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The Adverbial Theory of Properties

Andrea Borghini

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Abstract The paper presents a novel version of universalism—the thesis according to which there are only universals, no individuals—which is cashed out in terms of an adverbial analysis of predication. According to the theory, every spatiotemporal occurrence of a universal U can be expressed by a sentence which asserts the existence of U adverbially modified by the spatiotemporal region at which it exists. After some preliminary remarks on the interpretation of natural language, a formal semantics for the theory is first provided, along with an intended interpretation of its key metaphysical imports. Follow some commentaries on the spatiotemporal manifold and determinable properties.

Keywords Universals · Properties · Particulars · Instantiation · Adverbialism

1 Introduction

The analysis of predication is a central concern in ontology and has been cause of much trouble. At least since Aristotle, it is typically handled by postulating the existence of individuals—the subjects of predication—to whom certain properties are attributed. On one hand, the view perspicuously accounts for things such as the compelling appearance of uniqueness of the first person or the individuality of the soul. On the other hand, when applied to material objects, it carries forward a host of ontological puzzles and problems by means of which anyone working in the field has been trained, such as the explanation of change through time, the composition question, or the vagueness of individuals' boundaries. The issues are so many and their solutions so uncertain that one may be lead to contemplate other routes into the analysis of predication. The present paper is devoted to flesh out one such.

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In the sequel, I will explore an antagonist position, *universalism*, which explains predication in terms of universals only, thereby committing to the sole existence of universals. This view—I submit—is as ontologically straightforward as nominalism, while being more in keeping with any ontological scheme we may endorse, especially those of scientific derivation. But I shall here leave aside any discussion of the aspects of the theory that are not concerned with its formulation. Thus, for example, I shall not try to convince you that our knowledge can be interpreted as knowledge of universals. Nor shall I provide an exhaustive theory, covering all cases of predication; for example, sentences embedding proper names will not be discussed here. I would be content if I could succeed in showing that a certain version of universalism "can stand on its feet" and get going.

I shall not advance any hypothesis regarding which predicates pick out genuine universals and which universals are more fundamental than others. And, it is not my purpose to quarrel on a definition of universals either. To lay at once the cards on the table, I think of them as entities with a qualitative character that may *repeat* in space and time. But, really, to get the discussion started I am only asking to agree that they may repeat: *Being an electron* can be in Las Vegas and in Rome at the same time, not in virtue of being *part* in Vegas and *part* in Rome at the same time, but in virtue of being—in some sense—*twice*, once in Vegas and once in Rome, at the same time.

The greatest challenge for any universalist position is to explain what repeatability is. The challenge has not been directly met in the literature on the topic¹; yet, in other philosophical contexts, a number of authors developed argumentative strategies that may be readily used also for furthering the universalist cause.² The aim of the paper is to cover the gap, by explaining repeatability in terms of the number of truth-makers that a certain existential proposition can have: an entity is repeatable when the existential proposition, according to which the entity exists, can have more than one truth-maker. None of those claims can be perspicuously made without a rigorous framework; thus, after clarifying the basic strategy, much of the work will consist in construing an appropriate formal language and semantics to develop the theory.

The present proposal relies on an adverbial interpretation of predication. Yet the name might be misleading. By "Adverbial Theory of Properties" (from now on: ATP), I do not mean that universals are linguistic entities, namely adverbs. The label stresses the fact that, according to the theory, every spatiotemporal occurrence of a universal *U* can be expressed by a sentence which asserts the existence of *U* adverbially modified by the spatiotemporal region at which it exists. That is, the occurrence of *U* is expressed by saying that it exists *here-and-there-ly*—or, as I should say, "at-t-in-s-ly."

The author that more seriously stood on a similar theoretical path is Bertrand Russell, in a series of writings published between 1940 and 1959: *Enquiry Into Truth and Meaning* (1940), *Human Knowledge* (1948), and *My Philosophical Development* (1959).³ Russell's motivation for endorsing universalism was that "we experience

¹ It strikes me as remarkable that the recent debates over the so-called *bundle theory*, the multiple localization of universals, and the one on enduring entities ever faced the evident paradoxes related to the existence of the entities at hand.

² See for example (Burgess 2005) and for some notable ancestors (Montague 1970; Prior, 1968; Quine 1960; Strawson 1954).

³ Probably, the most relevant text among those is "Proper Names" in (Russell 1940: Ch. 6). See also (Russell 1912). Some remarks pointing in the direction of a universalist metaphysics are offered also in (Cover and Hawthorne 1998).

qualities, but not the subject in which they are supposed to inhere."⁴ Now, although this work shares similar motivations, it was developed independently of its ancestor and ultimately differs from it in a number of respects. First of all, in my view, the epistemic priority of universals is but one aspect of the thesis that universals are the sole denizens of reality and, by itself, is insufficient to secure it: a theory of repeatability is in order as well. Secondly, the present inquiry takes at face value the fact that the existence of universals is problematic, in that they are repeatable entities. This is a point that neither Russell nor other authors, that more recently discussed the issue, seriously confronted. Thirdly, ATP is not part and parcel of radical empiricism. Unlike Russell's theory, ATP does not entail that universals are sense data; they may be mind-independent entities, some or all of which are known only through reason. Lastly, in his writings, Russell vacillates between different conceptions of space and time, ending up with a theory according to which space–time location is a positional quality.⁵ I will opt for the view that space–time manifolds are conceptual schemas with no correlative entity in reality; they are those schemas through which we think of real entities—that is, universals.

2 Three Interpretations of Ordinary Language

To introduce the theory, it is handy to look at a case of temporal predication: I will thus compare the solutions offered by endurantism—the view according to which an individual can be numerically identical at different moments of its existence—with the ones faced by universalism. Indeed, there are three versions of endurantism, differing in their interpretation of sentences of ordinary language involving the having at time t of an accidental property P by an individual a ⁶:

- (i) a has P -at- t .⁷
- (ii) a has-at- t P .⁸
- (iii) At t : a has P .⁹

In (i), the property is relativized to a certain time; in (ii), it is the having relation to be modified; in (iii), it is the whole state of affair to be modified by the adverb "at t ." The theory I will defend is analogous to (iii). In some relevant semantic respects that shall be clarified in due time, however, ATP departs from the most thorough account of (iii) offered so far, the one of André Gallois.¹⁰

Correspondingly, you would expect three versions of universalism analogous to (i), (ii), and (iii). But we have only two, the other being a version of tropism. The

⁴ (Russell 1940: 122). On this particular aspect of Russell's thought, see also (Bergmann 1947, 1967; Casullo 1981).

⁵ On this point, see (Casullo 1982).

⁶ For an introductory exposition of endurantism, see (Loux 2002: Ch. 6; Haslanger 2003).

⁷ This view has been defended by (Mellor 1981: 111–114), who is the only one, to my knowledge, to have defended such view in print.

⁸ This view has been defended, among others, by (Johnston 1987).

⁹ This view has been defended, among others, by (Lowe 1987; Haslanger 1989; Gallois 1998).

¹⁰ See (Gallois 1998). Most importantly, I will offer more "liberal" rules of inference for sentences containing spatiotemporal adverbs; this avoids the problems with Gallois's theory that were outlined in (Varzi 2001).

three options for expressing the existence of a property P at a spatiotemporal region Δ are as follows:

- (A) P -at- Δ exists.
- (B) P exists-at- Δ .
- (C) At Δ : P exists.

To give an illustration of each of them, consider the following sentence of natural language:

1. The region s is blue at time t .

According to, respectively, (A), (B), and (C), (1) is interpreted as:

2. *Blueness-at- t -in- s* exists.
3. *Blueness* exists-at- t -in- s .
4. At- t -in- s : *blueness* exists.

(The reason why I prefer one symbol, Δ , for representing the adverb, and not two, lies in the fact that I reject the principle of distribution of a property over the spatiotemporal adverb. For example, with respect to (C), the principle is as follows¹¹:

- (F) For any t and s and property P , at- t -in- s : P exists iff at- t : P exists and at- s : P exists.

I reject this principle because it would render possible to conclude from:

5. at- t -in- s : P exists,

and:

6. at- t_1 -in- s_1 : P exists,

that, for example:

7. at- t_1 -in- s : P exists,

which is not generally valid.)

(A) is the option defended by trope theorists. (B) is the first option for a universalist, consisting in modifying existence while taking properties at face value. (C) is the second option for a universalist, which consists in modifying the whole sentence expressing the existence of some properties. I will not endorse (A) because I deny that there can be primitive similarity (see Borghini 2008). I will not endorse (B) either. The meaning of "to exist" is one of the few topics over which most hands might agree nowadays. And, even if this is not the case, and if this cannot be adduced as a valid reason for not endorsing (B), to modify existence as in "to exist-at- t -in- s " calls for such a high theoretical price that I would be willing to pay only if forced to do so. I will thence explore (C).

The idea behind the structure of ATP is rather simple. A sentence expressing the existence of a universal U has two main components: the first expresses the existence of U , via a function that I will introduce at the beginning of the next section; the

¹¹ A parallel reasoning would hold for (A) and (B).

second locates the universal in the spatiotemporal manifold by means of a sentential operator Δ , grammatically to be intended as a sentential adverb.¹²

I shall clarify immediately (and I will come back to this towards the end of the paper) that the sentential operator is intended as a way of thinking of the universal. Yet, space and time are not to be intended as real. Indeed, if they would be real, ATP would be false: R would be a manifold of individuals, whose existence is independent of the existence of universals. A space–time manifold is, I submit, a conceptual scheme, employed by us to think of universals. Thus, only the first component carries an ontological commitment (a commitment to the existence of a universal); the second, instead, commits to a certain conceptual scheme, space–time, through which a universal is thought.¹³ After this informal introduction, let us now see the specific language and semantics of the theory.

3 The Language and Formal Semantics of the Theory

3.1 The Language

The minimal language L of ATP contains¹⁴:

- An infinite stock of names for universals: A, B, C, \dots
- An infinite denumerable stock of adverbial operators: $\Delta_1, \Delta_2, \Delta_3, \Delta_4, \Delta_5, \dots$
- A complete set of connectives: $\neg, \&, \vee$
- A sentence-forming operator: \wedge

Now, there are two alternative ways of defining the well-formed formulas (from now on: wffs) of L . In the definitions below, intuitively, if " B " is, for example, "Being a dog", then " \hat{B} " can be read as "It dogs" or, perhaps better, "It's dogging."¹⁵

(WFF1)

1. *Atomic formulas*: All and only the expressions of the form β , where β is any name for universal.
2. *Compound formulas*: If ϕ and ψ are wffs, then so are: $\neg\phi$, $\phi \& \psi$, $\phi \vee \psi$, and $\Delta_n\phi$.
3. Nothing else is a wff.

¹² Adverbialist approaches have notoriously been employed to address other philosophical problems. See for example (Chisholm 1957; Sellars 1975; Jackson 1975; Tye 1989) for an adverbialist approach to visual experience, and (Lowe 1987; Johnston 1987; Haslinger 1989) for an adverbialist approach to the problem of persistence through time of an individual.

¹³ Two précis. Perhaps it is possible to think of a universal in isolation from any other universal and from any space–time region. Yet, my view is that, if it is possible to think of a universal in isolation, this does not imply the ontological independence of the universal from other universals. Perhaps you can think of *Being a wooden chair* without thinking of *Being a tree*, but you cannot have *Being a wooden chair* without having *Being a tree*; you can think of *Being a person* without thinking of *Being oxygen*, but you cannot have *Being a person* without *Being oxygen*. Secondly, the present discussion concerns the natural, material world. Perhaps there are universals which cannot exist in space and time, such as *Being a perfect square* or *Being third*. If such sort of universals exist, they will not be part of the present discussion.

¹⁴ Clearly the language may be enriched with quantifiers, modal operators, and such; but, again, I shall leave this part of the theory for another occasion.

¹⁵ See (Quine 1985; Quine 1958). More on this point below.

(WFF2)

1. Atomic formulas: All and only the expressions of the form β , where β is any name for universal.
2. Compound formulas:
 - 2.1 If ϕ and ψ are wffs, then so are: $\neg\phi$, $\phi \ \& \ \psi$, $\phi \ \vee \ \psi$.
 - 2.2 If ϕ is an atomic wff or a formula of the form $\neg\psi$, and $\Delta_n, \dots, \Delta_{n+k}$ are adverbial operators ($k \geq 0$), then $\Delta_n, \dots, \Delta_{n+k}\phi$ is a wff.
4. Nothing else is a wff.

I will adopt the first option, WFF1. Given the inferential rules I will provide below, however, there is no real difference in expressive power between WFF1 and WFF2. Indeed, any sentence of the form: " $\Delta_n, \dots, \Delta_{n+k}(\phi \ \& \ \psi)$ ", or " $\Delta_n, \dots, \Delta_{n+k}(\phi \ \vee \ \psi)$ " is, respectively, equivalent to: " $(\Delta_n, \dots, \Delta_{n+k}\phi) \ \& \ (\Delta_n, \dots, \Delta_{n+k}\psi)$ " and " $(\Delta_n, \dots, \Delta_{n+k}\phi) \ \vee \ (\Delta_n, \dots, \Delta_{n+k}\psi)$ ".

3.2 The Semantics

The model of ATP is a sextuple, $M = \langle U, R, l, f, d, s \rangle$, thus composed:

- U : domain of universals; $U: \{A, B, C, \dots, A_1, B_1, C_1, \dots\}$;
- R : spatiotemporal universe containing an infinite denumerable set of regions; $R: \{r_1, r_2, r_3, \dots\}$;
- l : function associating for each $u \in U$ a set of regions in R , that is:

$$l(u) \subseteq \{r : r \leq R\};$$

- f : interpretation function associating for each predicate B in the object language one element of U , that is:
- $f(B) \in U$, if defined;
- d : interpretation function associating for each Δ_n in the object language, a non-empty subregion of R , i.e., $d(\Delta_n) \subseteq R$;
- s : localization function associating for each well-formed sentence ϕ in the object language a set of regions in R , that is:

1. $s(\widehat{B}) = l(f(B))$
2. $s(\neg\phi) = R - s(\phi)$
3. $s(\phi \ \{ \ \psi) = s(\phi) \cup s(\psi)$
4. $s(\phi \ \vee \ \psi) = s(\phi) \cap s(\psi)$
5. $s(\Delta_n\phi) = s(\phi)$.

With a model at hand, we can now proceed to spell out the truth conditions for sentences in L :

- I. If ϕ is an atomic sentence, \widehat{B} :

$$\models_M \phi \text{ iff } \models_M f(B) \in U$$

- II. If ϕ is a negation " $\neg\psi$ ":

$$\models_M \phi \text{ iff not } \models_M \psi$$

III. If ϕ is a conjunction, " ψ & ξ ":

$$\models_M \phi \text{ iff } \models_M \psi \text{ and } \models_M \xi$$

IV. If ϕ is a disjunction, " $\psi \vee \xi$ ":

$$\models_M \phi \text{ iff } \models_M \psi \text{ or } \models_M \xi$$

V. If ϕ is a sentence of the form " $\Delta_n \psi$ ":

$$\models_M \phi \text{ iff } \models_M d(\Delta_n) \subseteq s(\psi) \text{ and } \models_M \psi.$$

Note that clause V. is stated generally, as it applies regardless of whether ψ is any wff (WFF1) or a wff with no other logical operator than adverbs (WFF2).

3.3 Inferential Rules

A first, noteworthy feature of ATP is that it renders the adverbs at hand, even when nested, unrelated (thus avoiding the problems of Gallois's outlined by Varzi).¹⁶ Several of the sentential adverbs in our ordinary language are of this sort. Suppose I tell you that:

- (1) At the beach in the evening P .

This is equivalent to:

- (2) At the beach P and in the evening P .

Or, suppose I tell you that:

- (3) In the park next to Bill P .

This is equivalent to:

- (4) In the park P and next to Bill P .

Grammatically, the adverbs of ATP behave in the same way as "At the beach," "In the evening," "In the park," and "Next to Bill." You can hence swap, drop, and distribute adverbs within sentences of the theory, without changing the truth conditions of sentences. This is reflected in the following inferential rules, where ϕ and ψ are wffs of L :

- (i) $\Delta_n \Delta_m(\phi) \equiv \Delta_m \Delta_n(\phi)$
- (ii) $\Delta_n(\phi) \Rightarrow \phi$
- (iii) $\Delta_n \Delta_m(\phi) \equiv \Delta_n \phi \ \& \ \Delta_m \phi$

Negation, too, will be "transparent" with respect to an adverb:

- (iv) $\Delta_n \neg \phi \equiv \neg \Delta_n \phi$.

From which it follows that:

- (v) $\neg \Delta_n \neg \phi \equiv \neg \neg \Delta_n \phi \equiv \Delta_n \phi$.

¹⁶ (Gallois 1998; Varzi 2001).

Adverbs will also distribute over conjunction:

$$(vi) \quad \Delta_n(\phi \ \& \ \psi) \equiv \Delta_n\phi \ \& \ \Delta_n\psi.$$

and over disjunction:

$$(vii) \quad \Delta_n(\phi \ \vee \ \psi) \equiv \Delta_n\phi \ \vee \ \Delta_n\psi.$$

4 Explicating the Theory

4.1 On Interpretation Again

First of all, I will show that the semantics of ATP captures the intuitive features of repeatable entities vis-à-vis those of particular entities. To this effect, it is useful to contrast (C) with (A). For a tropist, each particular will have a name, specifying its quality and its spatiotemporal location. A tropist's interpretation of:

(1) The spot *s* is blue at time *t*,

is:

(2) *Blueness-at-t-in-s* exists.

Now, it is crucial not to be deceived by the structure of (2). In fact, all that (2) contains is a name, "*Blueness-at-t-in-s*," plus the predicate "exists." For a tropist, the qualitative characters of different spatiotemporal regions are similar, yet not identical. In other words, in (2), "Blueness" does not express a universal entity which is located at *s* and *t*, and that it could be elsewhere too. *Blueness* is just part of the name of the property instance at hand, as it is "B" in the name "Brutus." This is a key point for spelling out the sentential inferences allowed by the tropist vis-à-vis those allowed by the universalist.

In what respect, then, does:

4. *At-t-in-s: Blueness* exists

differ from (2)? Let us begin answering this question by spelling out a bit more of the theory underlying (4). Consider the following sentence of natural language:

(12) The spot *s*₁ is blue at *t*₁,

where *s*₁ and *t*₁ are distinct from *s* and *t* in (1). Following (2), the *tropist* will represent (12) by:

(13) *Blueness-at-t₁-in-s₁* exists.

Now, for a trope theorist, it seems plausible to say that, from (4) and (13), follows:

(14) *Blueness-at-t₂-in-s₂* exists,

where *t*₂ and *s*₂ stand for, respectively, the temporal and spatial mereological sum of *t* and *t*₁ and *s* and *s*₁. That is, in the same way in which a nominalist has the theoretical opportunity to claim that the bread and the cheese are two non-overlapping individuals that compose one individual—the sandwich—which contains all and only them

as parts, so the tropist has the theoretical opportunity to claim that "*Blueness-at-t₂-in-s₂*" is a particular which happens to overlap all and only *t*, *s*, *t₁*, and *s₁*.¹⁷

On the other hand, the tropist cannot infer, from (2) and (13), that *Blueness* is *wholly* at-*t*-and-*s* and *wholly* at-*t₁*-in-*s₁*. That is, the tropist cannot maintain that (2) and (13) have some entity in common. It is not as if there is this entity, *Blueness*, which each sentence attributes two different spatiotemporal locations. As remarked above, for the tropist, every expression of the form "*Blueness-at-t_n-in-s_n*" functions as a proper name. *Blueness-at-t-in-s* is a distinct individual from *Blueness-at-t₁-in-s₁*. So is *Blueness-at-t₂-in-s₂* distinct from both *Blueness-at-t₁-in-s₁* and *Blueness-at-t-in-s*. And *Blueness-at-t₂-in-s₂* is *partially* in *Blueness-at-t₁-in-s₁* and *partially* in *Blueness-at-t-in-s*, but not *wholly* in both. So, according to the tropist, from (2) and (13) it follows that:

(15) *Blueness-at-t-in-s* and *Blueness-at-t₁-in-s₁* exist.

But this is different than saying that *Blueness* is *wholly* at both *t*&*s* and *t₁*&*s₁*. Hence, the tropist has no resources for maintaining that (2) and (13) have some entity in common. This is not a surprising result, considering that, for the tropist, all that there is, is particular.

Let us now move to consider (4). If the theory I am proposing succeeds at distinguishing universals from tropes, (4) will allow for different inferences than (2). Let us consider again the situation in which both (1) and (12) hold, but this time *Blueness* is a universal. If ATP correctly represents universalism, it should allow us to claim that:

(16) At-*t-in-s* at-*t₁-in-s₁*: *Blueness* exists.

Now, recall that, in the theory I presented, you cannot disentangle space and time: there are spatiotemporal regions, not spatial regions *and* temporal regions. Thus, if "at-*t-in-s*" is represented by " Δ_r ," and "at-*t₁-in-s₁*" by " Δ_{r_1} ," (16) can be expressed in the following way:

(17) $\Delta_r \Delta_{r_1} \widehat{B}$,

which entails, in virtue of inferential rule (ii), both:

(18) $\Delta_r \widehat{B}$,

and:

(19) $\Delta_{r_1} \widehat{B}$.¹⁸

Some remarks are in order. First, (17) captures the universalist's *dictum* that a general entity can be wholly at more than one place. This is what the tropist could not

¹⁷ For the suggestion of applying mereology to trope theory, see also (Paul 2002).

¹⁸ Note that this entailment is not in contradiction with the rebuttal of the principle of distribution (F). Indeed, (F) forbids the distribution of a property over a spatial region and a temporal region. In (17), (18), and (19), instead, the distribution is over two distinct spatiotemporal regions. Put it in another way: you can distribute over entire spatiotemporal regions, but you cannot distribute over single spatial or temporal regions. If *Being red* is here-now-ly and there-before-ly, then it is also here-now-ly; but it needs not be here-before-ly.

state, namely, that *Blueness* (the very same entity) is wholly here and wholly there. It is this additional expressive power of (4), then, that sets apart (2) and (4).

Secondly, both (18) and (19) are structured representations. They contain an adverbial modifier *plus* an existential claim. For the universalist, the former is not required for having a well-formed sentence. And there is a relationship between a formula with and a formula without a modifier. In the present case, such relation is expressed by saying that both (18) and (19) entail, in virtue of inferential rule (ii):

$$(20) \widehat{B}.$$

Thirdly, the universalist counterpart of (14) is not a theorem of ATP. Indeed, (18) and (19) do not logically entail:

$$(21) \Delta_{r_2}\widehat{B},$$

where the region referred to by " Δ_{r_2} " is the mereological sum of the regions referred to by " Δ_r " and " Δ_{r_1} ". Suppose *Being a dog* is a universal. (21) is saying that if you have *Being a dog* at *this* region and *Being a dog* at *that* region, you also have *Being a dog* at the region overlapping all and only *this* and *that* regions.

Now, I believe that the entailment from (18) and (19) to (21) should not be a theorem of ATP. It might be true in some cases. But, in others, it does not seem to be true, for two main reasons. The first is that the inference from (18) and (19) to (21) is not valid if the universal in question is a determinate of a determinable universal, such as *Being one kilogram* (more on determinable and determinate properties will be said below). If you have *Being one kilogram* at *this* region and *Being one kilogram* at *that* region, you do not thereby have *Being one kilogram* at the region that overlaps all and only *this* and *that* region; at such larger region, you have *Being two kilograms*. Hence, at best, (21) works for properties which are neither determinate nor determinable. So, it should not be a theorem of ATP.

The second reason why the entailment from (18) and (19) to (21) should not be a theorem of ATP is that such entailment seems to undermine the main intuition beyond (17). If this is correct, then the entailment never holds true (not as a matter of logic, but as a matter of metaphysical necessity). Now, (18) and (19) jointly entail both (17) and (21); and, in lieu of this, one could legitimately ask whether (17) entails (21), or vice versa, or both. If it does, what is, then, the difference between (17) and (21)? If what we aim at capturing through the adverbial modifier is the distinction between a particular and a repeatable entity, then we should reject that (21) is entailed by (18) and (19). (17) captures a key feature of our reasoning, one that should have a primary role in ontology. (21), instead, derives from the habit of applying mereology to all sorts of entities. But mereology is a theory of particular, not repeatable entities. While it works perfectly within trope theory, it fails to capture the intuitions beyond universalism. For these reason, I believe that the entailment from (18) and (19) to (21) never holds true within ATP.

Finally, the notation introduced allows us also to distinguish between a *Platonist* and an *Aristotelian* theory of universals. The latter, but not the former, in fact, will accept the following principle:

$$(22) \neg\widehat{B} \vee \Delta_{r_m}\widehat{B},$$

where n stands for a spatiotemporal region. That is, the Aristotelian maintains that, if a universal exists, it exists in at least one spatiotemporal region.

4.2 Three Alternative Notations and Why They Are Wrong

My treatment of nested adverbs of space and time allows them to be switched and dropped. In other words, they do not really affect each other when they are found together in a sentence. This is not the only treatment of adverbs you can think of within the theory. I will consider three more here, which might at first sight seem appealing, while in fact they are not. Before doing that, however, let me respond to a possible objection.

You might protest that the quantifiers of ATP more closely resemble the ones in the following sentence, rather than the examples given in (8) and (10):

(23) It was warm yesterday *and* today.

Unlike (23), (8) and (10) do not line two adverbs ranging over the same dimension—in this case, time. On the other hand, ATP does line adverbs ranging over the same dimension, namely, space–time regions. But, in (23) you have the conjunction "and", which is missing in (8) and (10). One could argue that such conjunction calls for a different interpretation of quantifiers than the one inspired by (8) and (10); for example, an interpretation in which the quantifiers are sentential operators that deliver, even when nested, only one region at which the sentence is supposed to be evaluated. So, one could argue, the "and" compels a different reading of nested quantifiers than the one given by ATP.

I deny this line of reasoning because it gets the ontology wrong. When I say that P took place on the evening and on the beach I am qualifying *one entity*— P —in two ways. That is what I am doing also when uttering (23), from a universalist perspective. You have one entity—*Being warm*—which is qualified in two ways—it occurred yesterday and today. Universals are repeatable in space–time. Hence, they can be qualified in multiple different ways along the spatiotemporal manifold. That we express, in ordinary language, those multiple qualifications via the conjunction "and" has to do with a superficial grammatical structure, one built on a prejudice towards repeatable entities. Now, the treatment of adverbs, I propose, is entirely in keeping with these considerations; on the contrary, the one inspired to (23) is not. To understand this point better, let us consider the three alternative treatments of nested adverbs I might have adopted.

First, one might think to avoid nested adverbs. Any time you have to express the existence of a property at two regions, instead of a notation like " $\Delta_{r1}\Delta_{r2}$," use something like " $\Delta_{r1} \& \Delta_{r2}$ ". The problem with this is to spell out what "&" stands for. It cannot stand for mereological composition; otherwise, universalism would turn out to be no different from tropism. Also, mereological composition does not work for determinate properties¹⁹: if you have *Being-one-kilogram* both in this region and in that region, it does not follow that you have *Being-one-kilogram* in the mereological sum of the two regions—you will have *Being-two-kilograms*.

¹⁹ This is a point on which I shall come back below.

Another possible notation also does without nested adverbs while inserting the regions in the scope of the adverb. For example, that universal B exists at region r_1 is expressed thusly: " $(\Delta(\widehat{B}, r_1))$." Nested adverbs would hence be expressed by sentences such as " $\Delta(\widehat{B}, r_1 \ \& \ r_2)$ " or " $\Delta(\widehat{B}, r_1, r_2)$." This, however, would suggest that we have, respectively, one adverb or a few classes of adverbs (one class for sentences adverbially modified by exactly one region, another for sentences modified by exactly two regions, and so on). On the contrary, I hold we have one adverb for each different region. It is not as if there is one way of being for a universal at one (any one) region; a way of being which is then qualified differently at different regions. One would have, in fact, to explain what each of those ways of being had in common. And, I believe that they have nothing in common, apart from featuring the same universal. So, there are as many ways of being for a universal as there are regions. As I shall explain more below, universals are determinable entities, which are rendered determinate by a specific existence at a region.

A third option would be to take spatial and temporal adverbs as delivering *at most one region* at which, the sentence in which they figure, is supposed to be evaluated. Gallois's treatment of the temporal adverb of the form "at time t " is of this form.²⁰ According to him, a sentence such as:

(24) Maria is happy in the evening

is interpreted as:

(25) In the evening: Maria is happy,

where "in the evening" is a temporal sentential adverb specifying the time at which the sentence "Maria is happy" has to be evaluated; the reading is something like: "In the evening it is true that." Thus, for a sentence such as:

(26) In the evening: in the afternoon: Maria is happy,²¹

the reading would be something like: "In the evening it is true that in the afternoon Maria is happy." Now, as Varzi has shown in his review of Gallois's book, this theory has some difficulty in explaining the meaning of some nested adverbs.²² But, aside from this difficulty, there is another problem, more pressing for present purposes. The representation proposed by the theory does not allow for an interpretation of (26) according to which "Maria is happy" is true more than once. Yet, this is the bulk of repeatability; and it is one of the imports of ATP. For this reason, I believe that Gallois's interpretation cannot work for present purposes. (And, as a matter of fact, since the entities endurantism is concerned with are also repeatable, I believe that Gallois's view is inadequate to express endurantism as well. But there is no point in pressing this line here.)

²⁰ (Gallois 1998).

²¹ It is to recall, however, that Gallois's goal is to defend endurantism, so he moves within an approach based on individuals. For this reason, I here employ an example involving a proper name.

²² See (Varzi 2001: 4–5).

4.3 On the Spatiotemporal Manifold

In Chap. 7 of *Individuals*, Strawson considers a view that comes very close to ATP. Needless to say, his conclusion is that "this is a project which I leave to anyone whose taste for exercising ingenuity for its own sake is greater than mine."²³ However, Strawson does not refrain from considering the option in some details. While doing this, he also discusses the role that spatiotemporal regions would have to play in the "project." Despite some promising remarks, he deems the project as fated precisely because it needs to appeal to spatiotemporal regions. What are these—asks Strawson—if not individuals? If you had an individual "which maintained its position and its boundaries unchanged," its criteria of identity would be the same as those of the spatiotemporal region it occupies. In other words, spatiotemporal regions are but particulars of a certain sort. Strawson's remark certainly touches an important aspect of ATP. The threat is that R is a domain of real individuals, in which universals are instantiated, and hence cannot support a form radical universalism, such as the one I am defending here. How should the spatiotemporal manifold R be intended, in order to avoid such a threat?

There are two opposite positions when it comes to the metaphysics of the spatiotemporal manifold. One—the so-called *substantialist* tradition—treats the manifold as an individual such that: (a) its existence is independent of the existence of any other entity, and (b) it contains as many proper parts, perhaps infinite other individuals, namely, spatiotemporal regions. If substantialism was true, ATP would be false. In fact, R would be a manifold of individuals, whose existence is independent of the one of universals. Strawson's objection would then go through.

ATP, hence, goes together with the second tradition: *relationalism*. According to relationalism, the space–time manifold can be construed starting from the fundamental entities which are said to occupy it. Clearly, there are various ways of spelling this out, differing on the entities which are taken to be fundamental and on the type of explanation offered for the dependence between the manifold and the fundamental entities. Here, I try to offer the best relationist story which fits ATP that I could devise. I leave for further discussion whether we should accept or reject it.

Suppose that the primitive entities, out of which all that there exists is made of, are events. Suppose, next, that some events are more fundamental than others, each fundamental event is constituted by one, and only one, universal represented by expressions such as " \widehat{X} " (where " X " stands for a universal). Once an event is placed into a network of events, we can and must explicit relations among them. This is done by providing a metric for the network, which determines relations among universals. The spatiotemporal manifold is the by-product of the metric. Thus, the adverbs typical of ATP have the role of placing each universal within a network of events. The spatiotemporal regions, which are predicated of each universal, *determine* the place in the network. In this sense, universals can be thought of as determinables and the adverbs as determinating blocks.

What is key is the metrics defining the spatiotemporal manifold is a concept under which the events are subsumed. Without the fundamental events, there would be no metric. Moreover, the choice of the specific metric is contingent. The adverbs of ATP

²³ (Strawson 1959: 221).

expressing spatiotemporal location of universals are sentential and not nominal adverbs. This is because they do not pertain to one universal at a time, but to a universal as related to others. Adverbs do not express features of a universal taken singularly, but of it as taken as part of a network of universals. Hence, formulations such as (v), (vi), and (vii) are crucial to the theory, in that they allow adverbs to express the relations between universals in the network.

4.4 The Transition from the Name of a Universal to Its Existential Expressions

In *Individuals*, Strawson also argues that universals are incomplete entities, while particulars are complete. The alleged incompleteness stems from the fact that you cannot express the existence of a universal, if it is not particularized, or at least embedded in an existential fact:

At the limit [of the distinction between particulars and universals] we find the feature-placing fact in which no particular is a constituent, though a universal is. At this limit, then, the universal appears as still something incomplete for thought, a constituent of a fact.²⁴

According to Strawson, you cannot express the existence of a universal without considering the universal as part of a particular fact; a fact of which the universal is one of the constituents, alongside some individual. On the other hand, the existence of an individual can be expressed also without making reference to an individual, as when we say that Socrates exists.

Here is a rendering of Strawson's point targeted for ATP. Allegedly, you could see in the transition from a universal, X , to its existential assertion, \widehat{X} , the transition from an incomplete entity to a fact; a fact which is particular. The friends of individuals could thus object that, by committing to expressions of the form \widehat{X} , ATP abandons its spirit. There is no way of expressing the existence of universals without rendering such existence a particular fact. At the bottom of ATP, thus lie particular entities that are facts expressing the existence of universals.

To this, I rebut that the existence of a universal, as expressed in \widehat{X} , is neither *particular* nor a *fact*. It is not particular, since particularity cannot apply to what is repeatable. And universals are repeatable because they can be said to exist at more than one spatiotemporal region at a time, as in (i), (ii), or (iii). Nor it is a fact, since facts are complete entities; they cannot be completed by additional qualification. Expressions such as \widehat{X} , on the contrary, can be qualified in infinite ways. For this reason, I believe that Strawson's challenge can be met by ATP.

You could, however, insist that, if \widehat{X} is not a particular fact, it is because it is incomplete. It was my suggestion, after all, to regard \widehat{X} and like expressions as determinable entities. And, what else is a determinable entity, if not one which is incomplete, or in need of being determined?

I will not deny that, in a sense, \widehat{X} is incomplete. There are many ways in which \widehat{X} can be modified. But this does not render \widehat{X} a particular fact, since it would still be repeatable. In ATP, there are facts which you can call particulars; they are the facts

²⁴ (Strawson 1959: 212).

which embed one set of all com-possible modifications of a situation such as \widehat{X} . \widehat{X} could be modified in many ways, but there are clusters of modifications which could all modify it at once: \widehat{X} could occur at a certain region, quickly, largely, suddenly... By producing one exhaustive list of such modifications, we express a particular fact, one that cannot be repeated. Still, its component, \widehat{X} , will not be a particular.

4.5 On Determinable Properties

Thus far, I did not take stance as to which universals exist, and I shall not take one within this work. When we come to certain controversial cases, however, it matters which stance you take also to ATP. A particularly interesting case is the one of predicates which appears to refer to determinable properties, such as "To have weight." Following the common terminology, I will call those predicates "determinable predicates." There are two positions that one could take regarding determinable predicates.

On one hand, one could hold that for each determinable predicate, there is a correspondent universal. Thus, to the predicate "To weigh" corresponds the universal *Having weight*; this cannot exist but in one out of infinite determinate ways, and it cannot exist in the same determinate way more than once at each space–time region. This would call for no enrichment of ATP.

On the other hand, one could hold that there is no general, determinable universal such as *Having weight*. Rather, there are a variety perhaps an infinity of universals, such as *Being one gram*, *Being three kilograms*, *Being thirty kilograms*, and so on. Each of those universals is incompatible with the others, in the following way: if you have one of them—for example, *Being one kilogram*—at a region, you cannot have another—for example, *Being two kilograms*—at the very same region. (This incompatibility can be spelled out in terms of one of the relations of ontological dependence among universals.) How does one express the determinate aspects of a determinable universal within ATP?

My proposal is to regard the determinate aspects as adverbs. But, this time, the adverbs are nominal, rather than sentential. Each universal will have a *space of determinates* defining it. For example, the space of determinates associated to *Having weight*—which I will refer to as " Σ "—will be given by all the positive real numbers²⁵:

$$\Sigma : \{x : x \geq 0\}.$$

On the other hand, the space of determinates associated with *Having color*—"Ω"—will be the whole space of the color chart:

$$\Omega : \{x : x \geq CC\},$$

where CC stands for the color chart. To make an example, the following sentence:

$$(27) \quad \Delta_{r-1}(\Omega_3\widehat{C} \ \& \ K_5\widehat{W}),$$

²⁵ This supposing that there is only one scale—say, the one in grams—for weight. For expressing different scales one could use a quantifier other than " Σ ".

expresses the existence, at region r_1 , of the determinate color that occupies position 3 in the color chart—say, a specific shade of white - and of the determinate weight that occupies position 5 in the space of determinate weights—say, five kilograms. Hence, if we represent *Being a dog* as D , the sentence:

$$(28) \Delta_{r_1}(D \& K_3\widehat{C} \& \Omega_5\widehat{W}),$$

is saying that there is a five-kilogram white dog at region r_1 .²⁶

5 Conclusions

ATP thus lays the foundation for “a world of universals”, an ontology in which universals are the sole denizens of reality. Look in front of you. You will see green here, red there, a table in front, and a person on the right. Provided you trust your eyesight as accurate, and ontologically salient, all these are—I maintain—universals. What you come to know is that:

(29) *Greenness* exists here-and-now-ly

(30) *Redness* exists there-and-now-ly

(31) *Being a table* exists in-front-and-now-ly

(32) *Being a person* exists on-the-right-and-now-ly.

These are your initial data on the basis of which to build an ontology. It still remains to dig deeper into the analysis of universals, especially to clarify their existence criteria and the types of existential joints among them. Moreover, more complex cases of predication shall be addressed too. For now, I shall be content if to the eyes of the reader a rigorous framework for universalism starts taking shape.

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²⁶ On determinables, see also (Armstrong 1989, 1978; Campbell 1990: 66).

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