There is no puzzle about change.

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ABSTRACT: This paper argues against the common practice of presenting perdurantism, endurantism, and other views about persistence and time as *solutions* to an alleged *puzzle* about change. Different recent attempts to generate a puzzle about change are examined and found unsuccessful. This does not mean, however, that the relevant views about persistence and time are not well motivated, but rather that their interest and purpose is independent of their suitability for solving the alleged puzzle.

In the contemporary literature on persistence through time, it is customary to present particular versions of endurantism and perdurantism (as well as other *theories of persistence*, as I will generically call them) as primarily intended to solve a certain puzzle about change. More generally, the idea that change is a deeply puzzling phenomenon is a common assumption among philosophers: how can one and the same object have incompatible properties? Nothing can have incompatible properties at the same time; how does having them at different times help? I will argue, however, that contrary to what is so generally assumed, there is no real puzzle about change – at least not one that could serve as a motivation for theories of persistence. Moreover, the pretension that there is such a puzzle can hardly be justified on heuristic grounds, as a useful means for presenting or motivating the different theories of persistence. As I will argue, this pretension is rather pernicious, since it obscures some actual motivations for theories of persistence. I want to emphasize at the outset that by undermining this standard way in which theories of persistence are motivated, I do not intend to dismiss these theories, or to belittle their interest. On the contrary, my argument is perfectly compatible with the view that theories of

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persistence are independently well-motivated, and that their interest does not depend on there being a puzzle about change for them to solve.

This is the plan for what follows: in section 1, I survey different recent attempts to generate a puzzle about change and argue that they are unsuccessful. In section 2, I consider David Lewis's *problem of temporary intrinsics*. Though Lewis's discussion may be taken as a further attempt to generate a puzzle about change, I argue that an alternative understanding of it is preferable. I conclude in section 3 that even if there are good reasons for focusing on the issue of change, they do not justify the widespread assumption that there is a *puzzle* about change that theories of persistence are intended to solve.

1. The problem with the puzzle of change.

Many philosophers just find it natural to think of change as a puzzling phenomenon. As an example, see the following paragraph with which Achille Varzi opens a recent paper on a related topic:

> Things change. Bananas ripen, houses deteriorate, people lose hairs and acquire new body cells. How can we say that they are the same things, if they are no longer the same? What grounds our belief that the things around us (and ourselves, too) may survive from day to day, in spite of the many changes that affect them? In this world of flux, persisting things are the only anchor we have, but the source of their persistence appears to be a genuine puzzle—a puzzle that has been with us since the Presocratics. (Varzi 2005, 485).

The fact that change is a genuinely puzzling phenomenon is presented here as a rather familiar fact, as something that could be taken for granted among philosophers – who are well aware of it since the very beginning of their discipline. This allows Varzi to be relatively succinct when explaining what exactly the puzzle is, and to summarize the problem in the following concise question: *how can we say of something that it is the same, if it is no longer the same?* I will come back to this question at the end of this section. First, I want to contrast what I take to be Varzi's attitude towards the problem of change with a different one, expressed by A. Bottani in the same journal and issue:

Philosophers have traditionally seen change as a paradoxical feature of reality, a source of great ontological puzzlement. One might ask why. Why on earth should such a natural, pervasive and uncontroversial phenomenon be treated as a philosophical paradox? (Bottani 2005, 381).

Bottani does think that there is a puzzle about change, but is reluctant to take it for granted. He realizes that there is an unavoidable difficulty in pinning down the puzzle of change, as he makes clear in the following passage:

However clear it may be in its general meaning, the problem remains somewhat elusive, as one can realise as soon as one tries to make the problem transparent to the non-philosopher. For one might find it natural to ask: sure, no book can both have and lack the property of being closed at once, but why not at different times? What about having distinct properties at distinct times does look impossible or at least odd, and why? (Bottani 2005, 382)

In this paragraph, Bottani acknowledges that it is not completely clear why change is a puzzling phenomenon, and later on he proposes to remedy this situation by discussing different ways in which the problem could be stated. In this section 1, I will discuss some laborious attempts that philosophers have made in the same direction, trying to generate a puzzle about change.

First, some neutral terminology must be introduced. I will say that an object x *changes* from time t_1 to t_2 with respect to the property expressed by a predicate 'P' iff x is P at t_1 but not at t_2 (or vice versa). So, for instance, a candle which is straight at t_1 and bent at t_2 changes with respect to *bentness* (and *straightness*) from t_1 to t_2. Some discussions focus on *intrinsic change*. Intrinsic change occurs when the property expressed by 'P' is an intrinsic property of x, i.e. a property that x has just in virtue of how x is (for our purposes, this rough characterization of intrinsicness will suffice). A related recurrent notion is that of *persistence*. Following Lewis (1986), I will say that an object x *persists* iff x exists at different times. This terminology – which is relatively standard in the literature about

change that I will discuss — allows for a *pre-theoretical* characterization of the phenomena. This pre-theoretical characterization may be not completely perspicuous once we have adopted some particular theoretical commitments about what properties, or time, or persistence really are. To take just one example, our pre-theoretical characterization implies that nothing changes if it turns out that, as presentists believe, there really is just one time – the present. However, it is a good policy to start with a relatively pre-theoretical characterization of change such as the one I have offered and then read the presentist characterization (or any other theoretical characterization) as refinements and corrections on it.

Since my main contention in this paper is that there is no puzzle of change that does a good job in motivating *theories of persistence*, it will also be helpful to briefly present here the two main such theories – which I call 'standard perdurantism' and 'relations-to-times (RTT) endurantism' respectively. According to standard perdurantism, (i) objects persist through time in virtue of having different temporal parts at each time in which they exist, and (ii) exemplify different properties at different times in virtue of their temporal parts exemplifying those properties *simpliciter*. Change is therefore a matter of having different temporal parts that exemplify different properties simpliciter. The other view that we will consider, RTT-endurantism, can also be split into two independent theses: (i) persisting objects are "wholly present" at each time in which they exist and do not have proper temporal parts, (ii) all temporary properties of persisting objects are in fact relations that they bear to times. Thus, change is a matter of bearing different relations to different times. Notice that both standard perdurantism and RTT-endurantism are "package views" that comprise a strictly ontological thesis about the existence of temporal parts, and a thesis about "temporal qualification", i.e. of what it is for an object to have a property at a time. These package views are examples of what I generically call 'theories of persistence'.

Finally, we also need to agree about what counts as a *puzzle*. I will call a *puzzle* any set of English sentences that satisfy the following two requisites: (i) each of them, when considered independently of the rest, appears to express a true proposition – i.e. to say something true; (ii) using uncontroversial rules of inference, a contradiction or an otherwise

patently false conclusion can be derived from the seemingly true propositions that we take the sentences to express. Typically, a good solution for a puzzle consists in showing which of the seemingly true propositions is not really true or not really the one expressed by the relevant sentence, and explaining why we get confused so easily in the first place. As we will see, this characterization is at least tacitly assumed by many philosophers who discuss the alleged puzzle of change. An important point to notice about this characterization is that it relies on the notion of a sentence's appearing to express a true proposition. But of course, appearances vary greatly among individuals and, in particular, what seems true to philosophers might not seem true to non-philosophers (and the other way around). As a result, we should regard *being a puzzle* as a relative matter, and we might think of a series of cases, ranging from the more "philosophical puzzles" to the less theoretical ones. At the first end of the spectrum we can locate those puzzles that arise only from the adoption of highly theoretical principles. At the opposite end, we find those puzzles that arise from very basic platitudes – propositions that seem true to any competent speaker. What I will be arguing in what follows is that there is no puzzle of change to be located on any point of this scale – or at any rate, no puzzle of change that could motivate the adoption of the different theories of persistence.

Let us then consider a first attempt to generate a puzzle about change. This first attempt appeals explicitly to Leibniz's Law, the principle according to which if $x=y$, everything which is true of x is true of y. A clear example of this strategy can be found in the following paragraph from T. Sider (2001):

> [The] challenge is that persistence through change is inconsistent with Leibniz Law. (…) Consider any ordinary case of change. Suppose I get a haircut. It would seem that the person before the haircut, call him Longhair, has different properties from the person, Shorthair, after the haircut; one has long hair while the other has short hair. Leibniz's Law then seems to imply that Longhair and Shorthair are distinct, and thus that I do not survive the haircut, since the person after the haircut is not the same person as the person before the haircut. (Sider 2001, 5)[1]

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[1] Bottani's (2005) preferred statement of the puzzle is ultimately a generalization of this case.

Thus, change is puzzling because it implies that nothing that changes *persists*. Now, can we explicitly construe a *puzzle*, in the sense defined above, out of the case described by Sider? One suggestion is that the following sentences may qualify:

      (1) Longhair=Shorthair

      (2) Longhair has long hair

      (3) Shorthair *does not* have long hair

      (4) Leibniz's Law.

The suggestion is that given (2) and (3), which describe an ordinary case of change, either (1) or (4) have to go in order to avoid contradiction. Since both (1) and (4) seem undeniably true, we have a puzzle. However, this suggestion goes wrong. The reason why is simple, though the details may vary depending on one's preferred view about propositions and the semantic contribution of tense and temporal modifiers. Assuming eternalism about propositions and the view that tense is reducible to temporal indexicals, this is the reason why the present proposal fails to generate a puzzle:[2] sentences (2) and (3) are present-tensed and, as a result, there is no single proposition expressed by them, but rather different propositions expressed in different contexts of utterance. Now, the *only* proposition that may be taken as both true and expressed by (2) is that Longhair has long hair *before the haircut*, whereas the *only* proposition that may be taken as both true and expressed by (3) is that Shorthair has short hair *after the haircut*. There are no other propositions in the vicinity that may be taken to be true and expressed by either (2) or (3). But then, there is no threatening contradiction behind them: the identity of Longhair with Shorthair is consistent

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[2] For the case of present-tensed sentences like (2) and (3), the idea that tense is reducible to temporal indexicals comes down to the view that that the present-tensed '*a* is *P*' is equivalent to '∃(t=now & *a* is *P* at t)'. The clause 't=now' in this analysis should in turn be understood along the lines of the semantic for indexicals in Kaplan (1989), according to which the contribution of 'now' to the proposition expressed is just the time of the utterance. Thus, the proposition expressed by an utterance of '*a* is *P*' is an 'eternal proposition', a proposition that cannot have different truth values relative to different times. This view on tense and propositions goes back to Frege and is nowadays very familiar, but its assumption is not required for dissolving the alleged puzzle of change. The puzzle also dissolves if we adopt the alternative "temporalist" view on propositions, the view according to which different utterances of the present-tensed '*a* is *P*' express one single proposition that has different truth values relatively to different times. If this view is preferred, each of (2) and (3) expresses a single proposition, but there is no single time relative to which both propositions are true, and therefore no contradiction can be derived.

with Longhair having long hair *before the haircut* and with Shorthair having shorthair *after the haircut*.[3]

Some comments about this argument are in order. First, I want to emphasize that the considerations above should not be taken as a *solution* to the alleged puzzle, but rather as showing that there is no puzzle in the first place. If we had a puzzle, a *solution* for it would consist either in the rejection of at least one of the seemingly true propositions, or in showing that at least one of those seemingly true propositions is not in fact the one expressed by the relevant sentence. Someone who does think that there is a puzzle here may want to *solve* it by claiming, for instance, that Leibniz's Law is not generally true, or that Longhair is not strictly identical to Shorthair.

Second, all that is required for this dissolution of the puzzle is that we take the ordinary meaning of English sentences (2) and (3) at face value, taking into account the contribution of tense. This does *not* imply "taking tense seriously" in the sense of Zimmerman (1998), or adopting any sophisticated philosophical view about the nature of tense or time – such as the "tensed theory of time", for instance. All that is required is that we give these English sentences their natural meaning. Perhaps a contradiction could be derived if we take (2) and (3) to be sentences in a regimented 'tenseless' language. But this would simply show that such a regimented language is not accurate enough to capture some basic semantic features of English. It would not reveal any deep problem for which a metaphysics of change is required. Moreover, the meaning of such tenseless language would have to be eventually explicated in English, and it is not clear that this can be done in a way such that sentences (1) to (4) will constitute a puzzle. Notice that two usual ways of understanding tenseless predication – what Zimmerman (2005) calls 'always tenseless' and 'sometimes tenseless' respectively – are ruled out. Understood as an "*always*-tenseless" sentence, (2) means that Longhair has long hair *at all times in which he exists*, which is clearly false. Understood as "*sometimes*-tenseless", (2) means that Longhair had, has *or* will have longhair, which is true but clearly not in conflict with a similar reading of (3).

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[3] For a similar point, see also Hansson (2007), p. 266-267.

Third, it is worth noticing how the present case differs from others in which some *non-evident* context-sensitive element may be responsible for generating a puzzle. This is what happens, for instance, in the "paradoxes of coincidence" according to the counterpart theorist's diagnosis, or in some arguments for scepticism, according to the epistemic contextualist's diagnosis.[4] If it is true that modal and epistemic predicates are context-sensitive, this is not completely evident for every competent speaker. This is why we are sometimes misled about which propositions are expressed by particular utterances of sentences containing those predicates, and this kind of confusion may produce a puzzle, in the sense defined above. But this does not happen with tensed verbs (and indexicals like 'here', 'this', etc), the context sensitivity of which is *evident* for competent speakers in a way that prevents them from ever being confused.

Finally, we should mention a second and independent element in the wording of (2) and (3) which may contribute to generate the appearance of a puzzle. As the argument is presented in the passage quoted from Sider above, we are asked to introduce two names at two different times –'Longhair' and 'Shorthair'. Even if our instruction is to baptize a *person*, the fact that we have two names introduced at two different times may mislead us into thinking that we are thereby baptizing a person's *stages* (if we think that such things exist). This confusion is further intensified by the suggestive descriptive character of the names chosen. Of course, a *stage theorist* like Sider will be ready to admit that ordinary proper names refer to person-stages. But the alleged puzzle of change is intended to be independent of the adoption of stage theory: if anything, stage theory is supposed to be part of the solution to the alleged puzzle, rather than an assumption required for its mere formulation.

In sum, the attempt to generate a puzzle by explicit appeal to Leibniz's Law fails. Can we do better than this? S. Haslanger (2003) describes the *puzzle of change* as arising from the following five principles:[5]

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[4] See Lewis (1986) for the modal paradoxes of coincidence and Lewis (1996) for the contextualist treatment of the sceptical arguments.
[5] Hinchliff (1996) and Wasserman (2006) offer versions of the puzzle that can be assimilated to Haslanger's.

(1) *Persistence condition*: Objects persist through change.

(2) *Incompatibility condition*: The properties involved in a change are incompatible.

(3) *Law of non-contradiction*: Nothing can have incompatible properties, i.e. nothing can be both *P* and not *P*.

(4) *Identity condition*: if an object persists through change, then the object existing before change is one and the same object as the one existing after the change; that is, the original object continues to exist through change.

(5) *Proper subject condition*: The object undergoing change is itself the proper subject of the properties involved in change.

Assuming the definitions of 'persistence' and 'change' that I have offered above, conditions (4) and (5) are actually specifications of what is already expressed in (1): the *identity condition* is implicit in the idea of *persistence*, and the *proper subject condition* is implicit in the idea of *change*.

As Haslanger points out, taken together these principles lead to contradiction:

> Suppose that [a] candle persists through [change from being straight to being bent]. That is to say that there is one thing, the candle, that is the proper subject of the property of straightness and of the property of bentness. But straightness and bentness are incompatible: nothing can be both straight and bent. In the face of this contradiction, there are a number of possible conclusions to draw. Contrary to appearances, one of the principles we started with must be false. (p. 317)

But do we really have a puzzle here? In order to qualify as a puzzle, each of the five assumptions should be intuitively plausible when considered independently. In my opinion condition (3) fails to satisfy this requisite. It is intuitively not true that objects cannot have incompatible properties, like being bent and being not bent. What *is* intuitively true is that objects cannot have these incompatible properties *at the same time* – and actually it is for

this reason that they are *incompatible*.[6] The negation of (3) is perfectly intuitively plausible: objects *can* have incompatible properties; and of course they *do* have them *at different times.* It may be that (3) inherits undeserved credibility from the name that Haslanger has chosen for it: "Law of Non-contradiction". It is therefore worth mentioning that in classical formulations, the *Law of Non-contradiction* states exactly what intuitions allow, as in the following Aristotelian formulation: "It is impossible that the same thing should both belong and not belong to the same thing *at the same time* and in the same respect"[7] The Aristotelian formulation clearly involves a temporal qualification that is not present in Haslanger's third principle.

Also in this case, it is important to notice that by rejecting the initial plausibility of (3) we are not offering a *solution* to the alleged puzzle, but rather showing that there is no puzzle in the first place. Though (3) may be false, the relevant point here is that it does not *seem* true. This claim should be distinguished from the reaction of those who think that (3) *does* seem true (and thus, that *there is* a puzzle here) but ultimately reject it *as a way of solving the alleged puzzle*.

At this point, I expect the following reaction: "of course objects can have different properties at different times, we all know that! The issue is *how* they do this, and your dissolution of the puzzle does not help us with that." This reply is frequent, and we find it very clearly stated by M. Hinchliff in "The Puzzle of Change".[8] After laying the premises of the alleged puzzle, Hinchliff acknowledges (as Bottani did) that the intended puzzle is somewhat elusive. This is how he makes the point:

> The solution to this puzzle may at first seem too obvious for it even to be a genuine puzzle: mention the distinct times at which the candle has its distinct shapes and declare the problem solved; for it is unproblematic that the candle is straight at t and bent at t'. This solution is correct but incomplete without an account of our (…) intuitions. What is required is a theory of temporal

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[6] Cf. Hansson (2007), p. 269.
[7] Aristotle *Meta*. Γ3, 1005b 19-20, emphasis added. Cf. also *Meta*. Γ6, 1011b 13-14 "The most certain of all principles is that contradictory sentences are not true *at the same time*" (emphasis added).
[8] Hinchliff (1996). Cf. also Hawley (2004), Sider (2001) p. 93.

qualification which explains how change is possible while also accounting for the intuitions that generate the puzzle in the first place. (Hinchliff 1996, 119-120).

I presume someone like Hinchliff would dismiss our dissolution of Haslanger's puzzle in terms like these: "what you say is correct but beside the point, or at best incomplete. You fail to offer the kind of account that is required for declaring the puzzle solved". I agree that having a "theory of temporal qualification" is a desirable goal. My present point, however, is that we should not regard such a theory as a solution for an alleged puzzle about change because, as we have seen, there really is no such thing. Desirable as it might be, having a "theory of temporal qualification" is not required in order to account for "the intuitions that generate the puzzle", as Hinchliff insists. Its motivation must lie somewhere else.

We have already considered two major attempts to expose the puzzling character of change and found both of them unsuccessful. Before discussing Lewis's problem of *temporary intrinsics*, we can finally consider a third suggestion, expressed in the following paragraph by L. N. Oaklander:

> The problem of change, like all metaphysical problems arises out of a conflict of intuitions. On the one hand, change requires *sameness*. A thing that changes must be one and the same both before and after the change, otherwise we have two things with different properties rather than one thing that changes. (…) On the other hand, change requires *difference*. For if change is to occur, then the same apple must be what is not, since the apple must have a property, such as green, and then have a different and incompatible property, such as red. But how can one thing be the same and different? (Oaklander 2004, 20).

This formulation of the problem brings us back to Varzi's initial question: how can things be the same if they are different? Is it not contradictory to say that a thing is the same and not the same? Not in the present case: the appearance of a contradiction vanishes once we notice that 'the same' does not mean the same in both cases: it means *numerical identity* when we say that the changing thing is the same, and it means *qualitative identity* when we

say that it is not the same. It may be that ordinary speakers of English are not fully aware that we are dealing here with two different meanings of 'the same'. If so, then the present problem does count as a puzzle, in the sense defined above, and the disambiguation proposed as a genuine solution to it.[9] However, this puzzle is clearly irrelevant for the debate about persistence and can hardly be used to motivate it. All that is required in order to solve this puzzle is to make the aforementioned distinction between two senses of 'the same' – the adoption of any metaphysical views about the nature of time, temporal parts, etc would be off the point.[10] Since I am primarily concerned with attempts to motivate theories of persistence as solutions to an alleged puzzle of change, I will not consider the present problem in what follows, even if it does constitute a genuine puzzle according to our standards.

2 The problem of temporary intrinsics.

I turn now to the *problem of temporary intrinsics* (*PTI*, henceforth), which D. Lewis raises in an excursus from the main thread of *On the Plurality of Worlds*. Lewis's arguments are well known and have been subject of a long series of responses. I do not intend to discuss at length this well-established debate, but rather focus on those aspects of it which are relevant for the issue at hand, namely whether there is something like a *puzzle* about change. My central contention will be this: though the way Lewis and others present the *PTI suggests* that there might be a *puzzle* about intrinsic change, this is only a suggestion and one that we should better ignore. Instead, we should understand the *PTI* as a metaphysical problem of a different sort: the metaphysical problem of explaining in very general terms how persisting objects undergo intrinsic change. This recommendation is in accordance with the general moral that I will draw from our discussion in the next section: philosophers of persistence should not pretend that they are solving a puzzle about change and should acknowledge that their efforts are still valuable even if there is no puzzle of change to solve.

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[9] Thanks to a referee for *dialectica* for pointing this out.

[10] Notice that the disambiguation move does accomplish what it is intended for: to show why, contrary to appearances, there is no contradiction in saying that the apple is *the same* and *not the same*. It can be argued in reply that the disambiguation does not go deep enough, given the intimate relation between numerical and qualitative identity (see Wasserman 2006). But this reply actually concedes that the real problem, if there is one, is not in the apparent contradiction that we are considering –that the real puzzle is rather to be construed in terms of either Sider's or Haslanger's versions discussed above.

It is natural to take Lewis's discussion of the *PTI* as just one further attempt to generate a puzzle about change, with the focus on intrinsic change. In fact, this is suggested by how Lewis introduces the subject: "[the] problem of temporary intrinsics which is the traditional problem of change". (Lewis 1986, 202). Many philosophers have followed Lewis in this identification, taking the *PTI* as nothing but the old problem of change, with the minor peculiarity that the focus is made on *intrinsic* change. (From this perspective, Lewis's special interest in *intrinsic* change in fact distracts from the more general issue, which concerns all kinds of change in the same way.[11]) Moreover, Lewis's formulation of the problem actually invites the thought that we are facing a puzzle, in the sense we have defined. Consider the following two quotations:

> Persisting things change their intrinsic properties. For instance, shape: when I sit I have a bent shape; when I stand, I have a straightened shape. Both shapes are temporary intrinsics properties; I have them only some of the time. How is such change possible? I know of only three solutions. (…) (It is not a solution just to say how common place and indubitable it is that we have different shapes at different times. To say that is to insist – rightly – that it must be possible somehow (…). (Lewis 1986, 203-204)

> Nothing can have the two incompatible shapes, bent and straight. How does having them at different times help? (Lewis 1988, 65).

In these two passages, the suggestion that we are facing a *puzzle* about change is reinforced by the *how-is-it-possible* question and by Lewis's talk of different '*solutions'* that would explain how it is possible what seems otherwise impossible. But if there is a puzzle about intrinsic change, what is it exactly? What is the contradiction that we would be left with if none of the three solutions worked? The answer to these questions is not straightforward. Even if Lewis suggests that there is a threatening contradiction here, he does not state a

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[11] Cf. Hawley p. 16: "the label ['problem of temporary intrinsics'] is misleading for, as we will see, intrinsic change is not inherently more problematic than change in extrinsic features, and thus I will simply refer to the 'problem of change'". See also Haslanger (2003), p. 329 and Rodriguez-Pereyra (2003). Johnston (1987) also thinks that the *PTI* is just a particular case of the more general problem, but he thinks that focusing on intrinsic change helps to "more vividly illustrate" the general problem (p. 113).

puzzle explicitly, i.e. he does not lay out a set of seemingly true claims about intrinsic change from which a contradiction could be derived.[12] Instead, what he offers is an objection against RTT-endurantism – an objection that I will discuss in a moment.

However, even if Lewis does not explicitly present a puzzle about intrinsic change, we may try to construe one along the following lines.[13] We pointed out, in our discussion of Haslanger's argument, that there is nothing intuitively problematic in objects having incompatible properties *at different times*. But perhaps the problem could be pushed forward if the properties in question are intrinsic. It may be argued that if P is an intrinsic property, no object can both have and lack P, *even at different times*. Suppose otherwise: P is intrinsic and x has P at t_1 and it lacks P at t_2. Given that P is intrinsic to x, x's having P should depend only on how x is; this is what being intrinsic means. However, in the present case, x's having P does not depend only on x (which both has and lacks P). It also depends *on which time* we are considering. So, contrary to our initial assumption, P is not intrinsic after all.

On my view, this argument rests on a mistaken assumption, and this is the reason why it also fails to ultimately constitute a puzzle. The assumption in question is that the time at which a property is temporarily had is necessarily something on which the having of the property *depends*. But in general, that x has P at t_1 and not at t_2 does not imply that x's having P depends on t_1 (or t_2). It may still well be that x's having P does not depend on anything other than "how x is", and thus be intrinsic to x. For instance, a persisting candle that is straight only at t_1 is arguably straight and not straight (at different times) in virtue of how it is – the particular time at which it is straight does not play any role in determining that it is so. In sum, being had at a time does not make a property extrinsic. And since there is no problem in having incompatible properties *at different times*, there is no problem in

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[12] At least, he does not do so in his (1986), (1988), and other discussions of the *PTI*, such as Lewis (2002). But in the introduction to his *Papers in Metaphysics and Epistemology* he writes: "if something endures identically through time while gaining or losing an intrinsic property, we have a prima facie contradiction: the very same thing both has and lacks an intrinsic property" (p 3). In this passage, it appears that Lewis identifies the *PTI* with a puzzle like Haslanger's. Thanks to a referee for *dialectica* for pointing to this passage.

[13] Thanks to an anonymous referee for *dialectica* for urging me to consider the following argument. It is doubtful, though, that this argument is what Lewis had in mind. See Wasserman 2003, section II for discussion of this last point.

x's being *P* at *t₁* and not being *P* at *t₂*, even when *P* is intrinsic. Once again, this is not a puzzle that might motivate the adoption of a theory of persistence.

Fortunately, we do not need to suppose that there really is a puzzle about intrinsic change in order to make sense of Lewis's discussion. Instead of talking about "solutions" that explain how something (otherwise impossible) is possible, Lewis might well have said: "I know of only three *general descriptions* of what happens whenever I change my shape". This alternative way of talking does not carry the implication that the phenomenon described is *puzzling*, or that the three competing descriptions are offered as ways out from contradiction. We can take the views just as very general explanations or descriptions of what happens when an object changes its intrinsic properties. And we can take the *PTI* as the demand of such an explanation or description, but one that is not based on the threat of paradox.

Before closing this section, I would like to take care of a loose end: as mentioned above, much of Lewis's discussion of the *PTI* is actually devoted to lay down a particular objection against RTT-endurantism. The objection is that RTT-endurantism misconstrues the real nature of some intrinsic properties, like shapes: we know, according to Lewis, that shapes are monadic properties and not relations, as they would be if RTT-endurantism were true. Now, someone might suggest that this objection *itself* constitutes a puzzle about intrinsic change: it may be said that *the RTT-endurantist faces a puzzle* if she wants to accommodate the alleged intuition that shapes are monadic properties, because this intuition is obviously prima facie incompatible with her view. But even if this may be a puzzle after all, it is not the one we were interested in the first place: it cannot be identified with the traditional problem of change or with the *PTI*, because under the assumption that these were puzzles, RTT-endurantism was supposed to be a solution rather than part of the problem. Another difference with the alleged puzzles considered in section 1 is that, unlike them, Lewis's objection to RTT-endurance relies on a very sophisticated metaphysical intuition. The claim that shapes are monadic *properties* (not to be conflated with the claim

that *predicates* for shapes are monadic) is arguably not supported by any ordinary intuition – it is rather a highly theoretical claim about which ordinary speakers know nothing about.[14] So even if Lewis

This diagnosis of Lewis's objection to RTT-endurantism (that it cannot be identified with the *PTI* itself, and that it is relies on highly theoretical assumptions) also applies to a related objection against endurance that is considered and dismissed by R. Kurtz (2006). Unlike Lewis's original objection, this second objection is based on a general principle rather than on intuitions about the nature of particular properties. This general principle is what Kurtz calls 'Atemporal Instantiation' (AI), and states as follows:

(AI): If an object is the proper subject of a property, then (i) the object has that property, and (ii) facts about time and tense are irrelevant to the truth of the proposition that the object has that property. (Kurtz 2006, 13)

Now, as before, we can say that the RTT-endurantist faces a puzzle if she tries to accommodate AI with her account of persistence and change, since AI rules out her proposed model of property exemplification. (Notice that Kurtz intends AI to rule out even the possibility that a book be the proper subject of "time-indexed" properties, like *being open at t_1*.) But, again, this is a puzzle in which RTT-endurantism is part of the problem rather than a solution to it. Moreover, the principle does not seem to follow from an ordinary conception of what it is for an object to instantiate a property, since we ordinarily think of objects as having their properties *at times*. We think of the property of *being open* as something that is had by the book (its proper subject) *at some times in which it exists* rather than atemporally – a fact of ordinary thought that is reflected in language by the presence of tense. Is there any *theoretical* motivation for AI? One such motivation may come from a certain view about the nature of *fundamental* properties, i.e. the most basic properties on which all other properties supervene. It may be argued that even if AI is not generally true, a restricted version of it concerning only fundamental intrinsic properties is. That is to say, even if most of the properties attributed by ordinary predication are temporally instantiated, fundamental properties are instantiated atemporally, in the sense

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[14] For discussion of this point see Haslanger (2003), Sider (2001) and Wasserman (2003)

specified by AI; temporal instantiation cannot go all the way down to properties belonging to the most fundamental level.[15] If this conception of fundamental properties is adopted, the objection to RTT-endurantism may then be valid, but it would be the result of a sophisticated metaphysical view of the nature of fundamental properties, rather than just some platitudes about change. Thus, and as we said with respect to Lewis's original objection, the present objection to endurance cannot be identified with the traditional puzzle of change.

3. Conclusions.

We have considered some major attempts to generate a puzzle about change that could motivate the debate about persistence, and found them wanting. Contrary to what many philosophers seem to believe, change is *not* a puzzling phenomenon. It may be thought that this leaves theories of persistence ill-founded or lacking any real motivation. I do not think this is the case, as I will explain in what follows.

It seems that the reason why the phenomenon of change has attracted the philosopher's attention is that it cross-cuts many issues of independent philosophical interest (see Wasserman 2006). The list includes issues about the existence of temporal parts, about temporal qualification (i.e., about what it is for an object to have a property at a time), and about the nature of time. It is undeniable that all of these issues are prima facie of genuine interest by themselves, and that the different views that one could take about them will determine how one thinks about change. Thus, one can thus focus on the phenomenon of change as a starting point for discussion of the different views about

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[15] Something like this may have been Lewis's own view. Lewis (2002) clearly states that he has nothing to object to "time-indexed" properties like *being bent at t* as long as 'they are not alleged to be fundamental properties of the sort that might figure in a minimal basis on which all else supervenes' (p. 4). This suggests that Lewis's objection to RTT-endurantism may ultimately depend on certain conception of fundamental properties – one that may be captured by a restricted version of AI. It is clear that on the Lewisian picture, fundamental properties satisfy AI: these properties are exemplified by instantaneous stages and as a result, "facts about time and tense" are irrelevant to the truth of the proposition that a given such property is exemplified. What is not so clear is whether there is any motivation for this restricted version of AI that is independent of the adoption of the ontology of instantaneous stages, and thus dialectically appropriate in an argument against endurantism. The desire to have an austere repertoire of fundamental properties may be one such motivation, but of course this austerity at the level of fundamental properties is compensated by overpopulation at the level of individuals.

temporal qualification, temporal parts, time, etc. This is probably a fruitful strategy, but it does not justify the idea that there is a puzzle about change, for which the views under consideration are a solution. The phenomenon of change can still be considered as an especially interesting junction point, even if there is no puzzle there to solve.

This said, one might think that the puzzle of change is a useful fiction. That is to say, even if there is no puzzle of change, the pretension that there is one may be useful for presenting, classifying and discussing the different philosophical views that, as we have just noticed, have some bearing on how we think about the phenomenon of change. I would like to point out some limitations of this strategy. First, this way of presenting the different views about persistence and time makes them appear less well motivated than they actually are. To take just a couple of examples, the adoption of views like *presentism* or *standard perdurantism* is likely to be deemed as an overreaction to the problem of avoiding the contradiction lurking in the alleged puzzle of change. The alleged puzzle seems immediately too easy to solve, independently of the adoption of those (perhaps) radical philosophical views. Second, the pretension that there is a puzzle about change may be responsible for a certain bias in the contemporary discussion of change, in particular for the fact that this discussion has focused excessively on the restricted phenomenon of *intrinsic change*, in detriment of non-intrinsic change and *mere* persistence – persistence without change. My guess is that it was mainly the interest in generating a puzzle that has relegated these phenomena to a secondary position: compared with intrinsic change, non-intrinsic change and mere persistence were probably considered less likely to generate a puzzle, and thus less worthy of attention.[16] But as we have noted above, at the end of the day, many philosophers think that non-intrinsic change is as worthy of attention as intrinsic change. Moreover, many also acknowledge that the issue of temporal qualification itself is what really interests them when they discuss the problem of change.[17] Thus, giving up the pretension that there is a *puzzle of change* helps to bring these phenomena (non-intrinsic

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[16] A clear example of this is given by Johnston's remarks above to the effect that focusing on intrinsic change helps to "more vividly illustrate" the general problem of change. It is clear in Johnston's discussion that by "vivid illustration" he means a puzzle, in the sense defined above. See Johnston (1987) p. 113.

[17] Cf. Hawley (2001), p. 16: "I will simply refer to the 'problem of change'. But the underlying issue is not specifically about change. Rather, it is about what underpins our talk about objects as they are at different times—what, if anything, can we say about how a persisting object atemporally is, and how does this relate to our talk about how the object is at different times".

change, temporal qualification) back as legitimate explananda alongside intrinsic change, a result that will be welcomed by most philosophers of persistence.

In sum, nothing justifies the pretension that there is a puzzle about change. A final point to notice is that, even if there is no puzzle of change, there remain some other puzzles that somehow or other involve change. As an example, consider the famous puzzles based on the story of the ship or Theseus, the Parfitian cases of fission and fusion, and even the "temporal versions" of the puzzles of material constitution. Nothing I have said here undermines the idea that these are real puzzles. But they are not puzzles *about change*, or not only about change, since they crucially depend on assumptions (about ships, persons, the possibility of co-location, etc) that go far beyond Leibniz's Law and the fact that objects persist and change over time.[18]

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