

The Meta-Problem of Change

THOMAS HOFWEBER

University of North Carolina at Chapel Hill

1. Introduction

One of the central problems in metaphysics over the last so many centuries has been the problem of change. It plays an important role in a variety of large scale metaphysical debates, in particular the philosophy of time and the metaphysics of material objects. The problem of change is not merely an end game consideration in these larger debates. It is one of the deciding points for which metaphysical view about time and objects one should adopt. Several philosophers have argued that their theory of time or objects is to be preferred since it gives us the best, if not only, solution to the problem of change.¹ The problem of change is thus conceived as a problem that a metaphysical theory of time and objects has to solve. And as such it is a central problem in metaphysics.

But it isn't clear if this role of the problem of change is legitimate, since it is not at all clear what the problem of change is, and why it is a metaphysical problem. What is the problem that change gives rise to, and why is it a problem for metaphysics to solve? This question is a largely neglected one, and the answer isn't at all clear. Many authors who discuss change as a metaphysical problem are rather vague about this. But it is well worth having a closer look at it. In particular, once it is clear what kind of problem the problem of change is, it should be clear what kind of solution one can hope for.

This issue quickly goes beyond the problem of change. It leads to the question how metaphysics relates to other disciplines, and what is distinctive about it and its methods. As we will see, many other disciplines address change, and if there is metaphysical work to be done about change as well, it will have to go beyond what is already done in other fields. Thus change

can be a case study for how metaphysics relates to other areas of inquiry, what a metaphysical problem is, and with what methods it is supposed to be solved. I will attempt to make progress on these larger issues by considering the problem of change as our case study. Not that what I will say about the problem of change necessarily carries over to other metaphysical problems, but a look at the problem of change with these larger issues in mind might prove to be quite useful and illuminating.

2. Three Problems about Change

We can distinguish three kinds of problems related to change. At most two of them are philosophical problems.

2.1. *Empirical Problems of Change*

Take a standard example of change: a candle is left next to the window, and after a sunny day it is bent. This and similar cases of change are change in the empirical world, and the empirical sciences try to understand them. Why did this change occur? How was it possible? I take it that for this example the answer is known, although not in detail to me. The story will come mostly from material science. It will include an account of the effect of sunlight on solid matter, the structural integrity of wax and its dependence on temperature, the effects of gravity, and so on. To explain the occurrence of this change in the candle is a substantial and difficult task for the empirical sciences, although in this case, as in many other cases, the correct explanations are known. Problems of change of this kind are *empirical problems of change*. They are the problem to explain why a particular change occurred. It is the domain of the empirical sciences to answer these questions, and given how well the empirical sciences have been doing, many, but not all, of them have been answered.

2.2. *The Metaphysical Problem of Change*

The *metaphysical problem of change* is one that is properly within the domain of metaphysics, and thus philosophy. It is commonly put as the problem to say how change is possible. But how does the metaphysical problem relate to the empirical problems? The empirical problem of saying why the candle got bent, or how it was possible that it changed its shape, even though no one touched it, has been solved. Material science has given us an answer to this question. So, given that we know how this particular change was possible, what is there to do in finding out how change is possible? It would seem that once you know how a particular change was possible, you know how change is possible. What is there to do for philosophy, given what has been done by the sciences? One way to think of it is as follows. The explanation why the candle changed its shape relied on the change in temperature of the

wax, which in turn was explained by a change in sunlight during the day. Thus the empirical explanations explain the occurrence of one change by citing another. But maybe in explaining how change is possible this can't be done. Maybe this question should better be stated as 'how is change possible at all?', and in trying to explain this one is not allowed to use change in the explanation. Thus such an explanation would have to explain a change without relying on some other change.

But this can't be what the metaphysical problem of change is supposed to be. That any change can be explained without citing some other change is a substantial empirical hypothesis, closely related to the hypothesis that certain events have no cause. Maybe our world contains such changes, like the decay of an atom, changes that happen not because something else happened, but they just happen. Why the particular decay occurred is not explained by citing some other change. But such an explanation is again an empirical explanation, and to demand that some changes be explained that way is to subscribe to a substantial empirical hypothesis. The metaphysical problem of change can't be based on this empirical hypothesis, and thus can't be that problem. But then, what is the metaphysical problem of change?

One option is to say that the empirical accounts of change do not answer how change is possible. They assume change to be possible and then explain particular changes. The empirical sciences have metaphysical presuppositions, ones that are not themselves established by the sciences, but that are simply assumed to be the case. Metaphysics has to establish them.² But if this is correct then science does not by itself establish that the candle changed, nor how or why it changed. This is only established once philosophy has figured out that change is possible at all. If it turns out that philosophy sides with change not being possible then the metaphysical assumptions of the sciences are not met, and their presuppositions fail. Scientists of all kinds should thus look at philosophy with great anticipation, hoping that their metaphysical assumptions turn out OK, otherwise the sciences would just be plain wrong. Such a conception of the relationship between philosophy and the sciences surely was popular in the history of our discipline, as Descartes' metaphor of the tree of knowledge illustrates. But hardly anyone would hold it these days, and rightly so. The sciences by themselves do establish the conclusions of their theorizing, without the help from philosophy, and it is reasonable to believe the results of our best sciences, despite the shortcomings of philosophy. In particular, it is reasonable to believe what is implied by these results. The sciences have shown how and why the candle changed, and thus what they have shown implies that something changed, which in turn implies that change is possible. The success of the sciences is so impressive that it would be anything but excessive immodesty on the part of philosophy to think that anything it can do could turn this success into failure. When science and philosophy clash, it seems wise to put ones chips on the sciences.

David Lewis nicely describes a similar situation in the philosophy of mathematics.³ He considers a philosopher who holds that the mathematical statement that there are infinitely many prime numbers is hostage for its final support to the philosophical confirmation that there are numbers at all. He then imagines the philosopher going to the mathematics department, with the bad news that philosophers have discovered that there are no numbers after all, and that the mathematical work on numbers thus should be stopped. But this would be absurd, given the great success of mathematics, and the embarrassing list of philosophy's great discoveries. And the same would hold for the metaphysician going to the material science department. That philosopher telling the material scientists that change isn't possible after all, and that their account of how the candle changed thus is to be rejected would be equally absurd and immodest. And it is hard to imagine that the metaphysical problem of change, whatever it may be, has to rely on this attitude towards the relationship between philosophy and the sciences. Can't it be that there is a metaphysical problem of change without having the immodest attitude towards scientific explanations of change? If there is such a problem, we will have to hear more about what it is, and how it relates to the empirical accounts of change.

2.3. *The Meta-Problem of Change*

The *meta-problem of change* is the problem to say what the metaphysical problem of change is, in what sense it is a metaphysical problem, and how it relates to the empirical problems of change. The meta-problem of change is thus a problem about the metaphysical problem of change, in particular in what sense the latter is a metaphysical problem. It is thus a problem about metaphysics, and therefore a problem in meta-metaphysics, the philosophical discipline that tries to understand metaphysics and its relationship to other kinds of inquiry.⁴ The main goal of this paper is to attempt to make progress on this problem.

One strategy to make progress in the meta-problem of change is to attack it top-down. This strategy is to first develop a meta-metaphysics, that is to say what metaphysics is and how it relates to the sciences. Then one would try to find room for the metaphysical problem of change, given what one said about metaphysics. But this strategy strikes me as wrong headed. For one, metaphysics is a complex and diverse discipline, and there is little hope to come up with a simple story of metaphysics as a whole. Any attempt to do so will be at least as hard as saying directly what the metaphysical problem of change is supposed to be. Thus the better strategy is to attack the meta-problem of change bottom-up: look at different candidates for what the metaphysical problem of change is supposed to be, and see how it relates to the sciences on these accounts. This is the strategy I want to pursue here. We will thus in the following look at different proposals about what the metaphysical problem of change is. These proposals try to locate

the problem of change as a general kind of problem, one for which one has a story why this kind of problem is a metaphysical problem. The following ways to specify the problem of change are the most commonly proposed ones, and the most important, it seems to me. Once we have looked at them more closely we will be in a position to say what metaphysical problem the problem of change is, and what role it should play in the philosophy of time and material objects.

One aspect of the meta-problem of change is to say in what sense the problem of change is a metaphysical problem. But there is another dimension as well. This dimension is in what sense there is a *problem* about change. We should distinguish at the outset between a *metaphysical story about change* and a *solution to the metaphysical problem about change*. The latter assumes that there is a problem, and proposes a solution to the problem. The former can be given even if there is no problem at all. Someone might propose a story about change as part of a metaphysics of time and objects, and someone else might propose a different story, none of which might attempt to solve a specific problem that change gives rise to, they might merely talk about change as part of their competing metaphysical accounts of the world. In particular, how well these accounts do overall can't be settled by looking at how well they solve the problem of change, if there is none. But if there is a metaphysical problem of change then we can look at these accounts and ask how well they solve it. And this can give us some guidance in picking a larger metaphysical picture of time and objects. So, besides the question why the work that needs to be done about change is metaphysical, there is the question if an account of change has to be a solution to a problem. Depending on what one says here, it will give rise to different roles that these accounts of change might play in the larger overall metaphysical picture. This will be of relevance later. But first we should look at metaphysics, and its relation to the sciences.

2.4. *The Domain and Methods of Metaphysics*

Although it seems pointless to first develop a story about what metaphysics is and how it should be pursued, there is a general problem about metaphysics and its relation to the sciences, one that arises for those who have *the modest attitude* towards philosophy, i.e. who hold that science can stand on its own, without needing the results of philosophy to finally confirm what until then has been left in limbo. I will call this problem the *separation problem*. If we have the modest attitude then any philosophical inquiry needs to be sufficiently separate from the sciences, unless it merely aims to make explicit and spell out the results of the sciences for problems that are generally considered to be in the domain of philosophy. Call *unambitious metaphysics* the project of spelling out the implications of the results of the sciences for problems that are traditionally called metaphysical ones. Such a project will look at what the sciences have to say, and then say what this means for classic

metaphysical problems. For example, unambitious metaphysics could look at physics to see what it says about time, and make this explicit in the context of the traditional metaphysical debate about time. Such a project will not solve problems on its own, merely make explicit the solutions others have provided. On the other hand, *ambitious metaphysics* is the project to answer metaphysical questions within metaphysics. It is a discipline that can stand by itself, maybe taking hints and ideas from other disciplines, but in the end being able to solve its own problems, possibly with its own, distinct methods.

When it comes to the problem of change, there is little work to be done for unambitious metaphysics. If there is a metaphysical problem of change at all, it is one that is in the ball park of the ambitious project, a metaphysical problem that asks for a metaphysical solution. But ambitious metaphysics, if there is to be such a discipline, faces the separation problem. Ambitious metaphysics has to have its own domain. That is to say there have to be certain questions whose answer is not settled by the other disciplines of inquiry, in particular the sciences. Thus there have to be certain propositions such that the results of the sciences do not imply whether or not these propositions are true or false. The modest attitude together with the ambitious project of metaphysics require that this be so. If the results of the sciences imply an answer to the metaphysical questions then the modest attitude will require us to accept that answer, and thus there is no reasonable project of metaphysics to investigate these questions. Whatever the sciences will say will be authoritative. But ambitious metaphysics has questions of its own, ones the sciences don't answer. Thus if one is to pursue ambitious metaphysics with the modest attitude, then metaphysics has to have its own domain, propositions whose truth or falsity only metaphysics establishes. The question what these propositions are is the *question of the domain*: what is the domain of ambitious, yet modest, metaphysics? If there is such a domain at all, it will have to be separate from the domain of the sciences. The propositions in the domain of the sciences can't immediately imply the truth or falsity of the propositions in the domain of metaphysics. A domain for metaphysics will have to be sufficiently separated from the rest. How this can be is the separation problem.

If metaphysics has such a domain then this gives rise to the *question of the method*: how is metaphysics supposed to settle questions that are in its domain? What methods is metaphysics supposed to employ to answer its questions? Both the question of the domain and of the method are important and difficult questions. How things turn out in these respects can be different for different parts of metaphysics. For example, I think they are quite different for problems in ontology than they are for our present case: the problem of change. To illustrate the separation problem with another case, let me briefly discuss the case of ontology, and outline the answer I prefer in this case. This will illustrate the general problem, and contrast with the solution to the same questions about the problem of change developed in the rest of this paper.⁵

Ontological questions about numbers are usually understood to be questions like

- (1) Are there numbers?

But it is not clear how there could be a metaphysical inquiry into this, one that might lead to a yes or a no answer. After all, it appears that an answer to this question is implied by what is known in mathematics. For example,

- (2) There are infinitely many prime numbers.

implies

- (3) There are numbers.

and thus answers the question. So, the question for ontology is: how can you separate the metaphysical question you want to ask from the mathematical answers that seem to be already established for it. One unsatisfactory approach to this is a collision course, as Lewis imagines it above. Mathematics and philosophy address the same questions, both with their own methods, and one or the other might win if the answers they propose are in conflict. This is not the best philosophy should hope for, since in case of such a conflict, it would only seem reasonable to side with mathematics rather than philosophy. After all, how could philosophy hope to know more about numbers than mathematics? And this might be taken to show that the ontological question about numbers is settled in mathematics, and thus isn't properly in the domain of metaphysics. Whatever metaphysical work there might be left to do about numbers, it has to be something else.⁶ Thus if the ontological questions about numbers are not separated from the answers mathematics has given then there is no legitimate philosophical project of ontology in the case of numbers. Philosophy has nothing to contribute here. But maybe there are other answers as well.

I have argued that the separation problem can be solved in the case of ontology.⁷ The solution involves the acceptance of a version of Carnap's internal-external distinction, but one that is in important ways different from Carnap's. The sentences we use to express the ontological questions are polysemous, they have several closely related, but different, readings. On one of them the question is answered by mathematics, but that is not the one that is used when asking the question we want to ask in ontology. On another, equally meaningful, reading of the same sentence we ask an ontological question. And this one is not answered by mathematics. In particular, and contrary to Carnap, both the internal as well as the external questions are meaningful. And furthermore, rather than leading to a rejection of ontology and metaphysics, I think an acceptance of an internal-external distinction

saves ontology as a metaphysical discipline with its own domain. As it turns out, to settle questions in ontology on this account does not involve a special metaphysical method. It mostly involves questions about language and the mind, questions that are addressed in linguistics and the sciences. In the case of ontology, there is a metaphysical domain, but no special metaphysical method.

I mention this particular case of the separation problem only to illustrate the general issue. The rest of this paper does not rely on it. In particular, it does not directly carry over to establishing a separate domain or method for a metaphysical theory of change. If there is a metaphysical problem of change, one that has its own domain, independent of scientific accounts of particular changes, it will have to be established in a different way. How this might be done is the topic of the following.

3. Change as a Conceptual Problem

One of the most important ways of presenting the problem of change as a metaphysical, or at least philosophical, problem is to think of it as a conceptual problem. To call change a conceptual problem is to say that the conceptual scheme that we employ when we describe the world as containing objects that change is somehow incoherent. And this incoherence can be traced to our concept of change. We should distinguish two kinds of conceptual problems about change. On the one hand change could be a *pure conceptual problem*. That is to say that our concept of change by itself, together with possibly other conceptual or logical truths, gives rise to contradictions. On the other hand, change could be an *impure conceptual problem*. This is to say that conceptual truths about our concept of change together with other assumptions lead to a contradiction. These other assumptions could be metaphysical assumptions, or even empirical ones. If change is a conceptual problem in one of these senses then it will have a particular kind of solution, or remedy. If change is a pure conceptual problem then the solution will either be to adopt an error theory about change, i.e. nothing changes, or we will have to revise our concept in such a way that the contradiction vanishes. If change is an impure conceptual problem then we have the above options, plus the option of giving up one of the additional hypotheses. The latter is, of course, only a good strategy if these hypotheses are essential in giving rise to the contradiction. Either way, revision of our conceptual scheme is properly a philosophical enterprise, or so we can grant, and thus if change is a conceptual problem then it can legitimately be seen as a metaphysical or philosophical problem. This might not be in conflict with empirical explanations of change. It might well be that what aspect of our concept of change gives rise to the trouble is one that science can live without, and that science would be just as well off with a revised and improved concept of change, one that we will have after the

concept has been cleaned up. The question thus is: is change a conceptual problem?

There are many arguments that aim to show that change is a conceptual problem in some form or other. We will discuss the two most central and important ones. Once we see what the proper response to these is we will be in a position to say whether change is a conceptual problem.

3.1. Change as a Conceptual Problem: Version 1

The following argument is often heard in discussions about change:

Change requires sameness. The object that changes has to be the very same before and after the change. Otherwise *it* wouldn't have change. But change also requires difference. The object has to be different before and after the change, otherwise it wouldn't have *changed*. But nothing can be both the same and different. So change is impossible.

This argument is no good. It confuses numerical and qualitative sameness and difference. Change requires an object to be numerically the same and qualitatively different. It has to be one and the same object that first has one feature, and then a different one. But numerical sameness and qualitative difference are quite different, and thus there is no conceptual contradiction when something is both the same and different in the relevant sense, since it is the same in one sense of the word, numerical sameness, and different in another, qualitative difference. This is not to say that nothing interesting should be said about numerical sameness and qualitative difference. But here we want to see whether or not our conceptual scheme of describing the world as containing objects that change is internally incoherent. The distinction between numerical and qualitative sameness and difference shows that the above argument does not establish this. This distinction is itself internal to our conceptual scheme, it is not a revision from the outside. But to argue that change is a conceptual problem one has to show that our concept of change leads to contradictions. The above argument does not establish this. It might give rise to some philosophical work, since pointing out where the argument goes wrong is a piece of philosophy, but this does not give rise to a problem of change, just as a bad argument that aims to show that telephones are impossible does not give rise to a problem of telephones.

3.2. Change as a Conceptual Problem: Version 2

The above argument for change being a conceptual problem does not work, but there is another argument for the same conclusion, one that is much more widely put forward, often as an argument for change being an impure conceptual problem. This argument comes in many forms, but in essence it is as follows:

- (4) a. Change involves an object first having one property, and then having another, incompatible property. (conceptual truth about change)
- b. The object having these properties is one and the same object. (conceptual truth about change)
- c. Nothing can have incompatible properties. (general logical truth)
- d. Thus: change is impossible, since if it occurs something would have incompatible properties.

More elaborate versions of this argument would say more about what it is for an object to have a property, and thus elaborate on premise (4a). Or it would spell out in more detail what it is for an object to be one and the same, and thus elaborate on (4b). These elaborations often involve particular metaphysical theses about what it is for an object to have a property, or what it is for an object to be the same at different times, and spelled out this way the problem turns into an impure conceptual problem. Most of the debate is then about these additional metaphysical theses, and thus about the parts that make the problem an impure one.⁸

The above argument has an interesting feature in that professional philosophers, metaphysicians in particular, have a quite different reaction to it than non-philosophers, say undergraduates who are presented with this problem for the first time. It seems to me that the non-philosophers get this one right.

Whereas the metaphysicians reject the argument by elaborating on premises (4a) or (4b), spelling out what it is for an object to have a property, or for an object to exist over time, while not questioning premise (4c), non-philosophers usually reject premise (4c). In fact, in a recent survey article Sally Haslanger calls premise (4c) “the law of non-contradiction” (p. 315) and says that “The law of non-contradiction is considered by all parties to the debate to be non-negotiable” (p. 328). But this “law” isn’t a law, at least not if understood in the way in which it has to be understood in the above argument. Let’s call (4c) neutrally ‘LN’, which could be read as ‘law of non-contradiction’, but really shouldn’t be. To make this clearer, let’s distinguish between what we’ll call the *atemporal version of LN*:

(AT-LN) Nothing can have incompatible properties.

and what we’ll call the *temporal version of LN*:

(T-LN) Nothing can have incompatible properties at the same time.

(AT-LN) and (T-LN) are meant to be different. Let’s make this explicit by stating what is implied by (AT-LN):

(AT-LN*) Nothing can have incompatible properties, not even at different times.

(T-LN) is indeed rather uncontroversial, but it, of course, isn't enough to get the above argument off the ground. What is needed is (AT-LN), in its strong form, (AT-LN*). What should we think about it? Now, the issue is not, at least not in this section, whether or not (AT-LN) is true. The issue is whether (AT-LN) is a conceptual or logical truth. In this section we want see whether or not change is a conceptual problem, and thus whether there is a contradiction that can be derived from conceptual truths plus possibly auxiliary premises. In the spirit of the above argument, (AT-LN) is considered a general logical truth. This is what is mistaken. If change is indeed impossible then (AT-LN) might well turn out to be true, but the question here is whether it is a general logical or conceptual truth that can be used to argue that change is somehow conceptually problematic.

So, is (AT-LN) a logical truth, or "the law of non-contradiction"? It is true that the most natural way to express it in first order logic turns it into a logical truth in first order logic:

$$(5) \neg\exists x(F(x) \wedge \neg F(x))$$

However, this does not mean that the English sentence (AT-LN) is a logical truth, at least not if it is meant as (AT-LN*), and not simply as the in fact rather uncontroversial (T-LN). The first order predicate calculus was developed to do formal inferences about a domain that doesn't change: mathematics. Thus the features of natural language that were taken over into this calculus were the ones which are relevant for the validity or invalidity of these inferences. Time did not play any role in it since it is irrelevant for mathematical reasoning, and thus the representation of time that we have in natural language did not make it into the calculus until later when people tried to do formal inferences about a domain that changes, and where these changes matter for the inferences. The formal logic suited for the latter task is not the usual version of the first order predicate calculus, but rather some form or other of tense logic, which one will in part depend on which inferences one believes to be valid in a changing domain. It is a mistake, though, to take a statement that is a logical truth in the impoverished first order predicate calculus, which is true in unchanging domains, like (5), and claim that it holds in all domains, changing or not. Only if we do the latter would be get something like (AT-LN*). But more reasonably we will get something like (T-LN), which is of course not sufficient to argue that change is a conceptual problem. Change will seem very problematic if we take a statement that is a logical truth in an impoverished language suitable for the description of a world of unchanging things, like mathematics, and claim that it applies universally, even in a world of changing things. But this confusion should not be taken to show that change is a conceptual problem.

3.3. Conclusion about Change as a Conceptual Problem

There are many similar arguments that try to show that change is a conceptual problem, and I won't be able to discuss them all. But I think they fail for similar reasons. First, they are based on a confusion, like version 1, which can be cleared up without conceptual revision. In this sense change is thus not a conceptual problem, but the argument that change is problematic is a bad argument, even by standards completely internal to our conceptual scheme. This does not turn change into a conceptual problem, and it does not motivate that change is a metaphysical problem. It might require philosophical work to make clear that the argument that aims to show that change is problematic is no good, but this applies to all bad arguments, and does not motivate that there is a metaphysical problem in the domain of the bad arguments.

Secondly, the attempt to motivate change as a conceptual problem relies on a premise like (AT-LN), which in its strong form (AT-LN*) is to be rejected as a conceptual or logical truth. If (AT-LN*) is true, this will have to be argued for, but can't be relied on in this debate. I thus conclude that change is not a conceptual problem. Our conceptual scheme of describing the world as containing objects that change is internally coherent. This, of course, does so far not mean much for the question whether or not change is a metaphysical problem. There are many more options to motivate metaphysical work about change. Revising our conceptual scheme is not one of them, though. If there is a metaphysical problem about change it must be something else.

4. Change as an Explanatory Problem

Even if change is conceptually coherent, there are plenty of options left to motivate philosophical and metaphysical work about change. In this section we will look at one of the main lines to motivate such work: explanatory tasks. If there is something about change that requires an explanation, and if this explanation is properly a philosophical or metaphysical one, then change would be an explanatory problem. As we saw above, particular changes of material objects will have empirical explanations, ones given by the sciences. But there might be other kinds of explanation as well, ones that are properly philosophical and not in conflict with the empirical explanations of particular changes. Thus for change to be an explanatory problem at least two things have to be the case:

1. There has to be a legitimate explanatory task related to change.
2. The explanation required has to be a metaphysical, or more broadly philosophical, explanation.

4.1. *Good and Bad Explanatory Tasks*

If change is an explanatory problem then there is something related to change that needs to be explained. Not everything can be explained, however, and not everything needs to be explained. Thus we have to be careful to see if what is demanded to be explained is indeed something that can legitimately be asked to be explained. What can legitimately be asked to be explained is, of course, controversial, but there are some limits that we can set without much controversy. Take, for example

- (6) Why is red a color?

I take it that if anything is a conceptual truth then that red is a color is one. Can we then explain why red is a color? The answer is actually not completely clear. Simply because something is a conceptual truth does not rule out that it has an explanation, or so I am happy to concede. After all, some mathematical truths can be explained, and it might turn out that mathematical truths are conceptual truths. Thus a mathematical explanation could explain a certain mathematical fact by citing certain other, in some sense more basic mathematical facts. I won't rule out that conceptual truths can be explained, but if they can be explained then what explains them has to be another conceptual truth, one that in some sense is more basic. It can't be that a conceptual truth is explained by an empirical truth. And this also applies to attempts to give metaphysical explanations of conceptual truths. If such explanations are possible at all they themselves will have to be conceptual truths. This reflects on what kind of metaphysical theory will be able to give such an explanation. Most contemporary metaphysical theories state a synthetic metaphysical hypothesis. They subscribe to a claim which is not itself a conceptual truth, but rather a synthetic claim about how the world is. This is contrasted with metaphysics as stating an analytic metaphysical hypothesis: an hypothesis that consist of a series of analytic or conceptual truths. An analytic metaphysical hypothesis is of limited philosophical interest, since most interesting theories involve synthetic claims, arguably all the ones that make statements in ontology, for example, and all metaphysical theories of time discussed these days involve synthetic hypothesis.

One might think that there are some general facts about change that require an explanation, but they most likely are conceptual truths. Examples might be:

- (7) Why does change involve an object first having one property, and then having another?

or

- (8) Why does change require that some time passes while the change happens?⁹

If these explanatory tasks require us to explain a conceptual truth then there is not too much to be done here. There might be such an explanation, but giving it would involve at best an analytic metaphysical hypothesis. In addition, our concept of change is so basic that it is hard to see how general conceptual truths involving it could be explained in any more basic terms. Thus in explaining these kinds of rather basic truths about change we have to watch out not to confuse the task to explain a conceptual truth about change with a deep metaphysical problem. So, once we watch out for bad explanatory tasks the question remains in what sense there should be a metaphysical explanation about change.

4.2. Version 1: Metaphysical Explanations

As we have seen above, there are many explanatory tasks about change, but they are part of the empirical problems of change. Why does the candle change its shape? Why does the leaf turn brown? Etc. What room is there for a metaphysical explanation about change? One way to look at this is to look at metaphysical explanation generally, and then to see how change fits in. A notion of a metaphysical explanation can be motivated by tying it to some notion of metaphysical priority, like metaphysical fundamentality, metaphysical reduction, or metaphysical 'grounding'.¹⁰ A metaphysical theory might propose that the most basic and most fundamental kinds of things or facts are those of one kind, and that the other things or facts somehow fit into the world by being derived from, or grounded in, or determined by, the most basic ones. Such a story can then propose to have given a special metaphysical explanation of how the non-basic things or facts fit into the world. And this explanation is distinctly metaphysical since it is derivative on a distinctly metaphysical notion of priority. And if one can ground change in this way then one has given a metaphysical explanation of change. This version of the problem of change thus asks for a metaphysical explanation of change.

However, this does not motivate a problem of change. It is one thing to give such an explanation, and another to motivate that such an explanation has to be given. After all, why can't it be that change is among the basic and most fundamental features of the world? To motivate a metaphysical problem of change is to motivate a problem that requires some metaphysical work, some work that has to be done. But this conception of metaphysical explanation or priority does not do that. It is one thing to say something about change, and another to motivate that something has to be said about it. The present conception of metaphysical explanation outlines how an explanation of change could be given that is distinctly metaphysical, assuming there is a legitimate notion of metaphysical priority on which it can be based. But it doesn't motivate that such an explanation has to be given. Without the latter we don't have a problem about change, just an example of a feature of the world which might or might not be basic. Thus so far we can at most

motivate a story about change, but not a solution to a problem about change, since so far there is no problem.

4.3. *Version 2: Why at Different Times?*

Even though change is conceptually coherent, there can be many things about it that ask for an explanation. Probably the best candidate of an explanatory task about change that relates to a particular feature of change is the following. Everyone agrees that nothing can have incompatible properties at the same time. But if change happens then something can have incompatible properties at different times. But this difference between it being contradictory to have incompatible properties at the same time, but not to have them at different times might seem in need of an explanation. Why is there this difference? What explains that crucial difference between ‘at the same time’ and ‘at different times’? In other words, we have to explain the following:

- (9) Why is it that something can have incompatible properties at different times, but not at the same time?

This is either the deepest problem, or the shallowest problem. Those who think it is the deepest problem hold that to explain this one needs to give a substantial metaphysical account of time, and to say how time makes this possible. Those who think it is the shallowest problem will think that the explanation is trivial. It seems to me that this is the shallowest problem, but it can be confused with the deepest problem if we don’t pay attention to what precisely the problem is, and what it isn’t. And we have to remember where we are in the overall dialectic. By now we are assuming that change is not a conceptual problem, that is, the concept of change is perfectly coherent. Thus if there is any metaphysical work to be done in solving the metaphysical problem of change, it isn’t tied to the concept of change. In particular, we are not assuming that change can’t happen. What we are trying to understand now is what needs to be done to give a certain explanation, in particular to explain (9). So, what is the explanation why something can’t have incompatible properties at the same time, but can have them at different times? It seems the explanation is simple: a thing can have incompatible properties at different times since it might have changed in the meantime, first having one property, and then another, incompatible one. Just take an example: how is it possible that the candle has incompatible properties at different times, but not at the same time? Simply because the candle might have changed from one time to another. It is a conceptual truth that an object that changes first, temporally, has one property, and then, temporally, another one. And it is a conceptual truth that change can’t happen ‘at the same time’. Thus we can see why this explains how an object can have incompatible properties at different times, but not at the same time.

I suspect that some will find this explanation unsatisfactory, and that they will claim that taking recourse to change is illegitimate here. But I suspect their suspicion will arise because they think that ultimately there is something wrong with change. If so, I would like to see what it is. It seems to me that the arguments that try to show that change is conceptually problematic are no good, and that given this, it is perfectly fine to cite change in an explanation. Here we wanted to know how something can have incompatible properties at different times, although not at the same time, and change explains that.

4.4. Version 3: Explaining Temporal Modification

A third explanatory task often associated with change is the following, which is related to the above one, but sufficiently different to be considered its own version. If we grant that it is contradictory to say

(10) An object *o* is *F* and also not *F*.

but not to say that

(11) An object *o* is *F* at one time, and not *F* at another time.

the question arises, how ‘at one time’ and ‘at another time’ make this contradiction disappear. We need to explain how this temporal modification changes a contradiction into a truth. This problem can be put as the problem to explain how temporal modification works, and how it makes something coherent that is otherwise a contradiction. And it can be put to explain why (11) does not imply (10), or any other contradiction.¹¹

This is an explanatory task that I think is a good one, but it isn’t one that is to be addressed in metaphysics. To see this, we should be clear what the task is and what it isn’t. And to see this we have to have a closer look at (10). It can be read in a number of different ways, and without saying more how it is to be understood our task remains unclear. (10) has at least two readings, an intended one and an unintended one. The intended one is

(12) An object *o* is *F* and also not *F* at the same time.

Whereas the unintended one is

(13) An object *o* is *F* and also not *F* at some other time.

Even though there is no explicit temporal modification in (10), this is simply a case of semantic underspecification, one where the semantic content of the sentence does not fully determine the content of an utterance of this sentence. (10) has at least two different readings, namely (12) and (13). When

we are considering questions about (10) we should be clear about what we are asking about: (12) or (13). And in this case presumably we are asking about (12), otherwise there is not much to explain.

In addition, the explanatory task is not how it can be that (11) is true while (12) is false. This is the task from the last section, and as we saw, that an object can change explains this. In this section we want to find out how temporal modification accounts for the truth of (11) and the falsity of (12). And I think there really is a task to be spelled out here. But it is a semantic task, not a metaphysical one. The legitimate semantic questions, for example, include how we should think of the relationship between the semantically underspecified sentence (10) and the two specifications, or readings, it has, namely (12) and (13). This is an interesting question about how we manage to communicate information with sentences that don't fully determine the content of utterances with them. As such there is no special issue about change here, but simply one of the semantic representation of temporal modification, and a larger issue of tense. This is on a par with many other semantic features that languages have, including aspect, negation, quantifier scope and so on. There is no special metaphysical issue about change here, but there is semantic work to be done.

4.5. Digression: Change as an Ontological Problem

Even if the semantic work about temporal modifiers in natural language and semantic underspecification is not properly metaphysical, one might think that there is a metaphysical problem about change in the neighborhood here: how is such temporal modification realized at an ontological level? This can be motivated as follows: we express properties and relations with our predicates, and for our sentences to be true there has to be an ontology of such properties and relations that are instantiated in the objects we are talking about.¹² Now we can ask questions about these properties and relations. How many argument places do they have in certain cases? Do they have an argument place for time? If not, what argument places are there, and how is temporal modification realized at an ontological level?

I don't think this is that different. If we assume that our description of the world is accurate, then the argument places of the property of being tall have to correspond to the argument places of the predicate 'is tall'. However, there is a real question about that predicate, namely whether 'on Monday', in 'is tall on Monday', is an argument or an adjunct. That is a real issue about predicate modifiers, and one that should be addressed in syntax and semantics. But is there a separate and different ontological question about how many argument places the property of being tall has? It seems not, since the property of being tall is expressed by the predicate 'is tall'. This is how we expressed this property, using that predicate.

In addition, we saw above that change is conceptually coherent. So the ontological problem of change is not to find a coherent ontology in which

things change their properties. Whatever the story will be about adjuncts and arguments of our predicates, it will give us a coherent ontology of properties and relations instantiated in things that change. There thus is no separate ontological problem about change.

4.6. Conclusion about Change as an Explanatory Problem

I am again skipping many other attempts to motivate a problem of change as a metaphysical problem that takes it to be the problem to provide a certain explanation, but I think, nonetheless, we can draw a conclusion. There are many things to be explained about change. There are many empirical changes that require an explanation, and there are explanatory tasks about natural language. But these tasks are carried out in the empirical sciences. What is missing, however, is a good explanatory task that motivates change as a metaphysical problem. If there is such a task, I don't know of it, and a good part of the literature on the problem of change doesn't spell it out, unless I missed it. I will thus conclude that change is not an explanatory problem. There is no explanation about change that has to be given in metaphysics. This, again, is not to say that there is no metaphysical problem of change, only that if there is such a problem, it has to be something else. There are more candidates to consider.

5. Change as a “Say More” Problem

The empirical sciences explain the occurrences of all kinds of changes. So, it would be tough for philosophers to question that change occurs at all, but there might be room for them to disagree over how change occurs. Change might simply be a general term and there could be different kinds of change. Change might be a determinable, with many different determinants. Thus the sciences might tell us that things change, and philosophy might tell us how they change, or what kind of change they undergo. Of course, the sciences themselves can distinguish different kinds of change, say change with a loss of energy, and without. But it just might be that there are two or more metaphysical conceptions of how things change, and metaphysics has to find out in which one of them things change. And that question is not how this thing changes, and how that thing changes. It is how things in general change, i.e. which one of several conceivable metaphysical kinds of change do things undergo. The problem of change is thus to say how things change in this sense. Which one of several metaphysical kinds of change is the one that things in fact undergo?

5.1. Change in Things and Change in Events

When we talk about change in ordinary life we seem to talk about two different kinds, and one might wonder if both of them really are change.¹³

Change has its two paradigmatic cases in change in events and change in things. When events change it is like a concert getting exciting after having a boring start. In that case the concert first is boring and then exciting, which is change. However, it seems that the concert itself, or the concert as a whole, does not change. The concert rather has a boring beginning and an exciting end. The concert as a whole always has a boring beginning and an exciting end, and so it seems that it does not change. Change in objects seems to be different. Intuitively, when an object changes then it is the object itself that changes, not the beginning or the end of an object. This gives rise to the question which one of these kinds of change is real change.

However, this question seems to me to be based on a confusion. It is true that our talk about change is interestingly different when we talk about change in objects and change in events. But the question which one is real change is misguided. The best way to think about this seems to me to be the following: the verb ‘change’, like most other verbs in natural language, is polysemous. It has different but closely related meanings or readings. Each one of them literally applies when it applies. Consider the analogous case of running a seminar. One might think that one can’t really run a seminar, since seminars don’t have legs. But that would be a mistake, since ‘run’ is polysemous, and according to one of its readings seminars can be run, but not according to another. And similarly for change. Some are inclined to say that the event didn’t really change, since it itself did not change, thereby using the reading we use to talk about objects. But it did really change, using the reading we use for events. So, we don’t have to decide which one is real change, change in objects or change in things. Both are. The next question, though, is how change in things relates to change in events. This question is usually tied to an important distinction of how things persist. We will look at this next.

5.2. The Endurance/Perdurance Distinction

There is a common distinction about objects persisting over time. It is supposed to be a metaphysical distinction, one about two kinds of existing over time. And it is supposed to be tied to two metaphysical kinds of how things change. The first way to persist is to endure. Intuitively, an object endures if it is all there at each moment at which it exists. It is ‘wholly present’, and the whole of the object first has a property, and then another, incompatible one, when an enduring object changes. The second way to persist is to perdure. A perduring object is spread out over time, it is not wholly present at each moment at which it exists, but only a temporal part of it is present at that moment. When a perduring object changes then first a part of it has a property at one time, and then another part has a different, incompatible property. The question thus is: how do things persist, and thus how do they change?

This way of motivating the problem of change depends on there being two coherent ways for a thing to persist, which come with two coherent ways for a thing to change. But whether this is so is not at all clear. There is an intuitive difference between an object being stretched out over time, and it being all there at each moment at which it exists, but it has proven to be notoriously difficult to spell out this distinction in a coherent way. However, the distinction can be spelled out precisely, but not in the way in which it is commonly attempted. This topic is slightly involved, and goes beyond the scope of this paper. I will thus in the following section outline material that is fully developed in another paper, (Hofweber and Velleman, 2009), which is joint work with David Velleman. In that paper we argue that the endurance-perdurance distinction can be spelled out coherently. After outlining this, we will go back to our discussion of change. As we will see below, this is a slight digression that is not absolutely necessary for my main conclusion, but it closely related to it, and since this issue is so central to much of the contemporary debate, it should be well worth to at least outline here what is defended in detail elsewhere.

5.2.1. *Parts Based Attempts to Capture the Distinction*

The distinction between endurance and perdurance is intuitively spelled out as the difference between an object being ‘wholly present’ or being all there, and it not being wholly present or all there. Not being wholly present is then understood as having temporal parts that exist at different times, whereas being wholly present is understood as not having temporal parts. It is difficult to capture this difference more precisely and in a coherent way.¹⁴ And there is good reason for this. In the paper cited above we argue that the parts based attempts to capture the distinction are doomed to failure, since one side of the distinction is not only true, but a conceptual truth. Thus these attempts try to capture a distinction where one side is a conceptual truth, and the other is conceptually incoherent. Not that one can’t spell out such a distinction, conceptually incoherent views can be clearly articulated. Nonetheless, there is a coherent distinction that is captured by the metaphors of being and not being wholly present. But it has to be spelled out differently, without recourse to temporal parts.

The parts based attempts to capture the distinction are doomed to failure since it is a conceptual truth that everything that persist has temporal parts. This claim is defended in the paper cited above, and I will only outline the argument here. It is based on the following claims:

- (14) a. Anything which is extended has parts. This holds for temporal as well as spatial extension.¹⁵
- b. To persist is to be extended in time.
- c. The above two claims are conceptual truths.

If these claims are correct then it is conceptually incoherent to hold that there are extended simples, objects that are extended, but don't have parts. And it is conceptually incoherent to hold that an object persists, but it doesn't have temporal parts. Anything that persists is extended in time, and anything that is extended in time has temporal parts. We also argue that even though these claims are claims about what exists, and thus claims in ontology, they can be conceptual truths. They are not absolute ontological claims, ones that simply assert that an object exists. We can grant that absolute ontological claims can't be conceptual truths. These claims are conditional ontological claims, ones that say that if something exists, then something else exists as well. Such claims can be conceptual truths if the objects in the antecedent and the consequent of the conditional ontological claim are picked out with conceptually rich singular terms. And similarly here:

(15) Anything extended has parts.

is such a conditional ontological claim that is a conceptual truth. It doesn't say that there is anything extended, nor that there are any parts, only that if there is something extended then there also is something else, its parts. If this is correct then the standard way of capturing the endurance perdurance distinction in terms of temporal parts is incoherent. But there is a coherent distinction to be captured.

5.2.2. *An Identity-Based Attempt to Capture the Distinction*

To think of an object being wholly present at a time, or all there at a time, shouldn't be seen to mean something about its parts. It should be seen to mean that what object there is is a fact that is determined at that single moment. That is to say, the identity of the object is determined at the single time alone, independently of earlier and later times. Intuitively we can say that an object is wholly present at a time if the identity of the object is *local to that time*, or, in other words, intrinsic to that time.¹⁶ Consider an ordinary event, like the performance of a play, and a particular moment during that play. What event is occurring is not local to that moment. Things could go in various ways afterwards, and could have gone in various ways before, so that this particular event would not have occurred. Thus whether or not this particular event is occurring depends on more than just one moment in time. The event isn't all there. Not just in the sense that not all parts of it are there at that moment, but in the sense that its identity is not fully determined at that moment. But not everything that persists has to be like that. Some things might be all there in this sense. Even though it is incoherent for something that persists to be all there in the sense that all parts are there at that moment, it is coherent for a thing to be all there in the sense that its identity is fully determined at just that one moment. Its identity can be local to a time.

This is an intuitive way to spell out being wholly present that gives rise to a coherent distinction between things that are wholly present and those that are not. But this intuitive idea has to be spelled out in more detail to make sure it indeed does make sense. Crucial for doing this is to spell out the idea of the identity of an object being local to a time. However, this can be done. In (Hofweber and Velleman, 2009) we spell this out in detail. I won't repeat the details here, but outline briefly some of the main steps.

Some of the properties that some objects have seem to be local in the following sense: not all of the universe matters for it having that property. It would still have the property as long as a certain part of the universe were the same. Whether or not ordinary examples are indeed local is at least in part an empirical question. Maybe all of the universe matters for my cup being a cup. But maybe not. Whether or not my cup being a cup depends on the whole of the universe doesn't matter for us here. What matters is to spell out the notion of depending on less than all of the universe. So, let's consider an example where, intuitively, this is not the case: not all of the universe matters for my dollar bill being a dollar bill. But more than my wallet is required for it. It being a dollar bill depends on its having a certain connection to the US treasury, it being made in a certain way at a certain place, and so on. But it doesn't depend on having whatever relations it has to some far away planet. It seems that my dollar bill being a dollar bill depends at most on what is going on inside our solar system. Thus it seems that being a dollar bill is a property that is local to the solar system in this sense: something in the solar system has it and would still have it as long as things inside the solar system were the same, even if they were different outside of it. More generally:

- (16) A property P is *local to a region* R iff something in R has P and that thing would still have P as long as R were the same, even if things were different outside of R .¹⁷

In this way we can then spell out what it is for the identity of an object o being local to a time. Just take the above definition, and consider a region that is temporally unextended, and the property of being identical to o . Similarly,

- (17) The identity of an object o is *local* (or *intrinsic*) to a time t iff the property of being o is local to some temporally unextended region that contains t .

We can now state our definition of what it is for an object to endure and to perdure. Intuitively, an object endures if it is wholly present. But to be wholly present is now not understood in terms of its parts, but in terms of its identity. Thus

- (18) An object o is wholly present at a time t iff the property of being o is local to t .

Alternatively, but equivalently, an object *o* is wholly present at *t* iff the existence of *o* supervenes on the instantiation of all the properties that are local to *t*, including object dependent properties. Given this account of what it is to be wholly present we can define endurance:

- (19) An object *endures* over an interval *I* iff the object is wholly present at each moment in *I*.

An object *perdures* over an interval simply if it exists at each moment in that interval, but does not endure over it.¹⁸

Now that we have seen how to better understand the endurance-perdurance distinction, we should see how it relates to our debate about the problem of change.

5.2.3. *The Distinction and the Philosophy of Time*

Given this way to draw the endurance—perdurance distinction we can see that the question ‘How do things persist?’ is indeed a good and important question. How does a person persist, does it endure or perdure, is a difficult question whose answer depends on the metaphysics of persons. The question how things persist thus has many interesting and difficult cases to consider. However, it is not the question how things persist as such. We should not expect an answer that says that all things perdure, or all things endure. It is a question that needs to be answered on a case by case basis, and not in general. Thus with this way of drawing the endurance—perdurance distinction we should not expect there to be a connection to the large scale issue in the metaphysics of time. For the parts based way to draw the distinction some people have argued for such a connection. They have argued that if you believe in temporal parts you have to believe in eternalism about time, and if you believe in enduring things you have to believe in presentism.¹⁹ But on the present distinction, there is no obstacle to some objects perduring while others endure. For example, it might be argued that persons perdure, but their bodies endure. Thus no general consequence about the nature of time follows from the endurance of an object, or the perdurance of an object, since one and the same temporal reality contains both. The identity of some objects depends on more than just a moment, but the identity of others does not. It doesn’t matter what the nature of time is for this to be true.

5.2.4. *Does it Matter?*

So, let’s briefly take stock. I have said that the common, temporal parts based way to draw the endurance-perdurance distinction won’t work since perdurance so conceived is a conceptual truth, and thus however endurance will be spelled out, if it is in competition with perdurance then it is conceptually incoherent. But there is a coherent way to spell out the distinction

that captures the metaphor that motivates it, but this way of spelling out the distinction is irrelevant for our debate here. So, no problem of change can be motivated by relying on the endurance-perdurance distinction. But I did not defend this claim in detail here. I merely referred to the paper that does defend it, and thus the issue for us here is how much of what I would like to defend depends on the view defended in another paper. In the final pages I would like to argue that even if I am wrong about the endurance-perdurance distinction, my overall conclusion still holds.

Suppose then that the endurance-perdurance distinction as a distinction about temporal parts can be spelled out in a coherent way, i.e. both sides of the distinction are conceptually coherent. Suppose further that this distinction applies to persistence as such, i.e. either all things that persist endure, or all of them perish. Thus we can ask how things, in general, change: do they change by having parts that have incompatible properties, or do they themselves have incompatible properties? We have to say more how change happens, or so the story goes.

Even though this distinction gives rise to two options about objects, their persistence, and how they change, it does not so far motivate a problem about change. After all, it might be that whichever side one picks things change either one way or another. So far we only see two stories about change, but not a problem. But there is a problem in the neighborhood, which is famously one of the arguments of David Lewis. It states that things have to change in one of these ways when it comes to their intrinsic properties, if they change at all. And thus we do have a problem.

5.3. The Problem of Temporal Intrinsic

David Lewis has argued that an account of persistence as endurance either is incoherent or requires presentism.²⁰ His argument is commonly known as the problem of temporal intrinsic. Lewis does not spell out what it is for an object to endure in much detail, but he clearly had a parts based approach in mind. The argument simply is that if an object endures and changes in its intrinsic properties then the object itself has to have a certain intrinsic property at one time, and a different one at another time. The endurantist then faces a dilemma to explain this. It is the very same object that has the intrinsic property and also another incompatible intrinsic property. This, he argues, is a contradiction, unless one makes use of the 'at one time' and 'at another time' temporal modifications. But these can't be understood as giving one relations to times since then the property would turn out to be a relation to a time, and not an intrinsic property. Other attempts to say what 'at one time' is supposed to do in the above sentence in various other ways get rid of the intrinsic property as well, Lewis argues, and thus change in intrinsic properties of an enduring object is impossible, unless presentism is true and there really is only one time.²¹

The crucial step for understanding Lewis' argument is to distinguish two ways we can think of intrinsic properties. Lewis mixes them together, but once we keep them apart we can see that the argument has no force. One way to think of an intrinsic property is by example. Intrinsic properties are paradigmatically properties like being round, or sitting, or the like. Another is via some theoretical conception. On the latter option intrinsic properties are all those that satisfy a certain theoretical condition. Suppose it is the former first what we mean by an intrinsic property. Thus intrinsic properties are properties like the property of being round. The property of being round is expressed by the predicate 'is round'. This is how I just managed to talk about this property, by nominalizing that predicate into 'being round' or 'the property of being round'. Now, it is an issue in semantics whether or not the modifier 'on Tuesday' in 'being round on Tuesday' is an argument or an adjunct, and thus whether or not the predicate has n or $n + 1$ many argument places.²² However things turn out here, it is not incoherent that something is round on Tuesday, and not round on Wednesday. Thus if we pick out what an intrinsic property is by example, then no matter which option turns out to be correct, it doesn't show that being round is not an intrinsic property. It just is the paradigmatic example of what an intrinsic property is supposed to be. Thus if intrinsic properties are picked out by example, then even if 'on Tuesday' is an argument, and thus 'is round' is at least a binary relation, this doesn't show that it isn't an intrinsic property.

Suppose then that we define what an intrinsic property is theoretically, and not by example. Then it is open whether or not the property of being round is intrinsic. It would only be if it satisfies the condition that defines being an intrinsic property. Suppose now that intrinsic properties can only have one argument place, but 'on Tuesday' is an argument of the predicates it modifies (in English). Thus nothing can have an intrinsic property on Tuesday. So, if the sentence

(20) Fred is F on Tuesday.

is true, and thus grammatical, then the predicate 'is F' in it does not express an intrinsic property. On such a conception of intrinsic properties, nothing can have them at a time, and none of the predicates we employ express intrinsic properties, assuming that with them there can be true instances of (20). Thus it might well be that nothing can change its intrinsic properties on this conception of intrinsic properties, since nothing can have an intrinsic property at a time. But that wouldn't be much of a problem, since none of our predicates will express intrinsic properties. And we would have no good reason to think that anything has intrinsic properties, so conceived, nor that they change, even if something has them. So, in either case, there isn't a problem about changing ones intrinsic properties. But if we first argue, thinking of intrinsic properties by example, that things obviously change

their intrinsic properties, and then argue that since intrinsic properties are of a special kind, theoretically, then it might seem that there is a problem. This, it seems to me, is what Lewis does. Once we keep the two conceptions of an intrinsic property apart the problem disappears, even if we accept the temporal parts based version of the endurance-perdurance distinction as coherent.

5.4. Conclusion about Change as a “Say More” Problem

Now it is time to draw some conclusions. Our concern in this section was to see whether there is a metaphysical problem of change as a “say more” problem. That is to say, the metaphysical problem of change is to say how things change, among several metaphysical options of how things might change. With what we have seen we can now answer this problem. First, there is no question about “real change”, in the sense that events do not “really change” but only objects do. The verb ‘change’ is polysemous and in each one of its reading we are dealing with real change, though they might be metaphysically different. The metaphysical question is thus not which one of them is real change. Secondly, we have seen, in outline, that there is a coherent distinction between endurance and perdurance, and that it is a difficult metaphysical question which objects endure, and which ones perish. However, it is not a question about objects as such, but only one about cases. In addition, the answer to the questions about the cases is completely independent of the metaphysics of time. Thus in the sense in which there is a problem about persistence it is only one about cases and not one that has anything to do with the philosophy of time. Finally, we have seen that the problem of temporal intrinsics does not show that change in the intrinsic properties of enduring objects gives rise to a problem about change.

So, overall there no problem of change as a “say more” problem. There are problems about cases, but there is no problem that could motivate a particular metaphysics of time or objects over another.

6. Conclusion

The meta-problem of change is the problem to say what the metaphysical problem of change is, how it relates to the empirical problems of change, and in what sense it is a metaphysical problem. Finding an answer to these questions should suggest an answer to the question what role this problem should play in the philosophy of time. Of course, we have not investigated all attempts to motivate the problem of change as a metaphysical problem, but we looked at the three main ones. Here we have seen first that change is not a conceptual problem and that our concept of change is internally coherent. Secondly, we saw that change is not an explanatory problem. There are many

things that need to be explained about particular changes, and these explanations will be given by the sciences, but there is no legitimate explanatory task for metaphysics to carry out about change in general. Finally, we saw that change is not a “say more” problem when it comes to change in general. Although there is a question about whether things are “all there” when they persist, this is not a question about persistence as such, but merely about cases. The answers to the cases are independent of the metaphysics of time.

Given that these ways to motivate the problem of change as a metaphysical problem do not work, I have to conclude that there is no metaphysical problem of change. This is not to say that there is no legitimate metaphysical project in this area, say a metaphysics of time and of material objects. But if there is such a legitimate project, what it should not do is to try to solve the problem of change. To think that there is such a problem is based on one of several possible confusions. Thus we should not pick which metaphysical account of time and objects is to be preferred by picking which one solves the problem of change the best. There is no such problem to be solved by a metaphysics of time and objects. There are many problems about particular changes, but there is no additional metaphysical problem of change.

The prominent role that the problem of change has in the philosophy of time is a mistake, or so I have argued. The problem of change is not a goal for the philosophy of time to solve, it is a distraction from the real questions in the philosophy of time. We should thus give up trying to solve the problem of change, there is no such problem, and focus on the central questions in the philosophy of time instead. Of course, what they are and what makes them metaphysical questions is itself not an easy questions, but there is much more hope for finding a motivation for a coherent project of a metaphysics of time and objects elsewhere, once we have left the problem of change behind. If there is to be a metaphysics of time and objects, one that is both ambitious, but also modest in our above senses, then it won't be easy to see what it could be. Maybe such a philosophical project is misconceived. As I have outlined above, I don't believe that ambitious, yet modest, metaphysics in general is misconceived, but it requires some work to carve out a domain for it, and to properly separate it from the rest of inquiry. Whether there can be such a metaphysics of time and objects is not fully clear to me, but in any case, the problem of change has no place in it.²³

Notes

¹ A paradigmatic case is (Hinchliff, 1996), who argues that the problem of change requires the adoption of presentism for a solution

² This view might be rare among contemporary philosophers, but it can be found in, for example, (Lowe, 1998: 5).

³ See (Lewis, 1991).

⁴ In general, philosophical disciplines contain their own meta-disciplines, and thus it is often silly to make this distinction, except to make clear what the focus of the inquiry is. I won't ride on this terminology.

⁵ These general requirements on metaphysics are spelled out and defended some more in (Hofweber, 2009a).

⁶ One option is that ontology as a metaphysical discipline is concerned with which things are the most fundamental, in a special metaphysical sense of ‘fundamental’. But whether there is such a sense is not all clear, nor is it clear why it matters what would be fundamental in this sense. The sciences themselves are concerned with what is fundamental in their domain. Whether energy is fundamental in the material world is in the domain of physics. Whether numbers or algebraic structures are fundamental is a question for mathematics. To be sure, they are fairly foundational questions, but certainly not distinctly metaphysical ones. Whether there is also a metaphysical sense of fundamentality or priority is not at all clear. For a positive proposal, see (Fine, 2001). I have my doubts, which are spelled out in (Hofweber, 2009a) and (Hofweber, 2009b).

⁷ See (Hofweber, 2005b) for the general issue, and (Hofweber, 2005a) for the case of numbers. (Hofweber, 2009b) spells all this out in detail.

⁸ See, for example, (Haslanger, 2003) for setting up the problem of change along these lines.

⁹ I mean ‘time passing’ in an innocent way here.

¹⁰ See (Fine, 2001) for an example of the latter kind. He does not endorse nor discuss the problem of change the way I outline and reject it below.

¹¹ Hinchliff, in (Hinchliff, 1996), motivates the problem of change in part as one to explain temporal modification, though he doesn’t seem to think the answer given in the next paragraph is an option.

¹² I disagree with this view of properties, but I will sideline this disagreement in this paper, since my main conclusion does not depend on it. See (Hofweber, 2006).

¹³ See (Prior, 2003).

¹⁴ See some attempts see, for example, (Sider, 2001) or (Parsons, 2007).

¹⁵ This is intended to mean ‘has arbitrary parts’. The details won’t matter for the following so I suppress them.

¹⁶ Thanks to Mark Moyer for pointing out to me that the notion of a property being intrinsic to a time, or a basically equivalent notion, also occurs in Chisholm, Simons, and Moyer, see (Moyer, 2004), and Perry, see (Perry, 1972), although not in connection with the endurance—perdurance distinction.

¹⁷ More details on this account of a local property can be found in (Hofweber, 2005c), including a discussion whether or not it is circular.

¹⁸ Again, this account of the endurance-perdurance distinction is spelled out in detail in (Hofweber and Velleman, 2009).

¹⁹ See (Merricks, 1995) for a defense, and (Haslanger, 2003) for a critical discussion.

²⁰ See (Lewis, 1986: 202–204).

²¹ For Lewis’ more recent discussion of this, including criticism of some attempts to solve this problem, see (Lewis, 2002).

²² How many argument places this predicate has doesn’t have to be settled by us here. Our issue merely is if there is one for a time, besides for whatever else there might be an argument place.

²³ Acknowledgments: I am indebted to David Velleman, Jason Bowers, Drew Johnson, Keith Simmons, Bryan Frances, Mark Moyer, Ryan Wasserman, Ted Sider, Martin Thomson-Jones, L.A. Paul, Laurel Goldstein, Mahrad Almotahari, and most likely a couple of other people as well, for helpful discussions and/or comments.

References

- Fine, K. (2001). The question of realism. *Philosophers’ Imprint*, 1(1).
Haslanger, S. (2003). Persistence through time. In Loux, M. and Zimmerman, D., editors, *Oxford Handbook of Metaphysics*, pp. 314–54. Oxford University Press.

- Hinchliff, M. (1996). The puzzle of change. *Philosophical Perspectives*, 10: 119–136.
- Hofweber, T. (2005a). Number determiners, numbers, and arithmetic. *The Philosophical Review*, 114(2): 179–225.
- Hofweber, T. (2005b). A puzzle about ontology. *Noûs*, 39: 256–283.
- Hofweber, T. (2005c). Supervenience and object-dependent properties. *Journal of Philosophy*, CII(1): 5–32.
- Hofweber, T. (2006). Inexpressible properties and propositions. In Zimmerman, D., editor, *Oxford Studies in Metaphysics*, volume 2, pp. 155–206. Oxford University Press.
- Hofweber, T. (2009a). Ambitious, yet modest, metaphysics. In Chalmers, D., Manley, D., and Wasserman, R., editors, *Metametaphysics: new essays on the foundations of ontology*, pp. 269–289. Oxford University Press.
- Hofweber, T. (2009b). *Ontology and the Ambitions of Metaphysics*. Manuscript.
- Hofweber, T. and Velleman, J. D. (2009). How to endure. Manuscript.
- Lewis, D. (1986). *On the Plurality of Worlds*. Blackwell.
- Lewis, D. (1991). *Parts of Classes*. Blackwell.
- Lewis, D. (2002). Tensing the copula. *Mind*, 111: 1–14.
- Lowe, E. J. (1998). *The Possibility of Metaphysics*. Oxford University Press.
- Merricks, T. (1995). On the incompatibility of enduring and perduring entities. *Mind*, 104: 523–31.
- Moyer, M. (2004). Statues and lumps: a strange coincidence? *Synthese*: 1–23.
- Parsons, J. (2007). Theories of location. In Zimmerman, D., editor, *Oxford Studies in Metaphysics*, volume 3. Oxford University Press.
- Perry, J. (1972). Can the self divide? *Journal of Philosophy*, 69: 463–88.
- Prior, A. (2003). Changes in events and changes in things. In *Papers on Time and Tense*. Oxford University Press.
- Sider, T. (2001). *Four-Dimensionalism*. Oxford University Press.