over the other.

## 2 Bezuidenhout's argument

Anne Bezuidenhout 1996 accepts the view that modes of presentation are components of the propositions expressed and argues that modes of presentation are truth conditionally relevant. She gives the following argument. Consider the pair of sentences (c) and (d):

- (c) If this boy is this boy, then John will show surprise.
- (d) If this boy is that boy, then John will show surprise.

Bezuidenhout holds that we are strongly inclined to take (c) as false and (d) as true. Presumably John will not show surprise as a consequence of an instance of the principle of the reflexivity of identity. In order to do justice to our inclination, Bezuidenhout says, one needs to ascribe different truth-conditions to (c) and (d). Given that there is no difference between (c) and (d) at the level of reference and the only difference resides at the level of the modes of presentation that are associated with the expressions 'this boy' and 'that boy', the conclusion follows that modes of presentation are truth conditionally relevant.

Bezuidenhout concedes that the theorists who deny the truth-conditional relevance of modes of presentation might have a rejoinder. The truth-conditional irrelevance of modes of presentation does not imply that modes of presentation cannot have an effect on the truth-conditions of certain compound sentences, in particular of sentences containing that-clauses. If one chooses the view that the propositions expressed include modes of presentation, one can hold that that-clauses refer to propositions containing modes of presentation (alternatively one can hold that that-clauses refer to complete contents – quasi-singular propositions – formed of propositions and modes of presentation). Therefore modes of presentations are among the constituents of the referents of that-clauses and as such they have a truth-conditional effect on sentences of propositional attitudes re-

ports.

Following this line of reasoning, one can argue that (c) and (d) have the form ‘If this boy is this (that) boy, then John will show surprise at that’, which makes reference to the proposition – or quasi-singular proposition – expressed in the antecedent. Given that the antecedents of (c) and (d) express different propositions – or quasi-singular propositions – since the mode of presentation associated with the expression ‘this boy’ is different from the mode of presentation associated with the expression ‘that boy’, the truth-conditions of (c) and (d) are different and the difference in truth-value is explained without appealing to the truth-conditional relevance of modes of presentation, apart from their effect on the referents of that-clauses. Suppose the boy is Jimmy, (c) and (d) have the following truth-conditions:

‘If this boy is this boy, then John will show surprise at that’ is true iff  $\text{Jimmy} = \text{Jimmy} \rightarrow \text{Be\_surprised}(\text{John}, \langle m, m, \text{Jimmy}, =, \text{Jimmy} \rangle)$ .

‘If this boy is that boy, then John will show surprise at that’ is true iff  $\text{Jimmy} = \text{Jimmy} \rightarrow \text{Be\_surprised}(\text{John}, \langle m, m^*, \text{Jimmy}, =, \text{Jimmy} \rangle)$ .

where  $m$  and  $m^*$  are the modes of presentation associated with the expressions ‘this boy’ and ‘that boy’. However Bezuidenhout claims she can provide another example showing two sentences with intuitively different truth values which cannot be accounted for in the same way as the previous case. Consider the following two sentences:

- (e) If the boy can lift this, John will think the boy is strong.
- (f) If the boy can lift that, John will think the boy is strong.

Bezuidenhout envisages the following scenario as the context of utterance. The demonstratives ‘this’ and ‘that’ refer to the same dumbbell-shaped piece of Styrofoam. Viewed from one visual perspective the fake dumbbell looks like a genuine dumbbell, and viewed from another visual perspective it looks like a piece of Styrofoam. The speaker, the hearer and John are all present in this conversational context and have similar visual perspectives on the boy and the dumbbell-shaped piece of Styrofoam. So the propositional attitude

reports are interpreted in the opaque rather than in the transparent sense. Bezuidenhout claims that in this scenario we are strongly inclined to take (e) as true – when the visual appearance of the fake dumbbell is that of a genuine dumbbell – and (f) as false – when the visual appearance of the fake dumbbell is that of a piece of Styrofoam.

Bezuidenhout considers and rejects a rejoinder of the same kind as the previous one. One may be tempted to say that (e) and (f) have the form ‘If the boy can lift this (that) *and John is aware of that*, then John will think the boy is strong’ which makes reference to the proposition *the boy can lift this* in (e) and to the proposition *the boy can lift that* in (f), which are different propositions because, as said above, the modes of presentation associated with the demonstratives ‘this’ and ‘that’ are different.

Bezuidenhout (1996: 153) refutes this rejoinder because she says that in order to understand (e) and (f) as material conditionals there is no need to understand John’s awareness of the event in the antecedent to have been asserted in (e) and (f). The truth conditional content of (e) and (f) does not make reference to John’s awareness that the boy can lift this(that) and the solution that is workable for the difference in truth value between (c) and (d) is not suitable for explaining the difference in truth value between (e) and (f). Thus, Bezuidenhout concludes – and I agree with her on this point – that (e) and (f) do not have the following truth-conditions, where  $m$  is the mode of presentation associated with ‘the boy’ and  $m'$  and  $m^*$  are the modes of presentation associated with ‘this’ and ‘that’ and  $O$  is the dumbbell-shaped piece of Styrofoam:

‘If the boy can lift this, then John will think the boy is strong’ is true iff  $\text{Can\_lift}(\text{Jimmy}, O) \wedge \text{Aware}(\text{John}, \langle m, m', \text{Jimmy}, \text{Can\_lift}, O \rangle) \rightarrow \text{Think}(\text{John}, \langle m, \text{Jimmy}, \text{Being\_strong} \rangle)$

‘If the boy can lift that, then John will think the boy is strong’ is true iff  $\text{Can\_lift}(\text{Jimmy}, O) \wedge \text{Aware}(\text{John}, \langle m, m^*, \text{Jimmy}, \text{Can\_lift}, O \rangle) \rightarrow \text{Think}(\text{John}, \langle m, \text{Jimmy}, \text{Being\_strong} \rangle)$ .

### 3 Counterargument

I hold that Bezuidenhout's argument is flawed. My counterargument to Bezuidenhout is that if one accepts Bezuidenhout's view on the interplay between reference and pragmatics, then one can hold that the *that*-clause 'that the boy is strong' refers to two different propositions when embedded in (e) and when embedded in (f). The propositions referred to are different because they contain different modes of presentation of Jimmy. Therefore, (e) and (f) differ in truth conditional content, and this explains their divergence in truth value. My claim, then, is that if Bezuidenhout's view on the interplay between reference and pragmatics is correct, then one is not forced to accept the truth-conditional relevance of modes of presentation in Bezuidenhout's strong sense which goes beyond their effect on the truth-conditions of propositional attitudes reports in order to account for the difference in truth value between (e) and (f).

One of the main points in Bezuidenhout's view is that reference is mediated by psychological modes of presentation. Psychological modes of presentation depend on contextually available information whose elaboration goes through pragmatic processes. For example the demonstrative 'this' in (e) and the demonstrative 'that' in (f) refer to the same piece of Styrofoam. But the modes of presentation with which they are associated are different. One presents the piece of Styrofoam as a genuine dumbbell, the other as a fake dumbbell.

Sentence (e) and sentence (f) make reference to the same piece of Styrofoam under different modes of presentation, and they make reference to the same boy, i.e. Jimmy, as well. I think one may grant that the first occurrence of the expression 'the boy' in (e) and the first occurrence of the same expression in (f) are associated with the same mode of presentation. But there is no reason why one ought to accept that the first occurrence and the second occurrence of 'the boy' in (e) are associated with one and the same mode of presentation, and that the second occurrence of 'the boy' in (e) and the second occurrence of 'the boy' in (f) are associated with one and the same mode of presentation. The antecedents in (e) and (f) create two different linguistic contexts, and one can hold that the modes of presentation of the second occurrences of 'the boy' in (e) and (f) depend on such linguistic contexts, as linguistic contexts are part of



the contextually available information. One might suppose that the mode of presentation ( $m$ ) associated with the second occurrence of ‘the boy’ in (e) is something like *boy who can lift this dumbbell*, whereas the mode of presentation ( $m^*$ ) associated with the second occurrence of ‘the boy’ in (f) is something like *boy who can lift that piece of Styrofoam*. The truth-conditions of (e) and (f) are the following:

‘If the boy can lift this, John will think the boy is strong’ is true  
iff  $\text{Can\_lift}(\text{Jimmy}, O) \rightarrow \text{Think}(\text{John}, \langle m, \text{Jimmy}, \text{Being\_strong} \rangle)$ .

‘If the boy can lift this, John will think the boy is strong’ is true  
iff  $\text{Can\_lift}(\text{Jimmy}, O) \rightarrow \text{Think}(\text{John}, \langle m^*, \text{Jimmy}, \text{Being\_strong} \rangle)$ .

(e) says that if Jimmy can lift  $O$ , then John will think of Jimmy that he is strong under the mode of presentation  $m$ , i.e. *boy who can lift this dumbbell* and (f) says that if Jimmy can lift  $O$ , then John will think of Jimmy that he is strong under the mode of presentation  $m^*$ , i.e. *boy who can lift that piece of Styrofoam*. This analysis accords with the intuition that (e) is true and (f) is false. If this analysis is correct, (e) and (f) turn out to have different truth conditional contents because the that-clauses in their consequents make reference to propositions that are different as containing different modes of presentation. Bezuidenhout’s right intuition that (e) and (f) diverge in truth value can be accommodated within the view that modes of presentation have a truth conditional effect in propositional attitudes reports without being truth conditionally relevant in the strong sense Bezuidenhout claims.<sup>1</sup>

<sup>1</sup> An anonymous referee of this journal commented that a better way of responding was by pointing out that ‘thinking’, in the relevant context, is ‘thinking on some basis’, and hence (e) and (f), properly expanded, would go like this:

(e) If the boy can lift this, John will think on that basis that the boy is strong.

(f) If the boy can lift that, John will think on that basis that the boy is strong.

The ‘that basis’ would refer to the proposition expressed by the antecedent, and hence this would be a reply along the lines of the one discussed for the argument based on (c) and (d). I agree with the anonymous referee that this explains the difference in truth value of (e) and (f). However, his solution does not accommodate Bezuidenhout’s constraint that the causal relation between the event

I close this note with my answer to an objection that has been raised to my counterargument. I argued that the two occurrences of ‘the boy’ embedded under attitude ascriptions express different modes of presentation that are parasitic on the modes of presentation expressed by ‘this’ and ‘that’. I do not claim that modes of presentation associated with singular terms *always* change when the singular terms are embedded under the scope of logical operations, like conditional constructions, and attitude ascriptions. My view is that modes of presentation *might* change in those circumstances. The linguistic contexts in which singular terms are embedded form a source of contextual information that might be relevant for building up the modes of presentation of the embedded singular terms according to the very same view that Bezuidenhout endorses on the interplay between singular reference and pragmatics. However, the objection goes, to hold that modes of presentation might change is sufficient for raising the following problem. Suppose, for instance, that it has been established that John will ring the bell if he thinks that the boy is strong. We can reason about whether John will ring the bell under various situations: if the boy can lift this, then John will think that the boy is strong. Therefore, if the boy can lift this, John will ring the bell. If the occurrences of ‘the boy’ are associated with different modes of presentation, it is unclear why we can infer correctly that conclusion. In other words, it is unclear how we can account for the validity of the following inference:

1. If John thinks the boy is strong, John will ring the bell.
  2. If the boy can lift this, John will think the boy is strong.
- Therefore
3. If the boy can lift this, John will ring the bell.

We can formalise the inference. Let  $Q$  be the bell,  $m'$  the mode of presentation associated with the occurrence of ‘the boy’ in 1. and in the antecedent of 2.,  $m''$  the mode of presentation associated with the occurrence of ‘the boy’ in the that-clause in 2.,  $p$  the proposition  $\langle m', Jimmy, Being\_strong \rangle$  and  $p^*$  the proposition  $\langle m'', Jimmy, Being\_strong \rangle$ :

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described in the antecedent and John’s belief need not be asserted in (e) and (f).

1. Think(John,  $p$ )  $\rightarrow$  Ring(John, Q).
  2. Can\_lift(Jimmy, O)  $\rightarrow$  Think(John,  $p^*$ ).
- Therefore
3. Can\_lift(Jimmy, O)  $\rightarrow$  Ring(John, Q).

The inference is clearly not valid and the reason is that  $p \neq p^*$  because  $m' \neq m''$ , which is exactly what my view predicts.

I reply to the above objection that the incompatibility of my view and the intuitive validity of the inference 1. to 3. is only apparent. The inference 1. to 3. is enthymematic, it has a suppressed premise. The suppressed premise is the following, which I take to be true:

Think(John,  $p^*$ )  $\rightarrow$  Think(John,  $p$ ).

By assumption,  $m'$  is a *de re* mode of presentation under which Jimmy is presented to the speaker (and to John as well in Bezuidenhout's scenario). This is to say that  $m'$  makes Jimmy salient for reference. It is true that  $m''$  is different from  $m'$ , but  $m''$  is a completion of  $m'$ . Suppose  $m'$  is *boy wearing a red t-shirt*. Then,  $m''$  will be *boy wearing a red t-shirt who can lift this dumbbell*. If  $m'$  is enough for making Jimmy salient for reference, anyone who thinks of Jimmy under the mode of presentation *boy wearing a red t-shirt who can lift this dumbbell* will be able to think of Jimmy under the mode of presentation *boy wearing a red t-shirt*. Therefore, anyone who thinks of Jimmy that he is strong under the mode of presentation *boy wearing a red t-shirt who can lift this dumbbell* will be able to think of Jimmy that he is strong under the mode of presentation *boy wearing a red t-shirt*. In general, if an agent thinks of an object under a mode of presentation  $m^*$  that is a completion of another mode of presentation  $m$ , which is sufficient for making the object salient for reference, then the agent is able to think of the same object under the mode of presentation  $m$ . For example, if agent A thinks of London as *the capital of England having more than ten million of inhabitants*, he will be able to think of London as *the capital of England*. And if A believes of London that it is North of Paris under the mode of presentation *the capital of England having more than ten million of inhabitants*, we can ascribe to him the belief that London is North of Paris under the mode of presentation *the capital of England*.

The above inference turns out to be valid if we make the suppressed premise explicit.

1.  $\text{Think}(\text{John}, p) \rightarrow \text{Ring}(\text{John}, Q)$ .
  2.  $\text{Can\_lift}(\text{Jimmy}, O) \rightarrow \text{Think}(\text{John}, p^*)$ .
  3.  $\text{Think}(\text{John}, p^*) \rightarrow \text{Think}(\text{John}, p)$ .
- Therefore
4.  $\text{Can\_lift}(\text{Jimmy}, O) \rightarrow \text{Ring}(\text{John}, Q)$ .

There is no incompatibility between the view underlying my counterargument to Bezuidenhout and the validity of certain intuitive inferences.

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# The Illusion of the Experience of the Passage of Time

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## **Abstract**

Supporters of the A-theory of time sometimes refer to an alleged experience of the passage of time in support of their theory. In this paper I argue that it is an illusion that we experience the passage of time, for such an experience is impossible. My argument relies on the general assertion that experience is contingent, in the sense that if it is possible to experience the passage of time, it is also possible to experience that time does not pass. Having established this claim, I argue that it is impossible to experience that time does not pass, and hence that it is impossible to experience the passage of time.

## **Keywords**

Experience, Hume, Kant, passage of time, Wittgenstein

## 1

In the continuing debate on the nature of time, between supporters of the A-theory of time and supporters of the B-theory of time, the status of the passage of time holds a center place. A-theorists maintain that the continual change in the attributes of past, present and future, which constitutes the passage (or 'flow') of time, is essential to time, and distinguish the temporal dimension from the spatial dimensions. B-theorists, on the other hand, deny the objectivity of these attributes, and maintain that the 'passage of time' is merely an illusion.

In this debate, an important consideration in support of the A-theory of time, which poses a major challenge for supporters of the B-theory of time, is found in the alleged human experience of the passage of time. It seems undeniable that we all experience the pas-

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sage of time, and the existence of such an experience constitutes a *prima facie* strong reason in support of the reality of the passage of time, and therefore of the A-theory of time (see, for example, Craig 2000: 138; van Inwagen 2002: 64).

The alleged experience of the passage of time poses a challenge for the B-Theorist. To begin with, it seems that the B-theory of time leaves out an important aspect of reality, as experienced by us. Furthermore, a notable obstacle for a B-theory account of this experience lies in the fact that the claim that an experience of the passage of time is illusion seems to run into the same difficulty as the claim that time is an illusion. The claim that a certain experience is illusory presupposes a gap between experience and what is experienced. However, since time is a feature of our experience, if we experience things as temporal, time is real in the sense that it is a characteristic of our experience (Dummett 1960: 503). Similarly, if we experience time as it passes, the passage of time must be a feature of our experience and therefore the passage of time is real.

Recently, Skow 2011 criticized specific arguments which attempt to establish the reality of the passage of time based on experience. This strategy, however, fails to discredit the general attempt to establish the truth of the A-theory of time based on our experience; it also does not dispel the air of mystery which surrounds time, and our experience of it.

In this paper I argue that it is merely an illusion that we experience the passage of time. I do not argue that the experience of the passage of time is an illusion in the sense that it does not correctly reflect physical reality. I argue that it is an illusion that people have such experience, and furthermore, that it is impossible to experience of the passage of time.

The claim that there is nothing in our experience that cannot be explained by the B-theory of time is not new. Similar claims have been recently advanced by Prosser 2007 and Dainton 2011. I see merits in both arguments, and shall not endeavor to discredit any previous attempts to argue to similar conclusions, but simply advance my own argument. I believe that the argument I present in this paper is simpler, relies on less controversial premises, and helps to dispel the cloud of mystery which surrounds our experience of time.

In the following section I discuss the general strategy I employ

and present a general outline of the structure of my argument. In sections 3 and 4 I argue for each of the two premises of my argument respectively. In section 5 I summarize the conclusion of my paper.

2

The assertion that we are mistaken in thinking that we experience the passage of time may seem paradoxical, if not a straightforward contradiction. This is certainly the case for those who maintain that first person beliefs regarding mental states are incorrigible, and even more so for those who believe that they are infallible.

There is similar claim, regarding a subject's awareness of its self, which can both clarify my claim as well as the general strategy I employ in order to show that the experience of the passage of time is an illusion. I am referring to Hume's claim that an individual's impression of his or her self is an illusion (Hume 1740: 251-2). Obviously, not any impression of the self will do. Hume is talking about an impression of the self as the direct subject of experience, rather than, for example, an impression of the self as a physical object in the world.

Hume famously asks us not to assume that such an impression exists, but actually look for this elusive impression. However, Hume does not rest his case merely on a factual claim, according to which we do not, as a matter of contingent fact, experience anything which can be identified as an impression of the self, qua the subject of that experience. He sometimes suggests a stronger line of reasoning, which implies that it is impossible to have such an impression. Hume maintains that all our impressions are separable, in the sense that it makes sense to claim that they may exist separately without contradiction (Hume 1978: 634). This implies that it is always possible to imagine that any particular impression does not exist. This, however, implies an absurdity in the case of an impression of the self. For this impression is supposed to be a necessary condition for identifying the self. Hence, in order to identify that 'I have no impression of the self,' it is necessary to first identify that it is *I*, that is, the self, and this is possible only with the help of an impression of the self. In summary, there can be no impression of the self, qua the subject of that experience, for such an impression would need to be a necessary

impression, but for Hume all impressions are contingent.

A similar idea is found in Kant's analysis of self-consciousness in the transcendental deduction of the categories, which appears in the first edition of the *Critique of Pure Reason*. Kant suggests that the attempt to look for an impression of the self, as the basis of self-consciousness, involves a misunderstanding of the logical structure of self-consciousness. This is reflected in his claim that due to the necessity which is involved in the notion of the self, it cannot be represented through empirical data (Kant 1781: A107).

A similar idea can also be found in Wittgenstein's *Tractatus Logico-Philosophicus*, when he explains the inability to find the metaphysical subject in the world by referring to the contingent nature of our experience (Wittgenstein 1921: 5.633-5.634). I do not find it surprising, in light of this and other considerations found in the *Tractatus*, that Wittgenstein dismisses 'the passage of time' with a quick remark, 'There is no such thing' (Wittgenstein 1921: 6.3611). I shall return to this point in what follows.

My strategy in this paper is similar to the one followed by Hume, Kant, and Wittgenstein, with regard to the case of the impression of the self. I argue for the impossibility of experiencing the passage of time based on the logical impossibility of experiencing that time does not pass. I advance my argument in two stages. First I argue for the general claim that experience is contingent, in the sense that it must be possible, for any proposition which describes the content of an actual experience, to experience its negation. Having established this claim, I argue that it is impossible to experience that time does not pass. The structure of my argument is therefore:

1. For every proposition  $\phi$ , if it is possible to experience that  $\phi$ , it is possible to experience that not- $\phi$ .
  2. It is impossible to experience that time does not pass.
- Therefore,
3. It is impossible to experience that time passes.

This argument is valid, and therefore the question of its soundness rests on the truth of its premises. I argue for the truth of premise 1 in the next section of my paper. In section 4 I argue for the truth of premise 2.



## 3

According to premise 1, if it is impossible to experience that not- $p$ , it is impossible to experience that  $p$ . There are two ways to explain that impossibility of experiencing that not- $p$ . The first is to show that  $p$  is a necessary truth, the second is to show that  $p$  describes a necessary condition for experience. As becomes apparent in the next section, both ways of explaining the impossibility of experiencing that not- $p$  are relevant for explaining the impossibility of experiencing that time does not pass.

The simplest case is the one in which  $p$  is a necessary truth, for example, a logical truth. In this case, it would be impossible to experience that not- $p$ , because not- $p$  would be self-contradictory. Contradictions cannot describe the content of our experience, just as they cannot describe reality.

The claim that it is impossible for contradictions to describe the content of our experience ('to experience contradictions') can be contested. Seeming counterexamples are found in M.C. Escher's work, in which impossible figures are drawn, and science fiction movies in which time travelers change the past (Lowe 2000: 11-13). However, if the content of experience, while watching these alleged counterexamples, is accurately described, no contradiction can be found. The contradiction is only found in the projection of what it experienced: in the translation of the two dimensional figures into a representation of three dimensional figures, and translation of a linear plot of a movie into time loops.

The second way to explain the impossibility of experiencing not- $p$  appeals to the logically necessary conditions of experience. Thus, even if the proposition 'not- $p$ ' is contingent, the necessary conditions of experience make it logically impossible (rather than merely psychologically impossible) to experience that not- $p$ . An example for this kind of impossibility is experiencing that something exists without being experienced by the subject (see, for example, Berkeley 1710: 91 (paragraph 23)). This is the reason why our experience does not include ourselves as the subjects of this experience.

In order to justify premise 1, it should first be noted that necessity is not a feature which can characterize our conscious experience. Our experience is always of the form ' $a$  experiences that  $p$ ,' and nev-

er of the logical form ‘ $a$  experiences that necessarily  $p$ .’ This idea is not new, and appears most notably in the writings of Hume and Kant (see for example Hume 1740: 77; Kant 1781: B3). The point that emerges from their arguments is that it is a categorical mistake to search a feature of our conscious experience (‘impression’) which corresponds to the idea of necessity. Necessity is an abstract feature of propositions, rather than a tangible feature which can meaningfully be said to characterize conscious experience.

So far I have established the claim that the content of our experience is never of the logical form ‘ $a$  experiences that necessarily  $p$ ,’ rather than that it is impossible to experience  $p$  if it impossible to experience that not- $p$ . However, the latter claim follows from the former. For the claim that the content of our experience is never of the logical form ‘ $a$  experiences that necessarily  $p$ ’ implies that experience can never teach us that something is necessary. Experience must therefore always leave open the possibility of experiencing that things are different from the way in which they are in fact experienced. Otherwise, experience could have taught us that something is necessarily so – namely, that things cannot be *experienced* otherwise than the way they are – contrary to the premise that experience can teach us only how things actually are, but not that things are necessarily so. Hence, a necessary condition for experiencing that  $p$  is the possibility of experiencing that not- $p$  (premise 1).

This claim does not preclude the category of necessary a posteriori truths, as suggested, for example, by Kripke 1980. Take, for example, the proposition that water is  $H_2O$ . According to Kripke this is a necessary truth, learned from experience. However, the term ‘experience’, in this context, is used in this context to describe empirical data in general, rather than a feature of our conscious experience of reality. This is clear from the possibility of a substance which has a different atomic structure, but resembled water in appearance, that is, in the way it is experienced by us (Kripke 1980: 128). The necessity which is supposedly involved in the identity of water and  $H_2O$  is cannot be identified as a feature of our conscious experience, although might be supported by empirical data.

Notwithstanding this line of reasoning, in support of the premise 1, it might seem that there is an obvious counterexample to this principle. Suppose that  $p$  is a necessary truth. Although one might agree

that experience does not teach us that  $p$  is a necessary truth, it might be argued that it still can teach us that  $p$  is true, and that is all that is required in order for  $p$  to describe the content of this experience.

Take for instance the logical truth, 'either I am in pain now or I am not in pain now.' According to premise 1 it is possible to experience that 'I am in pain now or I am not in pain now.' For, according to this premise it is only possible to experience that 'either I am in pain now or I am not in pain now' if it is possible to experience that 'it is not true that 'either I am in pain now or I am not in pain now'.' However, the latter proposition is a contradiction, and therefore impossible to experience. Hence it follows from premise 1 that it is impossible to experience that 'I am in pain now or I am not in pain now.'

This implication of premise 1 might seem problematic. One objection that can be raised against premise 1 is based on the idea that mental states are transparent to the subject of these mental states. It might be argued, for example, that if the proposition 'I am in pain now or I am not in pain now' accurately describes a subject's experience, it would also be accurate to say that the subject experiences that 'he is in pain or that he is not in pain.'

However, this objection loses its power once it is remembered that mental states, including experience, are intensional. It is possible, for example, for a subject to see the smiling president, but to fail to see that 'the president is smiling,' simply because he does not know that the person he or she sees is the president. Similarly, although the subject may feel that he is in pain, it would be false to say that he or she is feeling that 'I am is not in love, or that I am in love and in pain,' simply because he or she fails to realize that this proposition follows from the proposition 'I am in pain'. Similarly, a subject may also fail to recognize that the proposition 'I am in pain now or I am not in pain now' is true, and hence, although it would be true that the subject feels that he is in pain, it would be false that he feels that he is in pain or he is not in pain.

However, it might be argued that although the subject may not be aware of the truth of a tautology, surely he *can* be aware of its truth based on his experience. For example, a subject who feels pain can infer, based on his experience, that 'I am in pain now or I am not in pain now.' Obviously, one does not have to rely on one's experience

to recognize the truth of this proposition, and one may fail to recognize the truth of this proposition altogether. However, surely it is at least *possible* to recognize its truth based only on his or her experience. Think of a subject who fails to recognize that this proposition is a logical truth, and relies on introspection to determine its truth value. Surely, it might be argued, in this case it is justified to say that the subject experiences that 'I am in pain now or I am not in pain now.'

I believe the mistake in this objection lies in its transition from 'knows, based in experience, that *p*' to 'experiences that *p*.' To begin with, it is possible to know, based on experience, about things we never experience. If it was not the case, I could never learn that my wife is home, without seeing or hearing her, based on seeing her coat on the clothes hanger.

It might be objected that this example is irrelevant to the case which is currently under consideration. For the proposition 'I am in pain now or I am not in pain now' logically follows from the proposition 'I am in pain now,' which accurately describes the content of the subject's experience. This fact, it might be argued, shows that what is described by the proposition 'I am in pain now or I am not in pain now' does not go beyond anything that the subject experiences directly, and hence it is justified to say that the subject experiences that 'I am in pain now or I am not in pain now.'

According to this contention, if a subject experiences that *p*, the subject also experiences everything that logically follows from *p*. This claim is false. To begin with, as mentioned before, mental states are intensional. Hence it does not follow, from the premises that *a* believes that *p*, and that *q* follows from *p*, that *a* believes that *q*. Similarly, it does not follow from the premises that *a* experiences that *p*, and that *q* follows from *p*, that *a* experiences that *q*.

Furthermore, a necessary condition for the legitimacy of this inference is that both *p* and *q* describe the same state of affairs. However, not every proposition *q*, which follows from proposition *p*, describes the same state of affairs as *p*. Without committing to any general theory of the nature of states-of-affairs, it is obvious that a necessary condition for two propositions to describe the same state of affairs is that they are logically equivalent. This is clearly not the case with the propositions 'I am in pain now' and 'I am in pain now

or I am not in pain now,' because the first is contingent while the latter is a necessary truth. Hence, they cannot possibly describe the same thing.

It should also be noted that if it is meaningful to describe the content of experience with the help of necessary truths, the content of every experience is correctly described with the help of every necessary truth. For the proposition 'I am in pain now or I am not in pain now,' like any other necessary truth, follows not only from the proposition 'I am in pain now,' but from any proposition. This conclusion is clearly false in the case of complex logical truths, which the subject is not even aware of the fact that they are necessary truths.

Another troubling implication of the contention that any experience is accurately described by every necessary truth (which follows from the idea that a subject's experience can be described with the help of necessary truths) is the troubling implication that a subject's experience includes an awareness of an infinite number of necessary truths. Moreover, in an attempt to overcome this troubling implication, it is always possible to argue that the seeming difficulty of this implication is explained by the false premise that each different necessary truth describes a different fact which the subject experiences. However, it might be argued, all necessary truths describe a single fact. Again, without resorting to any general theory of individuating facts, the logical equivalence of all necessary truths may support such a claim. However, rather than convince us that all necessary truths describe the same mysterious fact, this may very well convince us that Wittgenstein was right in his claim that necessary truths say nothing, that is, that they describe no fact at all, and therefore cannot describe anything which we experience (Wittgenstein 1921: 4.461, 4.462, 6.11). Indeed, this may even convince us to accept Wittgenstein's position that logical truths cannot be confirmed by experience (Wittgenstein 1921: 6.1222).

What follows from these considerations is that the content of experience can only be described with the help of contingent propositions, for example  $p$ , so that it is always possible to experience that things are different from the way they are, that is, that it is always possible to experience that not- $p$ .

## 4

Having established the first premise of the argument, it is time to turn the attention to premise 2:

2. It is impossible to experience that time does not pass.

In what follows I argue for the truth of this premise by eliminating any possible explanation for experiencing that time does not pass. There seem to be only two such allegedly-possible explanations. The first is that of experiencing a temporal reality in time does not pass. Obviously, an A-theorist would deny that this is possible, for according to the A-theory of time the passage of time is a necessary condition for temporality. Hence, according to the A-theory of time, it is only possible to experience that time does not pass if it is possible to experience that there is not time at all. This leads us to the second possible explanation for experiencing that time does not pass. If it is possible to experience that reality is atemporal, such an experience is *ipso facto* an experience that time does not pass.

To begin with the first option, the question is whether it is possible to experience time without a passage of time. The passage of time is characterized by a change in the attributes of past, present, and future. An event is first in the future, then in the present, and finally in the past. Hence, an experience of time without a passage of time is either an experience whose content allows no use for the distinctions between past, present and future, or an experience whose content is characterized by static attributes of past, present and future, that is, attributes that does not change in time.

It is very difficult to see how can there be any temporal experience which does not allow a use of the distinctions between past, present and future. According to the A-theory of time it is impossible to experience time without these distinctions, since according to this theory it is a change in these attributes which constitutes time. According to the B-theory of time, on the other hand, these distinctions are subjective, and indicate the temporal position of events relative to the use of these distinctions, as suggested, for example, by the new tenseless theory of time, first suggested by Mellor 1981 and Smart 1980. There is no need, for the purpose of this discussion,

to commit to any specific version of this theory (the ‘token-reflexive version’ or the ‘date-version’). It is sufficient to recall that we find a use for the distinction between left and right although no one would suggest that this distinction is anything but subjective. Similarly, it seems that distinctions which indicate the temporal position of an event relative to a point of view from which reality is described are always possible if experience is temporal, that is, if the content of experience is described with the help of the temporal relations ‘before’ and ‘simultaneous with’.

The other option for experiencing time without passage is that the content of experience is characterized by static attributes of past, present and future, that is, attributes that do not change in time. However, this description is contradictory. For in order to experience something as static, one must experience that it does not change as time changes. However, if time is experienced as changing, say from time  $t'$  to  $t''$ , and experience includes the distinctions between past, present, and future, it is *ipso facto* an experience of a change in these attributes. For it follows from this description, for example, that time  $t'$ , which was present, is now past.

It might be objected that it is possible for the content of a subject’s temporal experience to remain constant in time. Take for example the content of my present experience. It is a temporal experience, which includes the distinctions between past, present, and future. Suppose that the content of my present experience remains constant for 5 minutes. Surely, it can be argued, this constitutes a temporal experience which is described by a static attributes of past, present and future.

The answer to this objection is that it would be false to conclude from this description that the *content* of this hypothetical experience is characterized by static attributes of past present and future. Surely, the criterion for deciding this is the way in which the subject would describe his experience, and the subject would not be able to describe his experience as static. For in order to experience these attributes as static the subject must be aware that time changes while they remain constant. However, due to the fact that the content of his experience remains constant, the subject would fail to notice the change in time, and therefore would fail to experience any static attributes of past, present and future.

It can be therefore concluded that it is impossible to experience time without a passage of time. The only other option for explaining the possibility of experiencing that time does not pass is that of experiencing that there is no time at all. This experience is *ipso facto* an experience that time does not pass.

Notice that what is required here is to experience that there is no time, rather than a lack of experience of time. For what we are looking for is an awareness of the lack of something, such as a lack of hunger, which supposedly describes the content of our experience. But what would it be to experience a lack of time – in the sense that we can be said to experience a lack of hunger?

In order to attempt to describe such an experience, it is helpful to first attempt to describe an atemporal reality. An atemporal reality can be thought of as a possible world which is comprised of one and only one instant of our reality, that is, the actual world, similarly to a single frame taken from a motion picture film. It is possible for a subject to experience this possible world as atemporal?

The answer is negative. It is impossible to experience that there is no time. For in order for experience to teach us that there is no time, it cannot be instantaneous. If experience is limited to a single instant in time, it is impossible to tell from this experience whether there are other moments in time or not. Hence, experience cannot teach us that there is no time. As we can see, at most experience can be limited to an instant, but this does not qualify as an experience that there is no time.

The second option for describing that time does not pass is hence eliminated, and the second premise of my argument is thus substantiated. It is impossible to experience that time does not pass.

## 5

Having established the two premises of the argument, the argument is proven to be sound, and the conclusion, that it is impossible to experience that time passes, shown to be true. It is therefore only an illusion that we experience the passage of time.

It should be stressed that the conclusion of this paper is not that the experience of the passage of time is an illusion in the sense that it does not correctly reflect physical reality. It is an illusion in the sense



that it does not describe an possible experience. This conclusion does not therefore discredit the A-theory of time. It does, however, eliminate a putative consideration in support of this theory.

Far from tracking the elusive experience of the passage of time, the conclusion is that not only it is impossible to experience the flow of time, it is impossible to experience time itself, as Kant famously insisted (see, for example, Kant 1781: B219). The previous section of this essay shows that it is impossible to experience that there is no time, and therefore, according to the principle which is formulated in premise 1 of my argument, it is also impossible to experience that there is time. It is therefore only an illusion that we are all experiencing a unique feature of reality, that is, the passage of time, or indeed that we ever experience time itself.

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# Saying too Little and Saying too Much. Critical notice of *Lying, Misleading, and What is Said*, by Jennifer Saul

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## 1 Introduction

You are going to Paul's party tonight. You have a long day of work ahead of you before that, but you can't wait to get there. Your annoying friend comes up to you and says, 'Hi! Oh, are you going to Paul's party tonight? I don't think I'll go. Unless your going?' You reply, 'I have to work.'

There are lies and then there are misleading utterances that are not lies. You did not lie to your friend, although you were being misleading. This difference has been the center of much attention mainly in two areas of philosophy. First, there have been attempts from within philosophy of language to characterize the difference between lies and merely misleading utterances *qua* speech acts.<sup>1</sup> Second, there is a longstanding debate over the moral significance of the difference, and in particular over to what extent lying is always morally worse than merely misleading.<sup>2</sup>

So there are mainly two questions that philosophers have been interested in regarding the lying-misleading distinction, namely

<sup>1</sup> See, e.g., Carson (2005), Sorensen (2007), Fallis (2009), Stokke (forthcoming).

<sup>2</sup> See, e.g., Kupfer (1982), Korsgaard (1986), MacIntyre (1995), Adler (1997), Williams (2002), Mahon (2003), (2006), (2009).

- (i) What speech act is required for lying (vs. merely misleading)?
- (ii) What is the moral difference between lying and merely misleading?

Jennifer Saul's recently published book, *Lying, Misleading, and What is Said. An Exploration in Philosophy of Language and Ethics*, proposes answers to both these questions, and as such makes a contribution to both spheres of interest concerning the lying-misleading distinction.

Saul's answer to the first question is that lying requires *saying*, understood in a certain way. Her answer to the second question is that there is no moral difference between lying and merely misleading.

## 2 Saul on saying

The idea that, from a linguistic point of view, the difference between lying and merely misleading turns on a difference between ways of conveying information, i.e., a difference in the speech acts involved in each, is a widespread one. It is easy to appreciate why. Speakers have attitudes toward information they convey. Typically speakers believe, or even know, what they convey, but sometimes a speaker conveys information she believes, or even knows, to be false. There are many ways of conveying information. Some are such that if the speaker believes that the relevant information is false, she is lying. But there are others for which believing the information to be false does not qualify as lying, although the utterance will be a misleading one.

What mode of communication is required for lying? Intuitively, *saying* is a good candidate. You did not *say* that you are not going to Paul's party. You implicated that. It is natural to explain how you managed to avoid lying, while still succeeding in misleading your annoying friend, by pointing to the fact that while you did indeed convey information you believed to be false, you did not do so by *saying* it.

So it is plausible to think that, roughly, lying requires *saying* something, and that one way of refraining from lying while succeeding in misleading is to convey information one believes to be false while avoiding *saying* it.

Saul's project in the first part of the book is to carve out a no-

tion of *saying* that will delineate the lying-misleading distinction correctly in general. The strategy that she takes up in pursuing this task is a novel one. Saul's approach is to turn to the debates over *what is said* familiar from philosophy of language at large – and in particular from the disputes over the semantics-pragmatics distinction. Saul's book is, to my knowledge, the first work that takes on the task of answering question (i) from a standpoint wholly informed by these contemporary debates in philosophy of language.

Saul stresses that finding a notion of *saying* that will capture the lying-misleading distinction is not necessarily a contribution to the debate in philosophy of language more generally concerning the notion of *what is said*. Rather, her project is to consider a range of proposals from these debates and attempt to recover a characterization of *saying* that will correctly delineate the lying-misleading distinction. Yet it may be that the notion that is under dispute in the semantics-pragmatics literature is a different one.

Here I shall not go through Saul's discussion of the complexity of the extensive literature on *what is said*. Rather, I shall confine myself to commenting on her final suggestion. For the purpose of capturing the distinction between lying and merely misleading, Saul proposes to characterize *saying* as follows:

(NTE) A putative contextual contribution to what is said is a part of what is said only if without this contextually supplied material, S would not have a truth-evaluable semantic content in C.

This principle has been discussed by writers on the semantics-pragmatics distinction. For example, Recanati (1993: 242) calls it the 'Minimal truth-evaluability principle.'<sup>3</sup>

Familiarly, these debates chiefly concern phenomena such as what is often called 'expansion' and 'completion.'<sup>4</sup> And as such, these are the kinds of phenomena that Saul discusses with respect to the lying-misleading distinction. Here is one of her examples:

Dave is lying in bed, and two nurses are discussing the treatment he needs. Ed holds up a bottle of heart medicine, points at it, and utters (1):

<sup>3</sup> See also Bach (1994: 160-161).

<sup>4</sup> This is the terminology of Bach (1994).

(1) Has Dave had enough?

Fred replies with (2):

(2) Dave's had enough.

As it turns out, Fred hates Dave, wants him to die, and plans to bring this about by denying him his much-needed heart medicine.<sup>5</sup>

As Saul notes, Fred's reply is intuitively a lie. And it is clear that, together with the claim that lying requires *saying*, (NTE) captures this. For Fred's utterance to be truth-evaluable, it requires completion. In this context the salient completion is the one illustrated in (3).

(3) Dave's had enough heart medicine.

So, according to (NTE), Fred counts as having *said* (3), and hence this explains why his utterance is a lie.

However, Saul's proposal can nevertheless be seen to undergenerate. There are cases in which someone lies as a result of conveying information they believe to be false, but where that information is not required for the truth-evaluability of their utterance. Consider, for instance, the following situation:

Jasper's neighborhood recently put on a Community Week. People helped their neighbors out with various chores and tasks that needed doing. Selfishly, however, Jasper used Community Week to fix the roof on his own house, ignoring the neighbors. The following week Jasper is having dinner with Doris. Jasper is keen to give Doris a good impression of himself.

(4) Doris. So how did you help out during Community Week?  
Jasper. I fixed a roof.

Jasper's reply is a lie. So, it is natural to think that, on Saul's view, there must be a piece of information that he *says* while believing that it is false. There are two candidates, (4a) and (4b).

<sup>5</sup> Saul (2012, 62). Example numbering altered.

- (4a) The roof Jasper fixed was not his own.<sup>6</sup>  
 (4b) Jasper helped out during Community Week by fixing a  
 (someone else's) roof.

Both (4a) and (4b) are propositions that Jasper believes to be false. But neither counts as *said*, given the Minimal truth-evaluability principle, i.e., (NTE). Jasper's utterance is truth-evaluable without supplementation. It is true if and only if he fixed a roof.

Here is Saul's full definition of lying:

Lying (Complete):

If the speaker is not the victim of error/malapropism or using metaphor, hyperbole, or irony, then they lie iff (A) or (B) holds:

(A) (1) They say that P; (2) They believe P to be false; (3) They take themselves to be in a warranting context.

(B) (1) They say something indeterminate across a range of acceptable propositions in the range CP1...CPn; (2) for each complete proposition in the range CP1...CPn, they believe that proposition to be false; (3) They take themselves to be in a warranting context.<sup>7</sup>

Is the problem raised above avoided by the full Lying (Complete)? No. Both (A) and (B) are false for Jasper's reply in (4). He does not say either (4a) or (4b), according to (NTE). So (A) is false. And his utterance is not indeterminate across a range of completions. It is not in need of completion at all. So (B) is false. Hence, since Jasper is lying, his reply is a counterexample to the left to right direction of Lying (Complete).

Further, there are cases of merely misleading that present challenges for Saul's view. For example, consider Larry's utterance in the following scenario:

Larry is keen on making himself seem attractive to Alice. He knows she's interested in logic – a subject he himself knows very little about. From talking to her he has become aware that she is under the mistaken impression that he has just finished writing a

<sup>6</sup> On some views, e.g., that of Grice (1989), this information is a generalized implicature of Jasper's utterance.

<sup>7</sup> Saul (2012: 65).

book. Larry has indeed been walking around with a manuscript for a book about logic. And he knows Alice has seen him with it. However, it's not a manuscript for a book he wrote himself, but rather one that he has been assigned to design a cover for by the publisher he works for.

- (5) Alice. Do you know a lot about logic?  
Larry. My book is about logic.

While Larry is not lying in this case, he is clearly being misleading. So it is natural to think that, on Saul's view, there should be a piece of information that Larry conveys and which he believes to be false, but which is not *said*. There are two candidates, (5a) and (5b).

- (5a) Larry knows a lot about logic.  
(5b) The book Larry wrote is about logic.

(5a) is clearly not said by Larry's utterance. So the more interesting candidate is (5b). However, at least at first blush, (5b) is not precluded from counting as said, given the Minimal truth-evaluability principle. (5b) is clearly a *putative* contribution to what is said, and Larry's utterance is not truth-evaluable without a contextually specified relation between him and the book.

Does Lying (Complete) avoid this problem? One possibility here is to argue that Larry's reply is indeterminate across a range of acceptable completed propositions, and that among them is (5c).

- (5c) The book Larry has been assigned to design a cover for is about logic.

(5c) is something Larry believes to be true. Hence, if this is right, (B) is false in this case.

However, for the problem to be alleviated, (A) would also need to be false. Is it? I suggested above that it is not, because the proposition that is most plausibly taken to be said by his utterance, namely (5b), indeed does have this status since the completion is required for truth-evaluability. On the other hand, if we agree that Larry's utterance is indeterminate across a range of propositions, this argument



does not hold up. Saul explicitly claims that in such cases, ‘what is said is indeterminate across a range of precise propositions.’<sup>8</sup> Hence, in such cases (A) is also false (or at least not true), since (A1) is false (or at least not true.)

I think this suggestion about Larry’s reply should be rejected. The reason is that if Larry’s utterance is indeterminate across a range of acceptable completions, it is hard to see how his utterance could be misleading. Clearly, the reason Larry is being misleading is because he intends to make Alice believe (5b), and as a result (5a). Indeed, Alice will take him to be conveying both. So, as we said earlier, (5b) is certainly a putative contribution to what is said. Hence, (NTE) would seem to predict that Larry *says* (5b). Even though, to be sure, (NTE) is only a necessary condition on *saying*, it is hard to see how to avoid this result. Yet this prevents the account from agreeing that Larry is not lying.

What we want to say about the case is that Larry’s utterance is misleading because it conveys (5b), which is something that he believes to be false, but that he is not lying because he does not convey (5b) by *saying* it. However, this verdict is not easily available to Saul’s account. Since (B) is of no help, this view at the very least must find a way of explaining why (5b) is not *said*, given the Minimal truth-evaluability principle. Hence, I think that, since Larry is not lying, the case is at least an explanatory challenge for the right to left direction of Lying (Complete).

### 3 Saul on the moral significance of the lying-misleading distinction

The second aim of the book is to argue for a complex picture of the moral significance of the lying-misleading distinction. Saul’s main claim is that, contrary to one long tradition in philosophy, lying and merely misleading are morally on a par. As she says, ‘As far as the acts go, misleading is not morally better than lying.’<sup>9</sup>

The rider (‘As far as the acts go’) is important. Saul complicates

<sup>8</sup> Saul (2012: 64).

<sup>9</sup> Saul (2012: 86).

her picture by arguing that, even though lying and merely misleading are morally equivalent, ‘decisions about lying and misleading may be genuinely (not just apparently) morally revealing about the character of the actor.’<sup>10</sup> So, Saul simultaneously endorses the following two claims:

- (A) There is no moral difference between lying and merely misleading.
- (B) The choice between lying and merely misleading may be genuinely morally revealing about the character of the actor.

Saul’s argument for (A) relies on cases like this one:

George makes dinner for Frieda. He knows that Frieda has a peanut allergy so virulent that even a small amount of peanut oil could kill her. He wants to kill Frieda, so he has cooked with peanut oil. Frieda, being rightly cautious, asks whether George has put any peanuts in the meal. George utters the true but misleading (6) rather than the false (7).

(6) No, I didn’t put any peanuts in.

(7) No, it’s perfectly safe for you to eat.<sup>11</sup>

Saul writes,

it doesn’t seem likely to me that anyone would think this choice of George’s makes his act even slightly better.<sup>12</sup>

I think some will take issue with this claim. For example, if one believes in the existence of a duty not to lie, one might maintain that (7) would indeed be morally worse, even though it is on a par with (6) as far as consequences go.

However, here I want to comment on a different point. Namely, the fact that Saul’s position endorses *both* (A) and (B). There is a tension between (A) and (B), as Saul is well aware. As she observes,

Some choices tend to be revealing about people’s moral characters. In general, these are choices between options where one is morally better

<sup>10</sup> Ibid.

<sup>11</sup> Saul (2012: 73). Example numbering altered.

<sup>12</sup> Ibid.

than the other.<sup>13</sup>

But Saul nevertheless maintains that

What's interesting about the case of choices between lying and misleading is that it seems plausible to suppose that such choices will often be morally revealing; and yet, if I am right, one is *not* morally better than the other.<sup>14</sup>

The challenge is, then, to explain how (B) can be true, given the truth of (A).

As Saul notes, it is important to point out a caveat up front. Namely that if someone *believes* that there *is* a moral difference between lying and merely misleading, it is not surprising that her choices in this area may be revealing about her moral character. But to vindicate her position, Saul needs to argue for the further claim that, even choices concerning lying vs. merely misleading made by people who consciously believe (A) may be revealing about their moral character.

Saul provides some ways in which this can be true in particular cases. On the one hand, the agent's choice may be based on a desire for deniability, in which case the choice may be negatively revealing about her character. On the other hand, the choice may be based on other factors. As examples, Saul mentions hypocrisy, epistemic hedging of bets (as a result of not being certain of being right), or a self-deceived desire to avoid guilt. And there may be others. In cases involving such further factors, again, it is not surprising that the agent's choice between lying and merely misleading may be morally revealing about them.

If Saul is right, there should be no cases in which a choice by someone who believes (A) is genuinely morally revealing about her unless the choice is based on factors like the ones Saul mentions. It is clear that *if* (A) is true, this follows. But moreover, the endorsement of (A) also implies that judgments about the relative badness or goodness of a choice between lying vs. merely misleading are always mistaken.

Such judgments abound. We make them routinely. But they are all in error, on Saul's view. This seems like a relatively high cost for

<sup>13</sup> Saul (2012: 91).

<sup>14</sup> *Ibid.*

the view. One might try to argue that, at least in many cases, the judgments are not erroneous because their subject matter is different from what it seems to be. Perhaps the judgments are often, or even typically, really about the moral character of the agent. But this is just to introduce error at a higher level, since it seems clear that at least most people who make such judgments believe that they are about what they seem to be about.

Suppose that Mark consciously makes a judgment to the effect that an act of lying was morally worse than an available alternative to merely mislead. Mark himself thinks the judgment is about what it seems to be about, i.e., the moral difference between the two choices. According to the present proposal, however, either Mark is mistaken about this, and the judgment is really about something else (in which case the judgment may in turn be either correct or mistaken about its real subject matter), or Mark is right, but the judgment is mistaken, since there really is no moral difference. So the only way that Mark's judgment can be right, according to this suggestion, is if Mark is mistaken about what its subject matter is. Hence, he could never think he is right and be so. This is surely an even higher cost.

But even if Saul sticks to the simpler view – that all judgments about moral differences between lying and merely misleading indeed have such differences as their subject matter, and hence they are all in error – some might be tempted to conclude that someone who rejects (A) has a more attractive position to offer. This theorist has a plausible way of accounting for (B). She will say that choices between lying and merely misleading can be morally revealing about the character of a person making such a choice simply because one option is morally better than the other. Further, the theorist who rejects (A) has an easy time explaining why judgements about the moral difference between lying and merely misleading are so common, and she has a straightforward picture of their subject matter.

To be sure, the traditional theorist must explain why, as Saul's arguments bring out, the feeling of the moral preference for misleading is weakened in cases like the one involving George, Frieda, and the peanuts. Yet it may seem plausible that an explanation, which points to the severity of the stakes involved, can be given.

Despite these comments, Saul's book is a welcome and challenging contribution to the debates over the lying-misleading distinction.

It presents a novel way of construing the distinction both from the point of view of philosophy of language and ethics. Saul advances the discussion by integrating contemporary research from the semantics-pragmatics debate, and she makes a strong case for rejecting traditional views on the moral preference for misleading over lying. *Lying, Misleading, and What is Said* should be read by everyone with an interest in this area.

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## Book reviews

**On the Plenitude of Truth. A Defense of Trivialism**, by Paul Kabay. United Kingdom: Lambert Academic Publishing, 2010, 147 pp.

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In *On the Plenitude of Truth*, which is a revised and expanded version of his doctoral thesis, Paul Kabay presents a defense of trivialism. Trivialism is the point of view that every proposition (or the truth-bearer you prefer) is true. This position has recently regained the attention of philosophers because Graham Priest and other dialetheists have felt the need to answer Aristotle's question about why not accepting that all contradictions are true if some of them are and hence, according to some plausible logical principles, accepting also that every proposition is true. See for example Graham Priest, 'To Be and Not to Be –that is the Answer: Aristotle on the Law of Non-Contradiction' (*Philosophiegeschichte und Logische Analyse* 1, pp. 91-130, 1998); or Graham Priest, 'Could Everything be True?', *Australasian Journal of Philosophy* 78, pp. 189-195, 1999 (both texts reprinted respectively as chapters 1 and 3 of Graham Priest, *Doubt Truth to be a Liar*, Oxford: Oxford UP, 2006). Trivialism is so extreme that is not clear how to deal rationally with it; it is similar to skepticism as is well remarked by Priest in the foreword (p. 5) and by Kabay himself (pp. 11, 139 and elsewhere).

The book that occupies us consists of six chapters plus an Introduction and a Conclusion, which could be divided into three blocks according to their contents and aims. The first block is formed by chapter 1, in which Kabay presents some antecedents of trivialism and suggests that certain claims by authors like Nicholas of Cusa or Hegel are very similar to the assertion of trivialism. The second block is composed of chapters 2, 3 and 6, where the author argues in favor of the plausibility of trivialism and against non-trivialism mainly from the philosophies of language, logic, mind and action. Regarding the third block, consisting of chapters 4 and 5 and the

Conclusion, it is devoted to study the “empirical” and practical bases and consequences of trivialism. In chapter 4 Kabay discusses some metaphysical problems concerning motion; in chapter 5 he embarks on a discussion of how is that we perceive the world as consistent when in fact it is trivial, whereas in the Conclusion he outlines how could be a life lived according to trivialism.

Kabay discusses many arguments from many fronts. Chapters and even sections within the same chapter exhibit quite different qualities. For instance, in chapter 1 (p. 25) there is a rather superficial and idle discussion on whether Spinoza, had he been aware of the modern logical resources, would have adopted trivialism. There are passages where arguments are showed quickly and incompletely, with poor discussion about premises and the steps that would permit to obtain the conclusions. A remarkable example is provided by Kabay’s quantum speculations in chapters 3 and 5. In the first case, Kabay quickly reviews some answers to the idea that quantum mechanics invalidates the principle of sufficient reason. In chapter 5 he uses an especially problematic part of the already controversial many-worlds interpretation to make plausible the idea that we could be observers of an inconsistent world that looks consistent to us because we are ourselves in an inconsistent state –just as observers would not perceive quantum superposition because they would be in a state of superposition too. In many occasions, more than finished replies, Kabay presents just vague indications of how those replies could start to be constructed, and in others his explanations are far-fetched and weak. In several cases a bit of formalization had helped the reader and the very author. There are well known formal tools for these considerations which Kabay just would have had to modify minimally for improving his exposition and avoid fallacies of scope, which are a latent risk in many parts of the book. An example of how useful would have been a bit of formalization in, say, the discussion on whether the actual world is trivial, is Lloyd Humberstone’s ‘Variation on a Trivialist Argument of Paul Kabay’ (*Journal of Logic, Language and Information* 20, pp. 115–132, 2011).

By having a taste for the subject and maybe because one of us has pondered similar thoughts, the arguments of what we have grouped as second block (chapters 2, 3 and 6), like the one reconstructed below, result more attractive to us, but this does not prevent us

from feeling some dissatisfaction with Kabay's exposition of some of them, though. For example, his treatment of Curry paradox and its implications for trivialism (pp. 52f) is very bald. If someone would ask us to tell her how Curry paradox could be a defense of trivialism, we would recommend Greg Restall's 'Curry's Revenge: The Costs of Non-Classical Solutions to the Paradoxes of Self-Reference' (in *Revenge of the Liar: New Essays on the Paradox*, ed. by J.C. Beall, Oxford: Oxford UP, 2007, pp. 261-271) instead of the book under review. Restall's text is not even an exploration of trivialism but a survey of difficulties that must be dodged before considering invalid such paradox (on pain of triviality), and whose degree of intractability puts trivialism as a serious consequence of certain logical notions. Even though the author mentions almost all what has been written on trivialism, we must say that we missed, in the middle of many ephemeral references, an equally ephemeral reference to at least two points of view. The first one is McTaggart's argument about the meaningless of trivialism given in *Studies in the Hegelian Dialectic* (Cambridge: Cambridge UP, 1922, 2<sup>nd</sup> edition, p. 8); the reader can find a commendable discussion of it in Priest's *Doubt Truth to be a Liar* (Oxford: Oxford, 2006, pp. 28-31). Another is Putnam's Aristotelian-like argument against trivialism in 'There is at Least One A Priori Truth' (*Erkenntnis* 13, pp. 153-170, 1978).

As we have said, Kabay presents many arguments of various kinds and it would be impractical even attempting to review all of them. Lest the reader get a rough idea of the arguments that can be found in the book, we will summarize that from chapter 2 (pp. 34-50). In it Kabay studies what could it mean to deny trivialism and argues that non-trivialists do not exist, for a non-trivialist should deny trivialism and that is an impossible speech act. For this, his (first) operational definition of trivialist is as follows:

(T1) An agent  $s$  is a trivialist if and only if for every proposition  $p$ ,  $B_{sp}$

where  $B$  is a belief operator, but also can be read as an assertion operator. Hence, ' $B_{sp}$ ' can be read in the usual way, " $s$  believes  $p$ ", or " $s$  asserts  $p$ ".

There are many ways of characterizing what is to deny  $p$ . Consider the following:



(D1) To deny  $p$  means to assert the negation of  $p$ , not- $p$ .

(D2) To deny  $p$  means to assert an alternative proposition to  $p$ .

(D3) To deny  $p$  is to perform a *sui generis* speech act in which not necessarily something is asserted:  $p$  is just applied denial illocutionary force.

Kabay presents some traditional arguments for discarding (D1) as an adequate characterization of the notion of denying  $p$ . Think of an advocate of truth value gaps: If she denies  $p$  this does not imply that she asserts not- $p$ . Or think of an advocate of truth value gluts: If she asserts not- $p$  it does not imply that she denies  $p$ . It makes no difference whether one thinks that there are no gaps or no gluts, the point is that one understands someone who thinks there are, and one understands their assertions and denials.

Now let us turn to (D2). Even if the concept of alternative proposition (to a given proposition  $p$ ) is a “fundamental concept”, it is not true that “we all can recognize an alternative point of view even if we cannot explain in detail its necessary and sufficient conditions” and the author should not have gave up and proclaimed that he cannot “say anything very informative about this” (p. 37). Moreover, his examples make clear that Kabay presupposes that  $q$  is an alternative to  $p$  if and only if the semantic content of  $q$  is not part of the semantic content of  $p$ . Also by his examples it is not hard to conclude that he is presupposing is a very traditional notion of content of a proposition, traceable back to works such as Wittgenstein’s, Carnap’s or Popper’s, namely that the content of a proposition consists in the collection of its non-tautological consequences (or the conditions under which it is false). According to this characterization of an alternative to  $p$  as a proposition  $q$  whose content is not part of  $p$ , trivialism, the claim that every proposition is true, cannot be denied because every other proposition is part of its content: There is no alternative to the trivialist assertion.

According to Kabay, a non-trivialist cannot deny trivialism in the sense (D3), either. A trivialist, as is characterized in (T1), believes that she has good reasons for asserting and denying each and every one of the propositions; she also believes of herself that is rational and

hence she will proceed to make those assertions and denials. Everything asserted by the non-trivialist is also asserted by the trivialist; everything denied by the non-trivialist is denied by the trivialist too.

Thus Kabay concludes that the non-trivialist does not exist, because there is no one capable of performing the speech act of denying trivialism in none of the three senses of denying specified above. Then nobody could say 'I am a non-trivialist' because none of her beliefs, assertions or denials would make her different from a trivialist (cf. p. 49). Of course one could try to block the argument, or probe different notions of denial or of content of a proposition. But even if not conclusive, this is a nice argument.

Insofar as editorial questions, we would say that the edition is rather poor and that an exemplar looks like one of the printed copies of the dissertation, but with a modified index and with a more attractive cover. But even so, there are some oversights that must not be allowed in a doctoral thesis and much less in a book that is supposed to be a revised version of it. But maybe they are not mistakes. Maybe it should not surprise us that in a book that presents a defense of trivialism it is said that the chapter following the first one is chapter 5, and that the following to this is chapter 3, even though the index states the usual order. Calling 'Mortenson' (at least 16 times between pp. 59 and 62 and five times in the bibliography) to Chris *Mortensen*, 'Plank's constant' (p. 78) to *Planck's* constant, 'Amour Garb' (p. 88) to Bradley *Armour-Garb* or 'Esher' (three times on pp. 98f) to Maurits Cornelis *Escher* also must be a way of expressing trivialist beliefs in the field of spelling proper names. This is in no way an exhaustive list of the slips and the reader can find many more.

It is very likely that *On the Plenitude of Truth* does not reach the magnitude of a trivialist manifesto, as was Graham Priest's *In Contradiction* (Oxford: Oxford UP, 2007, 2<sup>nd</sup> edition) with respect to dialetheism. This is partially due to the lack of the formal apparatuses that *In Contradiction* does have and that help to ease the discussion with the dialetheist. As a defense of trivialism, in general we do not consider *On the Plenitude of Truth* successful. Nevertheless, we think it succeeds as a defense of the idea that trivialism is worth discussing. Kabay deserves all the credit for putting in the philosophical scene a defense of that which has everything to be indefensible. Whether Kabay believes or not in the thesis that he is expounding, it seems to

us that he is doing his work as a philosopher, trying to analyze the value of a worldview that at first glance looks outrageous and has also tried to wield bold arguments that should be first-hand known by the reader of this review. Analytic philosophers, so prone to propose and discuss puzzles, will find a considerable amount of material and suggestions in *On the Plenitude of Truth*. For many people, to refute trivialism does not need even an incredulous stare, but Kabay's work suggests that many headaches will be required to refute trivialism and that is the value of this book in spite of the weaknesses pointed out before. After all, as Priest well spotted in the foreword, it is an irritation which produces pearls.

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**Meaning and Normativity**, by Allan Gibbard. Oxford: Oxford University Press, 2012.

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In analogy with Moore's founding question to metaethics, the central problem of a metatheory of meaning is the meaning of 'meaning'. In answering the latter question, Gibbard's *Meaning and Normativity* retains far-reaching Moorean ambitions about the main semantic concept: it applies classical metaethical arguments, strategies and distinctions to reach inviting, non-naturalistic conclusions about the concept of meaning.

At the outset, Gibbard interprets the normativity of meaning in two senses. On the *weak* reading, 'means' implies 'ought', understood in a Moorean, non-naturalistic sense. On the *strong* reading, however, any 'means' entails 'ought' and the concept of meaning can be fully defined in normative and naturalistic terms. After the introductory chapter, outlining the main concepts and aims of the project, Chapters 2 and 3 go on to discuss the weak normativity thesis. The starting point is Kripke's classic work on Wittgenstein, which is interpreted as defending the thesis. As often discussed in the literature, in arriving at his non-naturalistic conclusion, Kripke attacks a rather weak dispositional account. However, if Gibbard is right, Kripke could have taken a different route by both keeping the weak normativity thesis *and* retaining a naturalistic, dispositional account of meaning. To this extent, Gibbard proposes more refined dispositional theories of the solipsistic and communitarian type: the former claims that meaning is entirely in the head, whereas the latter contends that it is in part inherent in the community.

The key to reconciling dispositional accounts and the weak normativity thesis is to distinguish between properties and concepts. Like Moore, Gibbard locates normative dimension in the latter: while both the brain property and the community property are natural, the concept of meaning is normative. No contradiction arises, for the former tells us something about the world, the latter about our thinking about the world.

The two dispositional views are substantive theories of meaning and disagree about the correct naturalistic rendering of the meaning

property. Is such a disagreement itself naturalistic? Gibbard indicates it might be, invoking Kripke's famous example with 'quaddition', the function that delivers the 'quum' 5 for the numbers larger than 50. According to the thought experiment, imaginary Quermans generally reply with a 'quum' when using the '+' sign. While the meaning solipsist would hold that Quursula, an ordinary Querman, means plus by '+', the meaning communitarian would be prone to say she means quus. The two may disagree whether Quursula ought to accept ' $68 + 57 = 5$ ' or not, but in doing so both accept that 'means' entails 'ought' and so agree in their metatheory of meaning.

In Chapter 4, Gibbard introduces the crucial distinction between the subjective and objective senses of 'ought'. While the former is a matter of what one should do or believe given the available evidence, the latter concerns the facts, regardless of whether one can know them or not. The chapter centers on the concept of belief in the light of this distinction. By way of example, imagine I toss a coin which lands heads, unbeknownst to you. Subjectively, you ought to believe there are equal chances the coin landed heads or tails. Objectively, however, you ought to believe it landed heads. The latter sense of ought follows analytically from the facts and thus cannot ground a philosophically interesting normative thesis.

To argue for the normativity of meaning, then, we need to pinpoint an 'ought' that does not follow from a naturalistic *is*. In relation to this, Gibbard introduces Ewing's notion of primitive ought and posits it as the basic normative concept. According to this 'exceptionless ought of rationality', one 'ought always to disbelieve contradictions and in matters *a posteriori*, one ought always to believe in accord with the evidence' (p. 14).

The argument for the weak normativity thesis locates Ewing's ought in the relation of entailment, more specifically the existential generalization (I leave aside the examination of the inconsistency relation) and considers the following 'normative conditional':

If I accept 'Snow is white' and am warranted in doing so, then I ought immediately to infer 'Something is white' (p. 116).

While the antecedent of the conditional is explained in naturalistic terms, the 'ought of inference' in the consequent occurs in the primitive sense and contributes to the meaning of 'something' (p.

115). The meaning of ‘something’, then, entails Ewing-like ought, with such an ought being, in turn, ‘built into characterizing the very meaning’ of this word.

In assessing the argument, a naturalist may urge that the ‘ought’ in our example is also an objective ought of correctness, analytically entailed by the facts. Objectively, one ought to do what one would do subjectively if one had all the information (p. 82). But once we accept that ‘Snow is white’, we don’t need any new information to come up with the conclusion that ‘Something is white’. Had one ‘learned everything that is the case’, one would still make the same inferences. Unfortunately, if the ought of inference can be used in the objective sense, the overall conclusion would be normative only in a degenerate way.

Gibbard’s answer may well be to point to how the existential generalization can be tied to our actions. It is conceptually contradictory to both accept ‘Snow is white’ and yet reject that ‘Something is white’. If such a rejection could be related to the way we ordinarily act, only a normative explanation would do, since naturalistic thoughts lack similar ties to actions.

The argument is further developed in Chapter 6 with the proposal to use the concept *SOMETHING* in characterizing other concepts ‘more informatively’. On the face of it, the phrase in quotes may seem to suggest that the concept *SOMETHING* adds new information to the concept being characterized. This is misleading, however, as Gibbard uses the phrase only to capture the possibility of designating a concept in a theoretically interesting way. Given this, one would be wrong to insist that the concept *DOG*, say, cannot be rendered more informative by means of the concept *SOMETHING* because everyone who possesses the former also possesses the latter concept.

The concept *SOMETHING* gives us a new, theoretically interesting device to identify our concepts, Gibbard writes, as opposed to Horwich’s alternative approach in designating the concept *DOG* ‘as the meaning of my word ‘dog’’ (p. 113). However, Horwich also has other means of identifying the concepts: the same concept could be characterized by the following description: ‘The property that ‘*THAT IS A \_\_\_\_*’ is accepted with attention focused on a prominent dog’. (p. 96) This said, Gibbard’s intention here is rather to underline the normative dimension of such characterization, as Ewing’s primitive

ought is shown to follow invariably from the concept SOMETHING.

Gibbard's point can presumably be extended to proper names. Thus, starting from 'Socrates is Greek' we may infer that 'Someone is Greek'. The motivation we had for the concept SOMETHING now carries over to the concept SOMEONE: its meaning is tied to existential generalization (under the appropriate interpretation of the quantifier by the model theory), we ought to make similar inferences immediately, and it entails Ewing's primitive ought which is built into characterizing its meaning. Proper names, it seems, can likewise be described by pursuing the normative strategy. To see whether such extension will work, I suggested, we need to make sure that the ought of inference cannot be understood in the objective sense.

The second main reason for going normativist, in addition to the argument just discussed, is the seeming failure of the alternative, naturalistic proposals. Gibbard discusses in length Horwich's use theory of meaning. The argument he gives against this view resembles the strategy we encountered earlier when dealing with Kripke's meaning skepticism, on the line of the Moorean 'What's at issue?' argument. First, we take the meaning property to be naturalistic (Gibbard is a naturalist about all properties) and then show that there may be two opposing views disagreeing about the claim couched in naturalistic terms. Secondly, we explain that the disagreement itself may be normative.

Horwich's theory of meaning insists on there being a single ideal law governing our use of words (the basic acceptance property of a word, that is). Gibbard contrasts this feature with Quine's indeterminacy of meaning from *Word and Object* and opts for the latter. To illustrate the possibility of 'many alternatives' playing the meaning role, Gibbard takes a stock example from physics, the concept of mass. The evolution of the concept, the story goes, went from its single meaning in classic Newtonian physics to four distinct senses ascribed to it in the original version of the special theory of relativity. I will assume it is clear how Quine's moral would apply to the picture. And once we establish that there can be more than one model determining the meaning of 'mass', we make room for disagreement about claims involving this concept. While you may take a Newtonian physicist to mean something true by ' $p = mv$ ', I may understand her as saying something false. Our disagreement, Gibbard suggests,

does not have to be about facts (much less about our conceptual incoherence), but normative as ‘the questions in dispute will be ones of how to use our words’ (p. 116).

I find Gibbard’s argument illuminating and convincing. It is worth examining, however, whether the Moorean strategy may be extended to cover non-theoretical concepts. If this proves a difficult task, as I am more inclined to think, it would be interesting to see the implications for Moorean argument and the naturalistic take on its success.

Chapter 7 presents the problems of reference and truth, with greater emphasis on the former. The normative dimension of reference is linked to the question of how one ought to rely on the beliefs of others. Taking Ada’s assertion ‘I am sad’ as a model (Gibbard examines the personal pronoun ‘I’ along with some other indexicals), we may rephrase the question as asking what the audience should believe given Ada’s statement. Clearly, there’s no *one* specific belief we may attribute across the board. (Perhaps a ‘What’s at issue?’ argument could be invoked once again, addressing the normativity of belief). The audience may treat Ada’s expression of belief as (i) a ‘sheer reliable indicator’; (ii) a thought which Ada ought to have and thus the basis for a thought the audience ought to have; as well as (iii) an expression of a belief arising in a misleading epistemic circumstance.

In the first two cases, Ada’s warrant ‘transforms’ into our warrant. The explanation of how this proceeds may have been pointed to already with the distinction between subjective and objective ‘ought’. The issue concerns our evidence and the way we act on the basis of it. Regardless of believing or disbelieving Ada’s statement, we ought to do so subjectively. A more general moral about reference and the ought of communication applies in a similar way: it is not important what a concept *actually* denotes, but rather what the audience takes it to be denoting. Once again, the ‘ought’ in question is used in the subjective and thus normative sense.

Up to this point, much of the book is devoted to explaining meaning in terms of Ewing’s ought. Chapter 8 brings in metanormative considerations, explaining Ewing’s ought in expressivistic terms. The account is far from being straightforward: it amounts to describing the state of mind one is in when meaning the concept ‘ought’: the state of *planning*. Gibbard’s central notion of plan is somewhat meta-



phorical and departs from the ordinary concept in being directed towards hypothetical scenarios and in excluding the evidence of the person making plans as irrelevant.

The strong normativity thesis, in which meaning is fully defined in normative and naturalistic vocabulary, is carried out in terms of dispositions plus plans. By way of example, consider the meaning claim whereby Pierre *means* mass by 'masse'. Accepting this claim would amount to having a plan for a hypothetical case of being Pierre with his linguistic dispositions. To see how the plan will develop, we may think of cases when we accept sentences containing the word 'mass' in English. Our plan to accept sentences with the word 'masse' in French, for the appropriate epistemic circumstances and given Pierre's linguistic dispositions, is spelt out in a quite similar way. If you think what this plan amounts to is obvious, this is how it should be, at least in most cases. Chapter 9 offers a variety of such examples and tests of the hypothesis. One may worry if the expressivistic account is all that can be offered. Nonetheless, the solution seems cogent and, perhaps, the nature of the problem restricts how explicit one may be in addressing it.

In the expressivistic account, to accept a meaning claim (e.g. 'masse' means 'mass') amounts to having a certain plan, as noted above. But accepting this claim engages us in adopting a further plan, and so on. Gibbard shows that this kind of regress is not peculiar to expressivism, but inherent to any metatheory of meaning: we need to answer not only what the meaning of 'meaning' is, but also what the meaning of this very question is (p. 199).

The advantages of expressivism are most readily seen in its ability to explain ties to actions. The account neatly captures how normative thoughts are conceptually equivalent to planning thoughts, as one cannot both have a normative belief and yet reject the corresponding plan, on pain of conceptual incoherence. One cannot believe she ought to leave the burning building and decides to stay (p. 224). This is one of the upshots of Chapter 10. The expressivistic plans explain how 'ought', taken in the primitive and fully normative sense, entails 'do!' (p. 231). This is the final twist as expressivism, otherwise opposed to non-naturalism, is now taken as normative. Two views defended in the book, expressivism and non-naturalism, end up coinciding under Gibbard's refinements.

*Meaning and Normativity* is a stimulating reading. The strategies it pursues are controversial but well defended and both refreshing and insightful. The book is written clearly, although its arguments are not always expounded systematically. This may reflect the structure of the book, which grows in complexity, leaving the arguments to be addressed at various points, depending on the development of the metatheory. Those familiar with Gibbard's work will find particularly interesting the expressivistic talk of plans, which dates back to Gibbard's *Thinking How to Live* (2003), now applied to issues of meaning. The book is a great contribution to the ongoing debate between normativists and naturalistically minded theorists of meaning and presents a novel and clear-headed way to understand what is at issue.<sup>1</sup>

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