

OCKHAM ON TIME

Introduction

William Ockham¹ is a reductionist about time.² He maintains that time somehow exists but is not a basic thing in his ontology. The basic things in Ockham's ontology are particular substances and particular qualities: standard medieval examples are Socrates and his whiteness respectively. Therefore, since time somehow exists, its existence should be reduced to that of particular substances and particular qualities, and accounted for in terms of these basic things. Thus, Ockham's position about the ontological status of time consists of two main theses: (i) time is not a basic thing in the ontology, that is, neither a particular substance nor a particular quality; (ii) time is reducible to the basic things.

This concise presentation of Ockham's position is one resulting from a comprehensive view of his treatment of a large variety of highly controversial ontological issues (including universals and the status of Aristotle's categories), but does not correspond to the nature of the discussions that he specifically devotes to the ontological status of time. When he deals with time, Ockham does not offer any substantial argument in support of the negative thesis (i). He takes it as established in other sections of his works that the only basic things are particular substances and particular qualities, and takes it as evident that time is not a particular substance or a particular quality. As to the reductionist thesis (ii), Ockham does not explicitly argue for the ontological reduction of time to particular substances and qualities. Rather he argues for the reduction of time to the so-called permanent things. Since particular substances and particular qualities are permanent things, the reduction of time to permanent things that Ockham argues for can be regarded as an intermediate step in his overall reductionist program: so that the first step of such program consists in reducing time to permanent things, and the second step consists in reducing permanent things to particular substances and qualities. This second step, however, does not concern us here, since it contains nothing specifically about time. The focus of this paper is on the first step: Ockham's reductionism of time to permanent things.³

¹ On Ockham's life and works, see Courtenay (1999).

² For a comprehensive presentation of Ockham's discussion about time (and change), see McCord Adams (1987), vol. 2, 799-899.

³ In this article I offer a reconstruction of Ockham's reductionism that aims at a concise presentation of those aspects of it that I regard as the most crucial ones. I do not undertake, however, a systematic critical assessment of Ockham's view. For such an assessment, see McCord Adams (1987), vol. 2, 819-821, 873-874, 886-888. I essentially agree with McCord Adams's assessment.

Ockham's own approach and its emphasis on the reduction of time to permanent things reflect the way in which the question about the ontological status of time was addressed at his times. In the medieval context, permanent things are contrasted with successive things. The distinction between permanent and successive things is the fundamental feature of the medieval debate about the ontological status of time and of change too. Realists about time and change maintain that there are successive things distinct from and not reducible to permanent things, and that time and change are paradigmatic cases of successive things. It is this realist view that is the main polemical target of Ockham in his discussion of time and change.⁴ He argues that there are no successive things in addition to permanent things, and in particular that time and change are not such things; rather both time and change can be reduced to permanent things.

In this paper I will first explain the notions of permanent and successive things. I will then present the two main lines of attack of Ockham against successive things. I will finally focus on his reductionism of time and change to permanent things.⁵

1. *Permanent and Successive Things*

Despite their central role in the debates about the ontological status of time and change, the notions of permanent thing and successive thing are not themselves matter of dispute or subject to any accurate analysis.⁶ There is a dominant tendency among medieval philosophers to use these notions without specifying how they should exactly be understood. They believe that the distinction between the two kinds of thing has an Aristotelian origin. This is a passage of *Physics* III in which Aristotle contrasts the mode of being of a statue with the mode of being of a day and an athletic contest.⁷ In the medieval interpretation the contrast is that between the mode of being of permanent things -a statue- and the mode of being of successive things -a day and an athletic contest. The Aristotelian examples are also taken as an indication that time and change are paradigmatic cases of successive things: a day is a period of time and an athletic contest is a change. Furthermore, the Aristotelian passage suggests the most popular formulation of the distinction between permanent and successive

⁴ The realist view that Ockham's attack is the dominant one in the English tradition. It was endorsed by the large majority of the Oxford commentators on Aristotle's *Physics* around the middle of the 13th century, and later on by Thomas Wylton and Walter Burley. For this realist view see Trifogli (2000), 37-86, 203-261; Trifogli (2013). With the sole exception of Walter Burley, however, it is not clear which other exponents of this realist tradition are the deliberate targets of Ockham's criticism.

⁵ The primary source I have used is the Commentary on Aristotle's *Physics* (Ockham 1985a and Ockham 1985b). The English translation of the passages quoted from this work is mine.

⁶ For an extensive discussion of the medieval views about successive things see Pasnau (2011), 374-398.

⁷ Aristotle (1983), III.6, 206a18-24.

things. This formulation is the one given, for example, by Walter Burley, Ockham's contemporary and fiercest enemy in ontological matters:

(T1) This is the difference between permanent and successive things: that a permanent thing exists all at once, or at least can exist all at once, whereas it is incompatible with a successive thing to exist all at once.⁸

Thus, in the Aristotelian examples, a statue is a permanent thing because it (can) exist all at once whereas a day and an athletic contest are successive things because they cannot exist all at once.

To get a better grasp of the ideas at work here, it is helpful to introduce the notions of part and whole in explaining what existing all at once means. A thing exists all at once if it is such that all its parts (can) exist at once, that is, at the same time. Accordingly, a permanent thing is defined by the condition that its parts are such that they can all exist simultaneously, whereas a successive thing is a thing that does not satisfy this simultaneity-requirement: it has parts but its parts are such that they cannot exist simultaneously; rather they exist one after the other, that is, in temporal succession. Thus, a permanent thing is a whole such that all the parts composing this whole (can) exist at the same time, whereas a successive thing is a whole such that any two distinct parts composing this whole cannot exist at the same time but only in succession.

It is crucial to get a firm grasp on the question of what counts as a part of a thing in order to understand clearly the distinction between the two kinds of being. And it is especially relevant in the case of permanent things. If things like human beings and statues must count as permanent things, then there must be some restrictions as to what counts as their parts. For, as Pasnau correctly remarks, "if 'part' is understood broadly enough ... only God counts as permanent."⁹ This question, however, is not raised in the medieval debate. Human beings and statues are presented as obvious examples of permanent things. The tacit understanding is that the relevant parts of which permanent wholes are composed are the essential ones, that is, the parts that define the kind of thing that something is. Thus, in the case of a human being, such parts would be its matter and its (substantial) form. The question of the extension of the class of permanent things is not explicitly raised either. The tacit understanding here is that this class includes a large variety of things in Aristotle's ontology:

⁸ Quote from Pasnau (2011), 375.

⁹ Pasnau (2011), 376.

all substances (both material and immaterial) and their qualitative and quantitative properties (accidents belonging to the categories of quality and quantity), things like colour, heat, and bodily extension.

As to successive things, at least in the case of the two paradigmatic cases of such things, namely change and time, the question of what counts as the parts that define them as successive wholes is more straightforward, at least within an Aristotelian context. The relevant property of change and time is that of being continua, that is, divisible into parts ad infinitum. The parts that define change and time as continua are also those that define them as successive wholes. For example, consider a locomotion (change with respect to place) along a bodily extension. In this situation there are three continua: the bodily extension; the locomotion occurring along it and the time taken by this locomotion. There is also a one-to-one correspondence between the parts of these three continua: to each part P of the bodily extension there corresponds the part (or phase) of the locomotion that occurs along P and the part of time taken by this part of the locomotion, and the other way around. These three continua, however, are not completely isomorphic: while the bodily extension is a permanent continuum, the locomotion and its time are successive continua. To see this, focus on any two non-overlapping parts of the bodily extension, say AB and BC. These two parts, like any other similar parts of it, exist at the same time. The two corresponding parts of the locomotion, that is, the phase along AB and that along BC, however, do not exist at the same time, but one after the other: while the body is moving from A to B is not also moving from B to C; it first moves from A to B and then from B to C. Similarly, the two corresponding parts of the time taken by this locomotion -the time of the locomotion from A to B and that of the locomotion from B to C- do not exist together but one after the other.

2. Ontological Problems with Successive Things

One main line of attack that Ockham uses against successive things consists in pointing out that the notion of successive thing is an incoherent one and so does not define a sound ontological category. In the realist understanding, a successive thing is a whole, so something composed of parts, but a whole such that its existence does not require the existence of all the parts belonging to it. For Ockham, this realist notion of successive thing is seriously wrong. It ascribes incompatible properties to such a thing, namely, being a whole, and having existence as a whole independently of the existence of all its parts. Furthermore, it violates what seems to be a natural criterion for the existence of a whole, according to which for a whole to exist all its parts must exist. In Ockham's words:

(T2) It is impossible that some one thing distinct as a whole from all other things exists in nature unless all its parts exist in nature. Accordingly, if just one part of it does not exist in nature nor does the whole. For, if this were not the case, then I could say that a dead man exists because its matter exists, which is saying nothing.¹⁰

This criterion reflects the plausible principle that a being cannot be composed of non-beings. As Ockham puts it in another passage:

(T3) what does not exist is not a part of a thing.¹¹

With Ockham's example in (T2), if we give up this criterion and admit that for a whole to exist it is sufficient that some part of it exists, then since one part of the corpse of a human being, namely matter, is also part of the human being, the existence of the corpse of a human being would entail the existence of the human being itself, a conclusion that everyone would consider absurd. According to Ockham's criterion then, only permanent wholes are genuine wholes and so genuine composite things because only the parts of permanent wholes are such that they can all exist simultaneously. On the contrary, in our example, the locomotion from A to C through B does not exist as a whole composed of the locomotion from A to B and of that from B to C because these two phases do not exist together and thus cannot compose a whole. We cannot build a whole starting from these phases, so to say, because they do not add up: when one occurs, the other does not. Similarly, the time of this locomotion is not a whole composed of the time of the locomotion from A to B and the time of the locomotion from B to C because these two periods of time do not exist simultaneously.

This apparently damning objection of Ockham against the soundness of the notion of successive thing would hardly have impressed a realist. Indeed, in his criterion for the existence of a whole Ockham implicitly assumes that existence should be understood as simultaneous existence, so that the criterion says that for a whole to exist all its parts should exist simultaneously. This assumption, however, simply begs the question against the realist claim that there are wholes that do exist but the parts of which do not exist simultaneously

¹⁰ Ockham (1985b), 199.122-126: "... impossibile est quod aliquid unum secundum se totum distinctum ab aliis sit in rerum natura nisi quaelibet pars eius sit in rerum natura. Unde si una sola pars non sit in rerum natura, nec ipsum totum est. Aliter enim possem dicere quod homo mortuus est, quia materia sua est, quod nihil est".

¹¹ Ockham (1985a), 431.15: "illud quod non est non est pars alicuius rei".

but one after the other, or, more generally, against the realist claim that simultaneous existence is not the only kind of existence, as there is also successive existence.

To reach a better insight into Ockham's line of attack against successive things it is helpful to set it in its historical context. The main feature of this context are two arguments against the existence of time that Aristotle presents in *Physics* IV.10 at the very beginning of his extensive discussion specifically devoted to time.¹² It is with reference to these arguments that Ockham introduces his criterion for the existence of a whole in text (T2):

(T4) Therefore, I say that the arguments that Aristotle adduces are sufficient to prove that time is not something outside the soul distinct as a whole from all past and future permanent things and from all permanent things... *it is impossible that some one thing distinct as a whole from all other things exists in nature unless all its parts exist in nature...*¹³

Likewise, it is in reply to the Aristotelian arguments that the realists invoke the distinction between permanent and successive things. The Aristotelian arguments are indeed the *locus classicus* of the medieval debate about the ontological status of change and time. It is worthwhile to quote them:

(T5) <1> One part of it (i.e., of time) has been and is not, another part of it will be and is not yet. From these are composed both the infinite and whatever time is on any given occasion taken. But what is composed of non-beings might seem to be incapable of participating in being.

<2> In the case of anything divisible, if it is, it is necessary that when it is, either all or some of its parts must exist. But of time, though it is divisible, some parts have been, some parts are to come, but no part is. The now is not a part. For the part measures and it is necessary that the whole is composed from the parts. But time is not thought to be composed out of nows.¹⁴

¹² Aristotle (1983), IV.10, 217b32-218a8.

¹³ Ockham (1985b), 199.115-123: "Sic igitur dico quod rationes quas hic adducit Philosophus sufficienter probant quod tempus non est aliquid extra animam, distinctum secundum se totum ab omni re permanente, praeterita et futura et ab omnibus rebus permanentibus ... impossibile est quod aliquid unum secundum se totum distinctum ab aliis sit in rerum natura nisi quaelibet pars eius sit in rerum natura".

¹⁴ Quote from Coope (2005), 18-19.

The two arguments present the same idea, which is the following. In both arguments time is viewed as a whole composed of parts: something analogous to a line, a one-dimensional extension. Then both arguments assume a criterion for the existence of a whole composed of parts. This criterion is clearly expressed in the major premise of the second argument: for a whole composed of parts to exist, at least some of its parts must exist. Finally, both arguments claim that no part of time exists. The arguments obviously assume that the ultimate parts of time, those of which any period of time is ultimately composed, are past parts and future parts. The past parts have been but are not and the future parts are to come but are not yet; thus neither the past parts nor the future parts are or exist. The conclusion then is that time, being composed of parts that do not exist, does not exist. The remarks about the now, that is, the present instant, at the end of the second argument are meant to provide a reply to an implicit objection against the assumption that the only parts of time are the past and the future. The objection is that this assumption neglects another kind of part of time, namely the present; and the present, unlike the past and the future, does exist. The reply of Aristotle is that the present is only the present indivisible instant and an instant, being analogous to a point, is not a part of time. What is implicit in this reply is the Aristotelian assumption that continua are not composed of indivisibles. For example, a line contains points but it is not composed of points in the sense that points are not parts of a line. Indivisibles, like points and instants, are boundaries of the continua to which they belong but are not their parts.

Aristotle presents these arguments as considerations one may provisionally advance against the existence of time, but he does not think that these arguments are conclusive. Indeed, he goes on to establish what time is, but there would be no point in establishing what time is if time did not exist. Furthermore, it is quite clear that these arguments can be reformulated also in the case of change, and Aristotle never raises doubts against the existence of change. Aristotle, however, leaves these arguments without any explicit solution and to his interpreters the task of finding a solution to them. In the absence of an authoritative solution from Aristotle's himself, it is not surprising that there is not universal agreement about their solution, which is indeed matter of debate in the Aristotelian tradition.¹⁵

¹⁵ For the solutions of some modern Aristotelian scholars, see Coope (2005), 19-26; for the debate in the medieval Latin tradition, see Trifogli (2000), 205-219.

Ockham's position in this debate is highly original. In contrast with the dominant tendency among Aristotelian commentators to consider Aristotle's arguments as inconclusive, Ockham thinks that they do establish a true conclusion about time (and change):

(T6) It must here be understood that these arguments are not absolutely sophistic, but to some extent conclusive. Indeed, they sufficiently prove that time is not some one thing distinct as a whole from all permanent things and from every permanent thing.¹⁶

Ockham's idea here is that, although the arguments do not conclude that time does not exist at all, they at least conclude that time is not some kind of thing distinct from permanent things, and the kind of distinct thing that he has in mind is obviously a successive thing. Thus, in his view, the arguments are not completely sophistic in the sense that they do demonstratively prove a negative conclusion about a type of being commonly ascribed to time, that is, a successive being.

Let us examine Ockham's original interpretation in some detail. For this purpose it is convenient to reformulate Aristotle's arguments as follows:

- (i) For a whole to exist it is necessary that some or all of its parts exist;
- (ii) Time is composed of past and future;
- (iii) Past and future do not exist;
- (iv) Therefore, time does not exist.

As to the first premise (i) the common realist solution to the argument consists in denying that this premise is universally valid. It is valid for permanent things but not also for successive things. That is, while for a permanent thing composed of parts to exist, it is necessary that some of its parts exist, this is not also true for successive things. A successive thing does exist even if none of its parts exist now or simultaneously. It is in reaction to this common realist reading that Ockham says that Aristotle's arguments are not sophistic. For in the realist view the arguments are indeed sophistic because they apply to time a criterion of existence that does not hold for time or for any successive things. Ockham takes the opposite way. He thinks that the criterion of existence of a whole expressed by premise (i) is

¹⁶ Ockham (1985b), 195.17-20: "Intelligendum est hic quod istae rationes non sunt simpliciter sophisticae, sed aliquo modo concludunt. Probant enim sufficienter quod tempus non est aliqua res per se una, secundum se totam distincta ab omnibus rebus permanentibus et ab omni re permanente."

universally valid: there are no exceptions to it. Furthermore, he reinforces the criterion. While in the original formulation of Aristotle, there is the alternative that for the existence of a whole it is necessary that some of its parts, although not all of them, exist, Ockham thinks that there is not such an alternative. The only way for a whole to exist is for all its parts to exist. He maintains that if one part only of a whole does not exist in nature, then the whole does not exist either. In text (T2) quoted earlier he gives the very poignant example of a dead human being to illustrate the evidence of this principle.

The contrast between Ockham's and the realist reading of the Aristotelian arguments is not only about premise (i) but also about premise (ii), i.e., the claim that time is composed of past and future. The realists do not see any major problems with this premise. They take it as a genuine feature of time that it is a whole and that the parts of which it is ultimately composed are past and future parts. The problem of the realists rather is to find a criterion of existence that this kind of whole satisfies. For Ockham instead premise (ii), at least in the realist reading, is false. There cannot be a whole composed of past and future parts: past and future are not the kind of items that add up to a whole. Although this premise is part of Aristotle's original arguments, in Ockham's interpretation Aristotle does not endorse it in the realist sense, as he explains in the following passage:

(T7) [1] But when it is said 'time is composed of those things that are not, i.e., from past and future', it must be said that two senses of this proposition must be distinguished. One sense is that time is some one thing distinct from all the other things, and is really composed by the past and the future as by its parts. And this sense is false because time is not something of this kind. Another sense is that time signifies that something is past and something is future. Therefore in the nominal definition of time both past and future must be posited. And because of this past and future are said to be parts of time. Nor when they say that time is composed of past and future and that past and future are parts of time Aristotle and Averroes understand something else than the fact that past and future are posited in the nominal definition of time. And if the minor premise is understood in this sense, the conclusion that time does not exist does not follow -if this conclusion is understood as opposite to the sentence 'time exists', when this sentence is understood in the sense in which Aristotle does- but there is a fallacy of amphiboly.

[2] In the same way one must reply to the second argument, when it is said that 'if something divisible exists, then either all its parts or some of its parts exist'. It must be said that this proposition can be conceded. But when it is said 'some parts of time are past and others future', it must be said that two senses of this proposition can be

distinguished. One sense is 'some of the parts that really compose time as something distinct from all permanent things and from every permanent thing are past, and this sense is false because time is not this kind of composite, as has been said before. The other sense is 'some of the things imported by the name 'time' are not or are not joined with other things or are not in the same place in which they were', just as something that does not exist is imported by the verb 'becomes white' and by the verb 'becomes hot'. And this sense is true, but then the conclusion does not follow.¹⁷

This passage contains what can be regarded as Ockham's official solution to the two Aristotelian arguments against the existence of time of *Physics* IV.10. These arguments conclude without qualification that time does not exist; but for Ockham, like for any other Aristotelian philosopher, time somehow exists; thus, there is something wrong with these arguments. According to Ockham, what is wrong with them, however, is not the criterion for the existence of a whole in premise (i), as the realists think, but the identification of time with a whole composed of past and future as parts in premise (ii). This is the premise that must be denied to block the inference to the conclusion that time does not exist. More precisely, what is wrong and false is the claim that time is composed of past and future understood in the realist sense. As Ockham points out, however, there is also a correct and true sense of this claim, a 'nominalist' sense: past and future are not parts of time as thing but are parts of the nominal definition of time, that is, of the linguistic formula that expresses what the term 'time' means. This term signifies past and future things, although there is not a thing 'time'

¹⁷ Ockham (1985b), 200.151-201.182: "[1] Sed quando dicitur 'tempus componitur ex illis quae non sunt, scilicet ex praeterito et futuro', dicendum quod ista propositio est distinguenda penes amphiboliam. Unus sensus est quod tempus sit aliquid unum distinctum ab omnibus aliis, compositum vere tamquam ex partibus ex praeterito et futuro. Et iste sensus falsus est, quia tempus non est aliquid tale. Alius sensus est iste quod tempus significat aliquid esse praeteritum et aliquid esse futurum. Et ideo in definitione exprimente quid nominis ipsius temporis debet poni tam praeteritum quam futurum. Et praecise propter hoc dicitur tempus componi ex praeterito et futuro, et pro tanto praeteritum et futurum dicuntur partes temporis. Nec aliud intendunt Philosophus et Commentator dicere quandocumque dicunt quod tempus componitur ex praeterito et futuro, et quod praeteritum et futurum sunt partes temporis, nisi quod praeteritum et futurum ponuntur in definitione exprimente quid nominis temporis. Et sub isto sensu accepta minore, non sequitur quod tempus non est, sub illo sensu accepta conclusione sub quo opponitur isti 'tempus est', ista accepta in sensu quem habet Aristoteles de ea. Sed est in argumento manifeste fallacia amphiboliae.

[2] Consimiliter respondendum est ad secundum argumentum quando dicitur 'si aliquid divisibile est, vel omnes partes vel aliquae ipsius sunt'. Dicendum quod ista potest concedi. Sed quando dicitur 'temporis aliquae partes factae sunt et aliae futurae sunt', dicendum est quod ista potest distingui secundum amphiboliam. Unus sensus est 'aliquae partes vere componentes tempus distinctum ab omnibus rebus permanentibus et a re permanente factae sunt', et iste sensus falsus est, quia tempus non est tale compositum, sicut dictum est prius. Alius sensus est iste 'aliqua, quae importantur per hoc nomen 'tempus' non sunt, vel non sunt coniuncta cum aliis, vel non in eodem situ in quo fuerunt', sicut aliquid quod non est importatur per hoc verbum 'dealbatur', et per hoc verbum 'calefit'; et iste sensus verus est, sed tunc non sequitur conclusio."

composed of past and future things as parts. I shall return to the semantics of the term 'time' later in this paper when I will present Ockham's reductionism of time to permanent things.

3. *Successive Things and the Razor-Principle*

As I said, Ockham's attack against the coherence of the notion of successive thing is not as compelling as he thinks it is; for his crucial claim that the existence of a whole requires the existence of all its parts is basically question-begging. More forceful, in my view, is another kind of objection that Ockham raises against successive things. The objection is that successive things are superfluous, in the sense that they are not needed as basic things in the ontology. And if they are not needed, then we should not posit them, as Ockham argues by appealing to his famous Razor-principle.

In the passage below Ockham gives a very incisive formulation of this objection in the case of change:

(T8) Therefore, it must be said that change is not such a thing distinct as a whole from a permanent thing. (i) *For it is in vain to do with more things what can be done with fewer*; (ii) but without any such thing we can save change and all the claims about change; (iii) therefore, it is in vain to posit such other thing.¹⁸

The major premise (i) of this argument is one of the standard formulations of Ockham's Razor-principle: a principle of ontological parsimony. It is to this principle that Ockham appeals in some of his most powerful arguments against a variety of popular forms of realism at his time: in addition to the realism about successive things, also and more crucially the realism about universals things, as well as the realism about quantitative things and relative things. It is a principle that invokes parsimony about kinds of things, not about numerically distinct things of one and the same kind.¹⁹ This principle is now known as Ockham's Razor, but it was not invented by Ockham himself. Some versions of it are found in Aristotle (e.g., nature does nothing in vain) and also among medieval philosophers Ockham was not the only one to appeal to it. However, as Adams remarks, the label 'Ockham's Razor' that associates the principle with Ockham is appropriate, in the sense that, in comparison with his predecessors and contemporaries, Ockham's metaphysical conclusions are what one would

¹⁸ Ockham (1985a), 432.53-56: "Ideo dicendum est quod motus non est talis res distincta secundum se totam a re permanente. Quia frustra fit per plura quod potest fieri per pauciora, sed sine omni tali alia re possumus salvare motum et omnia quae dicuntur de motu, ergo talis alia res frustra ponitur."

¹⁹ On Ockham's Razor see McCord Adams (1987), vol. 1, 156-161.

expect from a philosopher who let the principle be his guide.²⁰ Ockham takes the truth of the Razor-principle as axiomatic, as not requiring any proof. As to the nature of this principle, Adams raises the question of whether the principle says something about reality or about our way of approaching reality, i.e., of formulating explanatory theories about reality. Adams thinks that the principle is methodological and should therefore be taken as an exhortation to look for a simple explanatory theory.²¹ Thus, in our case, the Razor-principle states that we should look for a simple/parsimonious explanatory theory of time and change.

There are interesting issues concerning the Razor-principle but they do not need to concern us here. For the Razor-principle is accepted without any qualifications or clarifications by all parties in the medieval debate: both nominalists and realists. Very significant in this respect is the reply to the Razor-argument in passage (T8) given by Ockham's main enemy, Walter Burley:

(T9) To the third argument, (i) when it is said that it is futile to do with more things what can and so on, I concede this. (ii) And when it is said that change and the things said about change are equally well saved by positing that change is not a thing distinct and so on, I reply by denying this, because unless change is a thing distinct from permanent things neither change nor the things said of change are saved.²²

Thus, Burley simply concedes the truth of the Razor-principle without devoting any special attention to it. He strongly rejects, however, the application of this principle to the case of change that Ockham proposes in the minor premise (ii) of his Razor-argument. While for Ockham change can be saved without positing successive things, for Burley we do need successive things to save change. In this version, then, like in all the other versions of Ockham's Razor-argument, the controversy is not about the Razor-principle itself but about its application.

Let us then have a closer look at Ockham's controversial application of the Razor-principle in the minor premise (ii) of the argument in (T8). In denying that change and time are successive things, Ockham does not mean to support the Eleatic view that change and time do not exist at all. As a true Aristotelian, Ockham believes that the physical world is a world of change. Bodies (material substances) do really change. Change and its temporal aspects are

²⁰ McCord Adams (1987), vol. 1, 157.

²¹ McCord Adams (1987), vol. 1, 158.

²² Quote from Trifogli (2013), 282.

not an illusion but something real. Thus, the existence of change and time is agreed both by Ockham and by his realist opponents. It is a datum to be saved and accounted for by all parties in the debate. The controversial issue, however, is about what we need to save change and time. Do we need to posit a kind of things, successive things, in addition to permanent things? The realist answer to this question is 'yes', and Ockham's answer is 'no'.

Let me illustrate these contrasting answers with our example of the locomotion of a body from an initial position A to a final position C. With some simplification, in order to account for this change in the realist view we need not only the mobile body and the space (bodily extension, for an Aristotelian) traversed by it, which are permanent things, but also one or two successive things (change and time). Why do we need them? Because -the realists insist- this locomotion occurs successively, not simultaneously; but succession or non-simultaneity cannot be accounted for in terms of the permanent things alone involved in this change, like the body and the space. More generally, if the only things involved in a change were permanent things, we could not account for the succession that necessarily accompanies any change. To account for succession then, we need to posit things that are successive by their nature. Accordingly, in our example, the body is first in A and then in B and finally in C in virtue of a successive thing inhering in it, just like it is white (for example) in virtue of a quality whiteness inhering in it.

Ockham thinks that this realist view is wrong, and that it is indeed a violation of the Razor-principle, because, he argues, change (and time) can be accounted for simply in terms of permanent things. He explicitly offers such a reductionist account for each kind of change (local, qualitative, quantitative change) in support of the minor premise of his Razor-argument in (T8). In the case of our favourite example of a locomotion it goes as follow:

(T10) For, if we posit that a body first is in a place and afterwards in another place, and that this body proceeds in this way without any rest and without any intermediate thing or a thing other than the body itself and the agent that moves it, we truly have locomotion. Therefore, it is in vain to posit such other thing.²³

In Ockham's reductionist account then only three kinds of thing are required for locomotion:

²³ Ockham (1985a), 432.59-62: "Ponendo enim, quod corpus sit primo in uno loco et postea in alio loco et sic procedendo sine omni quiete et omni re media vel alia ab ipso corpore vel ipso agente quod movet, vere habemus motum localem; ergo frustra ponitur talis alia res."

the mobile body, the positions or places occupied by this body and the agent of change. These are all permanent things. The intermediate thing Ockham refers to in this passage is locomotion as a successive thing in the realist account. This thing is not needed, Ockham argues, because locomotion of a body simply consists in the body's successive occupation of distinct places. This is an 'at-at' view of locomotion: locomotion is nothing else than a body being first at this location and then at another location.

Very illuminating are some objections that Ockham raises against his reductionist view. One objection says that mobile body and places are not sufficient for locomotion. For if they were sufficient, then whenever there are a mobile body and places, there would be locomotion, and this is evidently false. A mobile body can well be at rest in a place without occupying different places. The objection omits the agent of change, which is one of the things required for change in passage (T10), but we can implicitly add it and the objection would still be valid.

In reply to this objection Ockham concedes that the mobile body and places are not sufficient for locomotion in the sense that the following inference is not formally valid: "a mobile body and places exist, therefore locomotion of this body exists". Since they are not sufficient, something must be added to them to account for locomotion. But what must be added is not a thing, but a condition that a mobile body and places must satisfy, namely, that the mobile body must first be in a place and then in another place.²⁴ And, as Ockham explains, to satisfy this condition no additional thing is required:

(T11) Because of the fact that a body is first in *a* no thing other than *a* is posited; similarly, because of the fact that a body is first not in *b*, no thing other than *b* and the body is posited; similarly, because of the fact a body is then in *b* no thing other than *b* and the body is posited. And proceeding in this way in the other cases it is evidently manifest that in addition to the body, the parts of place and the other permanent things it is not necessary to posit another thing. It is necessary, however, to posit that a body is at some time in this place and in any part of that place and at another time it is not there. And this is to be subject to locomotion, namely, to occupy first one place and, without positing any other thing, to occupy afterwards another place without any intervening rest

²⁴ Ockham (1985a), 432.63-71: "Si dicatur, quod non sufficiunt ad motum localem corpus et locus, quia tunc quandocumque essent corpus et locus, tunc esset motus, et ita corpus semper moveretur, dicendum quod corpus et locus non sufficiunt ad hoc quod sit motus ita quod ista consequentia non est formalis 'corpus et locus sunt, ergo motus est.' Sed tamen praeter corpus et locum non requiritur aliqua alia res, sed requiritur quod corpus prius non sit in hoc loco sed in alio loco et postea in hoc loco et sic continue ita quod numquam in toto illo tempore quiescat in aliquo loco. Et patet quod per omnia ista non ponitur aliqua alia res a rebus permanentibus."

and without any other thing apart from place and body and the other permanent things, and to proceed in this way. And consequently, in addition to those permanent things, there is not some other thing, but it is only necessary to add that a body is *not simultaneously* in those places and that it was not at rest in those places. *And because of these negative propositions no other thing is posited in addition to permanent things* nor is another thing distinct from permanent things, that is, places, body and the like, posited by affirmative propositions like 'the body was in those places'.²⁵

In this passage the crucial additional condition, the non-simultaneity condition, is treated by Ockham as ontologically innocent and parsimonious. But matters are more complicated than the way Ockham presents them. Indeed, a realist could easily object to Ockham's reductionist account that by adding the condition that places are not occupied simultaneously by the mobile body we have in fact added another thing to the set of basic permanent things, a thing that is in some way responsible for the non-simultaneity of the locations of the body: a successive thing.

Ockham is aware of this objection. One way in which he deals with it consists in pointing out the negative character of the non-simultaneity condition. It expresses the negation of simultaneity. Being a negation, we do not need to posit a thing -something 'positive'- to satisfy it, as he points out in the sentence printed in italics towards the end of (T11).

This move of treating non-simultaneity as a negation, however, would hardly convince a realist. For example, a realist would say that non-simultaneity is in fact succession and succession at least grammatically is not a negation. 'Parts are not simultaneous' is a negative sentence but 'Parts are successive' is not negative and is equivalent to the first sentence. Thus, it seems that Ockham's appeal to the negative character of non-simultaneity is taken by itself rather weak. For at the ontological level, non-simultaneity does not seem to be the negation of a positive state, at least in the case of change. The only way a body can be in different places is by being not simultaneously in each of them. Similarly, in a case of alteration involving different forms. A body can be both white and black only if it is not white and black simultaneously. So a realist would not quickly dismiss non-simultaneity as a negative state as

²⁵ Ockham (1985a), 433.72-86: "Unde per hoc quod corpus primo est in *a*, non ponitur aliqua alia res ab *a*; similiter per hoc quod primo non est in *b*, non ponitur aliqua alia res a *b* et a corpore; similiter per hoc quod corpus secundo est in *b*, non ponitur aliqua alia res a *b* et a corpore. Et sic procedendo de aliis patet evidenter, quod praeter corpus et partes loci et ceteras res permanentes non oportet ponere aliam rem, sed oportet ponere quod corpus aliquando sit in illo loco et in qualibet parte loci et aliquando non sit. Et hoc est moveri localiter: primo habere unum locum, nulla alia re tunc posita, postea habere sine quiete media alium locum sine omni alia re praeter locum et corpus et cetera quae manent, et sic procedendo. Et per consequens praeter istas res permanentes non est aliqua alia res, sed solum oportet addere quod corpus non est simul in illis locis et quod non quievit in illis locis. Sed per tales negativas nulla alia res ponitur, nec per affirmativas tales 'corpus fuit in illis locis' ulla alia res ponitur praeter res permanentes, puta praeter loca et corpus et huiusmodi".

Ockham does. And if non-simultaneity is not a negation but something positive, the question arises again of whether another thing is needed to account for it.

Ockham addresses this question too. He replies:

(T12) ... for any non-simultaneity of the parts of change the non-simultaneity of the parts of a permanent thing is sufficient. Indeed, if in a permanent thing a part were not before another or if the thing that changes were not first in one part of place than in another, there would in no way be many parts of change that are not simultaneous. And this non-simultaneity of permanent things without any other thing is sufficient for the parts of change not to be simultaneous, and therefore because of the non-simultaneity of the parts of change it is not necessary to posit a thing distinct from permanent things.²⁶

There are two main distinct claims in this passage: (i) one is that permanent things are not incompatible with succession or non-simultaneity so that there can be permanent things such that they or their parts exist one after the other or acquire properties one after the other; (ii) the other is that the succession of permanent things is enough to account for the succession in a change. To illustrate Ockham's view with our example of a locomotion, the whole body (all its parts) will eventually have left the initial position A and have come to occupy the final position C, but this body leaves the initial position and occupies another gradually, part after part, that is, successively. Furthermore, the succession in this change is nothing over and above the body's being first in A, then in B and each of the intermediate locations, and finally in C, so that this succession requires nothing else apart from the body and the space traversed by it. More precisely, what is also required is an efficient cause of this change, for example, another body that moves the initial body from one position in space to another, that is, something responsible for the moving body's being first here and then there from the point of view of efficient causality. However, it is not also required something responsible for this from the point of view of formal causality, so to say, like whiteness is formally responsible for something's being white. In more abstract terms, according to Ockham, the succession that belongs to permanent things in a change is a primitive property of them, not one that they acquire in virtue of something else.

²⁶ Ockham (1985a), 441.36-43: "... ad omnem non simultatem partium motus sufficit non simultas partium rei permanentis. Nisi enim in re permanente una pars esset ante aliam vel nisi mobile prius esset in una parte loci quam in alia, nullo modo essent plures partes motus non simul existentes. Et talis non simultas plurium rerum permanentium praeter omnem rem aliam sufficit ad hoc quod partes motus non sint simul, et ita propter non simultatem partium motus non oportet ponere aliam rem a rebus permanentibus."

In the following passage Ockham gives a very neat presentation of his reductionist interpretation of the distinction between permanent and successive things:

(T13) ...when authors consider propositions like 'no successive is permanent' and 'successive and permanent are opposite', they mean in fact the following propositions 'nothing that is successive acquires or loses something simultaneously, but acquires or loses it successively'; similarly they mean propositions like 'everything that is acquired by something either is simultaneously acquired and not part before part, or successively, that is, part before part'. Therefore, when it is argued as follows 'no successive is permanent; change is successive; therefore change is not permanent', the conclusion must be conceded under this sense 'that which is part by part acquired or lost is not acquired or lost simultaneously as a whole'. *But this is compatible with the claim that in addition to past, present, and future permanent things there is no other thing distinct as a whole from them.* And this is precisely our main intention.²⁷

As the sentence printed in italics indicates, in Ockham's view what is needed to accommodate succession within the class of permanent things is simply to extend the class as to include not only the present permanent things but also past and future ones. Ockham's implicit assumption here is that to account for things being present, past or future we do not need to posit time as a successive thing. This is an assumption, however, that realists would reject.

4. Reductionism of Change and Time to Permanent Things

Ockham not only formulates general arguments, like those presented in the previous section, for the reductionism of change and time to permanent things, but also provides specific indications about how this reductionism is to be understood. The version of reductionism advocated by Ockham is a very strong one. Its force and originality can be

²⁷ Ockham (1985a), 445.185-446.197: "... quando auctores accipiunt istam propositionem 'nullum successivum est permanens' et similiter quod successivum et permanens ex opposito dividuntur, intelligunt tales propositiones 'nihil quod est successivum, acquirit vel deperdit aliquid simul, sed successive acquirit vel deperdit illud', similiter tales 'omne quod acquiritur alicui, vel simul acquiritur et non pars ante partem, vel successive, hoc est pars ante partem'. Et ideo quando arguitur sic 'nullum successivum est permanens, motus est successivus, igitur motus non est permanens' debet concedi conclusio sub isto sensu 'illud quod partibiliter acquiritur vel deperditur, non acquiritur vel deperditur totum simul'. Cum hoc tamen stat quod praeter res permanentes praeteritas, praesentes et futuras nulla est res distincta secundum se totam ab eis, et hoc praecise est principale intentum".

better appreciated if Ockham's view is set in its historical context and compared with the dominant kind of reductionism at Ockham's time.

According to the dominant reductionist position, successive things are not ontologically distinct from permanent things but they do have the ontological status of things. Consider, for example, the reductionist claim about change that change is not a thing distinct from permanent things. This claim would have been accepted by any medieval reductionist before Ockham (for example, Thomas Aquinas) but it would normally be understood in the following sense: change is not a thing distinct from permanent things because it is really identical with one of the relevant permanent things. In the case of the qualitative change of a body from being cold to being hot, for example, the relevant permanent things are the body that changes, the two qualities of coldness and heat, which are the initial and final state of the change, and the agent of the change. In the pre-Ockhamist views, the change of a body from being cold to being hot is one of these permanent things. Which one? The most popular view is that the change is in fact essentially the same as the final terminus of the change, namely, heat in our example.

This view was suggested to Latin medieval philosophers by the Arabic commentator Averroes, who maintained that a change differs only in degrees of completion from the final permanent state to which it is directed.²⁸ Thus, in Averroes's words "to go towards heat - i.e., becoming hot- is somehow heat itself".²⁹ What is important for us in Averroes's view is that, while it denies that change is a thing distinct from permanent things, it does not deny that change is a thing. Becoming hot is indeed a thing, namely, heat in some incomplete state or heat in the process of being acquired.

At the semantic level, the Averroistic view can be put as follows. Consider the terms 'becoming hot' and 'heat'. These are both proper names in the sense that both of them signify things; but although these names are distinct the things signified by them are not distinct, but in fact the same thing, namely, heat. The difference between the two names is not a difference in the things signified by them but in the way in which the two names signify the same thing. While 'heat' signifies heat as such without further qualifications, 'becoming hot' signifies heat as successively acquired. In Medieval terms, 'becoming hot' primarily signifies heat and co-signifies or connotes that heat is being successively acquired. Thus, in the pre-Ockhamist kind of reductionism change and time are things, although not successive things, and

²⁸ On Averroes's view and its reception in the Latin tradition, see Trifogli (2000), 47-66.

²⁹ Averroes (1962), V, t.c. 9, fol. 215ra: "ire ad calorem est calor quoquo modo".

correspondingly the terms 'change' and 'time' have real semantic values: they are terms that signify things.

This is not what Ockham thinks. His reductionism is much more radical. It is well-condensed in his claim that:

(T14) Thus, it is evident that these terms 'change' and 'time'... are invented for the sake of brevity.³⁰

that is, the terms 'change' and 'time' are not naturally significant terms in the sense that they are not terms that signify things. Rather, they are simply conventional linguistic devices used to give a more concise and elegant formulation to sentences that express facts about (permanent) things that change.

Ockham illustrates his claim about the linguistic role of the terms 'change' and 'time' with the examples of two standard sentences about change and time in Aristotle's natural philosophy. The first sentence is 'change is in time'. In a naive realist reading, this sentence signifies that there are two distinct things -those signified by the terms 'change' and 'time'- and that one of them is contained in (/measured by) the other. In Ockham's view, instead, the way to reach the correct reading of the sentence is not by identifying which things the two terms signify, because there are not such two things, but by identifying the linguistic items of which the two terms are supposed to be abbreviations. In Ockham's reading, the sentence 'change is in time' abbreviates the sentence 'when something changes, it does not acquire or lose all the things that it acquires or loses simultaneously but one after another'. It is this longer sentence that the philosophers mean, according to Ockham, when they use the sentence 'change is in time'. But in this longer sentence the terms 'change' and 'time' do not appear at all. All the terms in the longer sentence are terms for permanent things. The other example offered by Ockham is the sentence 'change is in the thing that changes'. Again, in a naive realist reading, this sentence signifies that there are two distinct things -those signified by the terms 'change' and 'the thing that changes'- and one of them is contained in (inheres in/is a property of) the other. For Ockham, instead, this sentence must be understood as an abbreviation of the longer sentence 'the thing that changes acquires or loses something'.³¹ In

³⁰ Ockham (1985a), 435.163-164: "Et ita patet quod ista nomina 'motus' et 'tempus' ... sunt inventa causa brevitatis".

³¹ Ockham (1985a), 435.163-436.172: "Et ita patet quod ista nomina 'motus' et 'tempus' ...sunt inventa causa brevitatis, ut totum quod importatur per istam longam orationem 'quod movetur, non acquirit vel deperdit omnia quae acquirit vel deperdit, simul sed unum post aliud' importetur per istam brevem orationem 'motus est in

this case too, all the terms in the expanded sentence signify permanent things: the body that changes and the permanent properties involved in its change (e.g., qualities in the case of a qualitative change, and locations in the case of locomotion).

Given that the terms 'change' and 'time' are invented for the sake of brevity, it is not surprising that they can be replaced by a great variety of items in the corresponding expanded sentences, as Ockham explains about 'change' in the following passage:

(T15) As to the way of speaking, when we posit in a sentence the term 'change' it must be said ... that sometimes 'change' supposits for the verb 'to be changed' and for the single modes and tenses of it, sometimes it supposits for the thing itself that changes, sometimes for the terminus or the thing acquired when something changes, sometimes it supposits for the sentence 'that which is changed' or 'when it is changed' or for some similar sentence. Likewise, the things that are added in a sentence to the term 'change', either on the side of the other extreme or sometimes on the side of the same extreme, are to be explicated in different ways.³²

The notion of supposition that Ockham uses in this passage is a technical one in medieval semantic theories.³³ Supposition is a property that belongs to terms when they are used in sentences. The supposition of a term in a sentence is the item that term stands for in that sentence. Ockham's examples in the passage above are illustrations of the supposition of the term 'change'. The point he wants to make is that its supposition includes items with very different ontological status: both things, like the body that changes and the properties it acquires and loses when it changes, and linguistic items of various complexity, atomic ones like verbs but also whole sentences. For example, in the sentence 'change is in time', the two terms 'change' and 'time' supposit for whole sentences rather than for things. For, as we have seen, Ockham's suggested expansion of the sentence reads 'when something changes, it does not acquire or lose all the things that it acquires or loses simultaneously but one after another', and the terms 'change' and 'time' of the abbreviated sentence corresponds to the two

tempore'... Similiter ista propositio 'motus est in moto' debet sic exponi 'quod movetur, acquirit vel deperdit aliquid.'"

³² Ockham (1985a), 435.152-160: "Circa modum loquendi ponendo in oratione hoc nomen 'motus' est proportionaliter dicendum, ... Quia aliquando 'motus' supponit pro hoc verbo 'moveri' et pro singulis modis et temporibus eius, aliquando supponit pro ipso mobili, aliquando pro termino sive pro re acquisita quando aliquid movetur, aliquando ponitur loco talis orationis 'quod movetur' sive 'quando aliquid movetur' vel loco alicuius talis consimilis. Et similiter illa quae adduntur in oratione huic nomini 'motus' ex parte alterius extremi et aliquando ex parte eiusdem, sunt diversimode exponenda."

³³ On Ockham's theory of supposition, see McCord Adams (1987), 327-382.

sentences of which the expanded sentence consists, namely 'when something changes' and 'it does not acquire... another' respectively.

Ockham's view is in short the following: given any sentence in which the terms 'change' or 'time' appear, this sentence is equivalent in signification to a sentence, normally longer, in which these terms do not appear. Thus, 'change' and 'time' are pseudo-names. Although they make our way of talking about things changing more concise and elegant, Ockham maintains that we should try to avoid their use because they can easily generate confusion in simple-minded people. As Ockham laments:

(T16) And therefore in modern times because of the errors originated by the use of such abstract terms it would be better in philosophy for simple-minded people not to use such abstract terms, but only verbs, adverbs, prepositions, conjunctions, syncategorematics, as they were primarily instituted, rather than to invent such abstract terms and use them. Furthermore, if such abstract terms, like 'change', 'mutation', 'mutability', 'simultaneity', 'succession', 'rest' and the like, were not used, there would be little difficulty about change, mutation, time, instant and the like.³⁴

The simple-minded people Ockham refers to in this passage are the realist philosophers of his time. Ockham's charge against them is that they are deceived by their own use of the simple abstract terms 'change' and 'time'. Such terms, unlike their expanded equivalents, can be easily taken as terms signifying basic things in the ontology; therefore, their use naturally lends itself to raise difficult ontological questions about what kinds of thing change and time are. As Ockham explains in another passage on this topic:

(T17) (i) And therefore such propositions 'change exists', 'time exists', and the like are not to be understood in the same way as the propositions 'a man exists', 'an animal exists', 'whiteness exists', and the like. They must instead be resolved into other propositions, so that saying 'change exists' is the same as saying 'something is changed'. Similarly, saying 'time exists' is the same as saying 'something is changed so that the soul can know how much something else is changed'. (ii) And for the simple-minded people who imagine

³⁴ Ockham (1985a), 434.110-118: "Et ideo in modernis temporibus propter errores subortos ex usu talium abstractorum melius esset propter simplices in philosophia non uti talibus abstractis, sed tantum verbis, adverbis, praepositionibus, coniunctionibus et syncategorematibus sicut primario fuerunt instituta, quam fingere talia abstracta et uti eis. Immo nisi esset usus talium abstractorum 'motus', 'mutatio', 'mutabilitas', 'simultas', 'successio', 'quies' et huiusmodi, parva esset respective difficultas de motu et mutatione, tempore, instanti et huiusmodi."

that as names are distinct so distinct things always correspond to them it would be better to use this way of speaking rather than the other one. Since, however, we must talk as the majority of people do, therefore I want to use a similar way of speaking, but I never understand that time is some one thing distinct as a whole from all permanent things. Rather by this proposition 'time exists' we must only understand that something is changed so that the soul can understand how much something else is changed.³⁵

In the first part (i) of this passage Ockham intends to point out that the use of the abstract terms 'change' and 'time' results in a linguistic parallelism between the sentences 'change exists' and 'time exists', on one hand, and the sentences 'man exists' and 'whiteness exists', on the other. This linguistic parallelism, however, conceals a deep semantic difference. The latter couple of sentences signifies the existence of two basic distinct things in the ontology: individual substances and individual qualities, e.g., Socrates and his whiteness. But the former couple of sentences signifies neither basic things in the ontology nor distinct things altogether. In Ockham's expansion, the sentence 'change exists' is not at all about a thing 'change' but it is about the body that changes (a permanent thing). Similarly, the sentence 'time exists' is not about a thing 'time' distinct both from permanent things and from the thing 'change', but it is again a sentence about the body that changes and our activity to measure the duration of its change.

In the second part of the passage (ii) Ockham focusses on the distinction between the two abstract terms 'change' and 'time'. This is source of further confusion: the confusion between a linguistic distinction and an ontological distinction, i.e., the assumption that to distinct terms there always correspond distinct things. According to Ockham, it is this kind of confusion - 'reification' of linguistic distinctions, so to say- that gives rise to many forms of realism at his time. In particular, it gives rise to a realist interpretation of the distinction between change and time: the view that change and time are two distinct things.

³⁵ Ockham (1985b), 199.127-139: "Et ideo tales propositiones 'motus est', 'tempus est', et huiusmodi non sunt eodem modo recipiendae sicut tales 'homo est', 'animal [est]', 'albedo est', et consimiles, sed debent resolvi in alias, ut idem sit dicere 'motus est', et 'aliquid movetur'. Similiter idem est dicere 'tempus est' et 'aliquid movetur unde potest anima cognoscere quantum aliud movetur'. Et propter simplices qui imaginantur quod sicut nomina distinguuntur, ita correspondent [eis] semper distinctae res, melius esset uti tali modo loquendi quam alio. Quia tamen loquendum est ut plures, ideo volo uti consimili modo loquendi, numquam tamen intendo quod tempus sit aliquid unum secundum se totum distinctum ab omnibus rebus permanentibus. Sed per talem propositionem 'tempus est' non est aliud intelligendum nisi quod aliquid movetur unde anima potest intelligere, quantum movetur aliud."

The relationship between change and time is a major issue in Aristotle's philosophy of time and matter of controversy among his medieval commentators.³⁶ It is worth taking a closer look at Ockham's position about it. Traditionally, this issue was formulated as a question about the real distinction between time and change, that is, the question of whether time and change are two distinct things or not. The realist view that Ockham attacks gives a positive answer to this question: time and change are indeed distinct things, and more precisely two distinct successive things. Time is seen as a successive quantity that inheres in any change -an accident of change in Aristotelian terms- a successive quantity that accounts for the temporal extension of a change. The dominant reductionist view at Ockham's time denies that change and time are distinct extra-mental things. It treats time not as a mind-independent thing that inheres in a change, but as simply the result of the mental operation of measuring the duration of a change. What makes the difference between a change and the time associated to it is a mental operation -an operation of the soul, in medieval terms.³⁷

Ockham finds the realist view totally wrong. On the contrary, he is very sympathetic with the reductionist view. However, he cannot simply accept it in its dominant formulation as a negative reply to the question of whether time and change are two distinct things. For, as we have just seen, according to Ockham, neither time nor change is a thing and so it does not make sense to him in the first place to ask whether time and change are the same thing or not. The traditional question itself needs to be reformulated. Ockham's reformulation goes like this: whether the set of extra-mental things signified by the term 'time' is the same set of extra-mental things signified by the term 'change'. Equivalently, take all the sentences in which the term 'time' appears and all the sentences in which the term 'change' appears. The question then is whether the extra-mental things that are needed to verify the time-sentences are the same as those needed to verify the change-sentences. Ockham's answer to the question reformulated in this way is that the same set of extra-mental things is needed in the two cases. There is actually an additional thing that is required in the case of time and not of change. But, following the dominant reductionist view of his time, Ockham claims that this is an operation of the soul, and not an extra-mental thing:

(T18) ... time is not an extra-mental thing distinct from change. But every extra-mental thing that one can imagine and that is imported by the name 'time' is also imported by

³⁶ On this topic, see Trifogli (2000), 219-237.

³⁷ The idea that time depends on the human soul is put forward by Aristotle. On Aristotle's view, see Coope (2005), 159-172.

this name 'first motion'. However, in addition to this, the name 'time' connotes, or co-signifies or makes one understand, the soul itself that numbers the before and after in a change, so that one of these two complex expressions 'the soul that numbers the before and after in a change' or 'the soul that can number the before and after in a change' falls in the nominal definition of time.³⁸

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³⁸ Ockham (1985b), 291.4-12: "... tempus non est aliqua res extra animam distincta a motu. Sed omnis res imaginabilis extra animam importata per hoc nomen 'tempus' importatur per hoc nomen 'motus primus'. Tamen hoc nomen 'tempus' connotat vel consignificat seu dat intelligere vel forte significat ipsam animam numerantem prius et posterius in motu, ita scilicet quod alterum istorum totorum 'anima numerans prius et posterius in motu', 'anima potens numerare prius et posterius in motu' cadit in definitione exprimente quid significat hoc nomen 'tempus'."

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