

Coextension and Identity

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1. The coextension difficulty

Suppose that a is F and that a is also G (for arbitrary “ a ”, “ F ” and “ G ”). Then I shall say that *a case of coextension* is a situation in which the following conditions are both true (where plural descriptions like “the F s”, “the G s”, etc. are intended as denoting *unambiguously* all and only the things that are F , all and only the things that are G , etc.):

Non-identity: $\langle a$ is $F \rangle$ and $\langle a$ is $G \rangle$ are distinct propositions, *i.e.* distinct ascriptions of properties to a ;¹

Coextension: the F s = the G s (where quantification is intended as unrestricted).

Metaphysicians disagree about whether there are cases of coextension thus defined. This chapter is about this metaphysical dispute in the context of *thing* nominalism, namely this version of nominalism that rejects tropes alongside universals. Since whether there are genuine cases of coextension is contested, I shall use the phrase “*alleged* cases of coextension” to refer specifically to these situations in which it is disputed whether both *Non-identity* and *Coextension* are true.² Roughly, alleged cases of coextension correspond to situations in which a realist about universals would claim that there is a case of coextension. Here are some examples of alleged cases of coextension:

- A cordate particular is a particular with a heart. A renate particular is a particular with kidneys. So *prima facie* by asserting that Kiki is cordate and that Kiki is renate, we are asserting two different things about Kiki. If so, \langle Kiki is cordate \rangle and \langle Kiki is renate \rangle appear to be different ascriptions of properties to Kiki. Yet “is cordate” and “is renate” apply to exactly the same particulars.
- A triangular particular is a particular with three angles. A trilateral particular is a particular with three sides. So *prima facie* by asserting that Triglet, a particular figure,

is triangular and by asserting that Triglet is trilateral we seem to be asserting two different things. And so it seems that <Triglet is triangular> and <Triglet is trilateral> are non-identical propositions, although “is triangular” and “is trilateral” are necessarily coextensive.

- Consider Chilito, a red and spicy particular. It seems that <Chilito is red> and <Chilito is spicy> are non-identical propositions. But imagine that only what is present exists and that, presently, the red particulars = the spicy particulars; or that only what was past or is present exists and that it has always been the case that the red particulars are the spicy particulars. Then consider that Chilito will become brown while remaining spicy.

The first example is an alleged case of contingent coextension: “is cordate” and “is renate” have the same actual extension, but a cordate particular without kidneys is a logical possibility. The second example is an alleged case of necessary coextension: every possible triangular figure is trilateral, and vice versa. The third situation exhibits an alleged case of *temporary* coextension. The plausibility of temporary coextension depends on disputed views on the structure of time and the persistence of objects.

By analogy with Kit Fine’s (2003) description of the debate about coincident material objects, I shall call *pluralism about coextension* (or, for short, *pluralism*) the view that *Non-identity* holds in every alleged case of coextension. Thus, according to the pluralist, alleged cases of coextension always involve different ascriptions of properties to a same particular. On the other hand, I shall say that whoever is committed to the claim that *Non-identity* fails in some alleged case of coextension is committed to a form of *monism* about coextension. Therefore, the debate between pluralists and monists concerns the range of situations in which *Non-identity* is true. But there may be disagreements within each group regarding the range of situations in which *Coextension* holds (see section 3 below for such disagreements among monists). Considering our examples and similar ones, there is undeniably a common sense intuition – that is, a pre-theoretical and uncritical belief (Rodriguez-Pereyra 2002, 201) – in favour of pluralism. This is the reason why any theory of properties that seems to be involved in monism is thought of as having a “coextension difficulty”. The coextension difficulty targets a specific family of thing nominalisms that I shall call *analytic extensional nominalism* (or AEN, for short).

2. Analytic extensional nominalism

Proponents of AEN, contrary to other nominalists, typically purport to analyse ascriptions of properties (that is why they are *analytic*). There are disagreements among historical analytic extensional nominalists about the sort of *analysis* they purport to offer.³ My preference is to cast examples of AEN analyses in terms of the propositional operator “because”. Here are four paradigmatic examples of how proponents of AEN account for ascriptions of properties (for ‘*a*’ and ‘*F*’ arbitrary):

- *Plural nominalism*: *a* is *F* because *a* is one of the *F*-particulars;
- *Class nominalism*: *a* is *F* because *a* is a member of the class of *F*-particulars;
- *Resemblance nominalism*: *a* is *F* because *a* resembles every *F*-particular;⁴
- *Natural (class) nominalism*: *a* is *F* because *a* is a member of the class of *F*-particulars and the class of *F*-particulars is a natural class (alternatively, because *a* is one of the *F*-particulars and the *F*-particulars together are natural⁵).⁶

The first two examples of AEN and their analogues are usually associated with an account of properties as *abundant*. On the other hand, versions of AEN alike to the last two examples are associated with a *sparse* view on properties. These theories assume an unanalysable non-logical predicate as primitive, e.g. “resemble” or “is natural”, to account for ascriptions of properties. But one can also combine an abundant version of AEN (e. g. class nominalism) with a sparse version of this doctrine (e. g. natural class nominalism) in order to get a version of AEN according to which properties are abundant although some of them are *natural* (Lewis 1999).

I must emphasise that, although these versions of AEN are associated with different accounts of properties, AEN does not incur a commitment to properties. Some analytic extensional nominalists admit classes and identify properties with *property classes* that are defined as classes whose members are all and only the things that have a property. Other proponents of AEN used to identify properties with *property wholes* instead (Goodman 1966, 211-12; see also Barcan Marcus 1978, 354). But analytic extensional nominalists need not identify properties with anything at all (Rodriguez-Pereyra 2002, 56-62). For, as some of the proposed examples indicate, proponents of AEN can account for ascriptions of properties without committing themselves to properties (conceived of as classes, wholes or otherwise).

So versions of AEN may differ greatly with respect to their ideology and ontology: some, but not all of them, admit classes and properties; some, but not all of them, admit a

sparse view of (ascriptions of) properties; some, but not all of them, admit an unanalysable non-logical predicate as primitive. And they can also differ with respect to the kind of analysis they purport to offer. Differences between varieties of AEN will have little or no importance in what follows.⁷ For the coextension difficulty challenges every variety of AEN in virtue of what these theories share, namely the following axioms:

- *Thing Nominalist Axiom*: There are neither universals nor tropes.
- *Analysability Axiom*: ascriptions of properties are analysable.
- *Extensionalist Axiom*: necessarily, $\langle x \text{ is } \Phi \rangle = \langle y \text{ is } \Psi \rangle$ iff $x = y$ and the Φ s = the Ψ s.

The *Thing Nominalist Axiom* is what makes AEN thing nominalist; the *Analysability Axiom* makes it analytic; and the *Extensionalist Axiom* makes it extensionalist: according to analytic extensional nominalism, the identity of ascriptions of properties is a purely extensional matter.⁸ I shall sometimes describe the *Extensionalist Axiom* as meaning that the identity of ascriptions of properties wholly depends on (i) whether their propositional subjects have the same reference and (ii) whether their propositional functions have the same extension. A consequence of this axiom is that, on the assumption that there are properties, properties that have the same extension turn out to be identical. But I am not assuming that there are properties.

AEN conflicts with the claim that there are cases of coextension because of the combination of the *Thing Nominalist*, the *Analysability*, and the *Extensionalist* axioms.⁹ But strictly speaking, the coextension difficulty originates in the *Extensionalist Axiom*. For, for any alleged case of coextension, if *Coextension* is true in this case, then it follows by the *Extensionalist Axiom* that *Non-identity* is false in this case. Thus the *Extensionalist Axiom* seems to incur an involvement in monism about coextension. However, this is so only if *Coextension* really holds in alleged cases of coextension. So it seems that there are two ways AEN can accommodate the coextension difficulty. Proponents of AEN can either maintain that, despite appearances, *Coextension* fails in alleged cases of coextension or they can maintain that, despite appearances, it is *Non-identity* that fails in these cases. The former strategy implies a certain amount of involvement in pluralism about coextension. The second strategy amounts to a defence of monism about coextension. I shall offer a more detailed account of these strategies in the next section, and I shall explore the monist strategy in the following sections.

3. Three degrees of involvement in pluralism

According to the pluralist, alleged cases of coextension always involve different ascriptions of properties to a same particular. Opponents to AEN usually endorse pluralism. But *prima facie* AEN conflicts with pluralism.

On the other hand, whoever is committed to the claim that *Non-identity* fails in some alleged case of coextension is committed to a form of monism about coextension. We may distinguish between three versions of monism that are each available to proponents of AEN. Adapting Fine's terminology (2003, 197-200), I shall qualify these three versions of monism about coextension as *mild*, *moderate*, and *extreme*. According to the *mild* monist, *Non-identity* fails in alleged cases of necessary coextension but not in any other alleged case of coextension. On the other hand, the *moderate* monist about coextension rejects *Non-identity* in both alleged cases of necessary and contingent coextension, but maintains *Non-identity* in alleged cases of temporary coextension. Finally, an *extreme* monist about coextension rejects *Non-identity* in every alleged case of coextension, including temporary ones.

Given the *Extensionalist Axiom*, AEN entails the rejection of *Non-identity* or *Coextension* in alleged case of coextension. Denying *Non-identity* implies an involvement in monism while denying *Coextension* implies an involvement in pluralism. There is an intuition in favour of pluralism. But is this intuition worth preserving for proponents of AEN? How involved do they need to be in pluralism? We can distinguish three degrees of involvement in pluralism corresponding respectively to moderate monism, mild monism, and full pluralism. The standard analytic extensional nominalist solution to the coextension difficulty, held for instance by Gonzalo Rodriguez-Pereyra (2002), incurs a mere commitment to mild monism and so a commitment to the second degree of involvement in pluralism. But I tend to believe that mild monism about coextension is the least defensible version of monism about coextension in the context of AEN. For, AEN being assumed, any degree of involvement in pluralism yields a further ontological commitment, so that mild monism is the least parsimonious monist solution to the coextension difficulty.

The first degree of involvement in pluralism, moderate monism, implies that proponents of AEN commit themselves to an eternalist ontology of temporal slices of past and future particulars. For, assuming presentism (or growing block theory), the *Extensionalist Axiom* and *Coextension* together yield the conclusion that *Non-identity* fails in alleged cases of temporary (e. g. present) coextension. Moreover, three-dimensionalist eternalism is insufficient in order to yield moderate monism. For imagine that the world contains just three tomatoes: *a*, *b* and *c*. Suppose that *a* is green at t_1 and red afterwards, that *b* is green at t_2 and red afterwards, and

that c is green at t_3 and red afterwards (for $t_1 \neq t_2 \neq t_3$). Then, according to three-dimensionalist eternalism, the red particulars (a , b and c) = the green particulars (a , b and c). By the *Extensionalist Axiom* we can derive that $\langle a$ is green \rangle and $\langle a$ is red \rangle are identical ascriptions of properties to a , which means that *Non-identity* fails.¹⁰ However, a commitment to temporal slices of particulars would avoid this conclusion. The temporal slices of a , b , and c that are green are not the same as the temporal slices of a , b , and c that are red. So, if the extension of “is green” is the domain of past, present and future green temporal slices of particulars and if the extension of “is red” is the domain of past, present and future red temporal slices of particulars, *Coextension* fails and *Non-identity* can be maintained in alleged cases of temporary coextension.

The second degree of involvement in pluralism, mild monism, implies a further commitment to worldbound otherworldly *possibilia*, *i. e.* a commitment to David Lewis’s *modal realism* (Lewis 1986). For, if actualism is assumed, the *Extensionalist Axiom* and *Coextension* together entail that *Non-identity* fails in alleged cases of contingent coextension. On the other hand, modal realism with overlap is the modal analogue of three-dimensionalist eternalism and is insufficient to yield mild monism.¹¹ However, if one assumes an ontology of worldbound otherworldly particulars, there are (possible) cordate particulars that are not renate. If so, the extension of “is cordate”, which turns out to be the domain of cordate *possibilia*, is distinct from the extension of “is renate”, which turns out to be the domain of renate *possibilia*. Since *Coextension* fails according to this model, *Non-identity* and the *Extensionalist Axiom* can be consistently maintained in alleged cases of contingent coextension. So proponents of AEN must commit themselves to an ontology of worldbound otherworldly *possibilia* in order to be involved in the second degree of pluralism, *i. e.* if they want to be mild monists.

Finally, the third degree of involvement in pluralism consists in maintaining that *Non-identity* is true in every alleged case of coextension, and in particular in cases of necessary coextension. The only way one can coherently maintain the *Extensionalist Axiom* with *Non-identity* in cases of necessary coextension consists in a further commitment to a modal realism about *impossible* particulars. For suppose that there are impossible particulars that are triangular without being trilateral. Then “is triangular” and “is trilateral” fail to be coextensive as the domain of triangular particulars contains impossible objects that are not trilateral and the domain of trilateral particulars contains impossible objects that are not triangular.

The third degree of involvement in pluralism may appear utterly unacceptable.¹² If it is so, proponents of AEN cannot be fully involved in pluralism. But we may wonder why they

should be involved in pluralism *at all*. Of course, the ontological imports of the first and second degrees of involvement in pluralism are not as bad as the ontological import of the third degree. Still, modal realism seems implausible to most philosophers. And while an eternalist four-dimensional conception of space-time appears less eccentric than modal realism, it is not uncontroversial either. Solutions to the problem of universals are not supposed to have such ramifications for the metaphysics of modality and time. Other things being equal, it is preferable to avoid a commitment to such ontologies for *ad hoc* reasons. Since extreme monism about coextension avoids such commitments, it is, other things being equal, the most defensible position for proponents of AEN.

However, in what follows I shall merely defend the *moderate* version of monism about coextension because other things are *not* equal. They are not equal because there is an asymmetry between monism about contingent coextension and monism about temporary coextension: while modal realism is *prima facie* less plausible than its negation, eternalism *cum* four-dimensionalism is not *prima facie* less plausible than its negation, or so I believe. If so, then *all things considered* there is less pressure to reject our intuitions about the non-identity of temporarily coextensive ascriptions of properties. Moreover, my defence of moderate monism against pluralist arguments can be adapted *mutatis mutandis* to temporal cases so as to give rise to a defence of extreme monism about coextension. Describing how to adapt my defence of moderate monism to temporal cases would be space consuming and slightly redundant. It is therefore left as an exercise.

Can proponents of AEN coherently maintain that *Non-identity* fails in alleged cases of necessary and contingent coextension? This depends on whether they can resist arguments for pluralism about coextension. There are two such arguments. I shall describe them in the next section and undermine the weakest argument there. Then I shall explain how moderate monist proponents of AEN can resist the strongest line of argument for pluralism in section 5.

4. Arguments for pluralism

There are two related arguments in favour of pluralism about coextension. One argument has to do with *meaning*, the second argument is a Leibniz's Law argument. I shall describe these two arguments in this section. I shall immediately criticize the argument from meaning. For my criticism of this argument will play a role in the subsequent reply to the strongest line of argument for pluralism, namely the Leibniz's Law argument.

4.1 The argument from meaning

The traditional argument for pluralism has to do with *meaning*. The predicates “is cordate” and “is renate” have different meanings and so do “is triangular” and “is trilateral”. For “is cordate” *connotes* a part-whole relation holding between organisms and their heart, while “is renate” *connotes* another part-whole relation holding between organisms and their kidneys. Likewise, “is triangular” *connotes* a part-whole relation of geometrical figures with their angles, whereas “is trilateral” *connotes* another part-whole relation in which geometrical figures stand with their sides. It should go without saying that proponents of AEN agree with their opponents that these ascriptions of part-whole relations are non-identical.¹³

According to a traditional view, predicates with different meanings represent different things in reality. This thought is, according to MacBride (2012), constitutive of the creation myth of analytic philosophy:

Then, around 1898, the light shone upon Cambridge. Words, once benighted, were blessed with representational efficacy. “[Any] terms that can be used in a proposition, have being or are entities,” reported Moore (in Baldwin 1901–2, 2: 421). Russell confirmed it: “Words all have meaning, in the simple sense that they are symbols which stand for something other than themselves” (1903, § 51). Language and the world co-habited in a state of Edenic co-operation. (MacBride 2012, 135)

In fact, the Russell of 1903 identifies meanings with properties. If it is assumed that properties are meanings, or at least that to each particular meaning there correspond a distinct property, then *Non-identity* naturally follows from the assumption that coextensive predicates have distinct meanings, and so pluralism is true.

But the argument from meaning is weak, as I think contemporary realists about universals should agree. David Armstrong (1978, 11) has emphasised the past tendency among realists about universals to think that to each predicate-type or *meaning* there corresponds a peculiar universal, and he quotes Timothy Sprigge (1970, 85n1) as illustrative of this view. Yet Armstrong firmly rejects the conception of universals as meanings. For, on Armstrong’s light, universals are sparse. In general, Armstrong’s view is that, if *P* and *Q* are distinct properties, then there are *distinct* causal powers, cp^1 and cp^2 , such that *P* endows its instances with causal powers cp^1 while *Q* endows its instances with causal powers cp^2 . Arguably, this view is compatible with there being two predicates “is *F*” and “is *G*” with different meanings that are satisfied by the same particulars and represent the same property. We may imagine, for instance, that the predicates “is water” and “is H₂O” were, during a

certain period, associated with different meanings. For instance, before the discovery that water is H₂O, it was part of the meaning of “is water” that water quenches thirst, but it was not part of the meaning of “is H₂O” that H₂O quenches thirst. Nevertheless, if there are properties, then it seems that “is water” and “is H₂O” must represent the same property on Armstrong’s view despite the fact that these predicates have different connotations. So Armstrong concludes:

What we must do, I submit, is to distinguish with all possible sharpness between the meaning, intension, or connotation of a predicate on the one hand, and the property or relation, if there is one, in virtue of which the predicate applies to particulars, if it does apply to any, on the other. (Armstrong 1978, 12)

The monist about coextension could not agree more with Armstrong’s *sharp* distinction: the claim that there are two distinct coextensive predicates with different meanings ascribed to a particular does not imply that *Non-identity* is true. According to monists, her pluralist opponents misleadingly believe that any alleged case of coextension exhibits different ascriptions of properties. And part of the reason why, according to monists, the pluralist entertains this misleading belief is that she illegitimately concludes from a difference of meaning to a difference of ascriptions of properties.

4.2 The Leibniz’s Law argument.

Another line of argument for pluralism about coextension appeals to Leibniz’s Law. The Leibniz’s Law argument for pluralism proceeds by deriving an absurd conclusion from *Coextension* and the rejection of *Non-identity* by Leibniz’s Law. In this section, I describe Leibniz’s Law arguments for pluralism about contingent and necessary coextension. In section 5, I shall develop the monist reply to these arguments.

Consider alleged cases of contingent coextension first. The Leibniz’s Law argument for pluralism in alleged cases of contingent coextension runs as follows. Let us assume that “is cordate” and “is renate” are coextensive, hence that (1) is true:

(1) The cordate particulars = the renate particulars.

From (1) and the *Extensionalist Axiom*, we can derive

(2) $\langle \text{Kiki is cordate} \rangle = \langle \text{Kiki is renate} \rangle$.

(2) implies that *Non-identity* is false in this situation. However, since coextension is only contingent in this case, there might have been a cordate particular that is not renate, or the other way around. For the sake of the argument, I shall assume that Kiki is not essentially renate, *i.e.* that it could have had no kidneys. Imagine, for instance, that Kiki lost its kidneys in a crash and benefits from a bionic prosthesis that plays each of the functional roles that are naturally played by kidneys. This counterfactual situation represents a possibility according to which it is true that Kiki is cordate but false that Kiki is renate. So the following is true:

(3) $\langle \text{Kiki is cordate} \rangle$ and $\langle \text{Kiki is renate} \rangle$ are such that they might have distinct truth values.

Necessarily, propositions that have distinct truth values are distinct. So (4) follows from (3):

(4) $\langle \text{Kiki is cordate} \rangle$ and $\langle \text{Kiki is renate} \rangle$ are such that they might be distinct ascriptions of properties to Kiki.

However by Leibniz's Law, (2) and (4) yield (5):

(5) $\langle \text{Kiki is cordate} \rangle$ and $\langle \text{Kiki is cordate} \rangle$ are such that they might be distinct ascriptions of properties to Kiki.

But (5) is absurd. Nothing, and *a fortiori* no ascription of a property, may be distinct from itself. Therefore, by *reductio* it seems that (2) is false, or so the argument goes. But if (2) is false, *Non-identity* is true in alleged cases of contingent coextension.

A similar but weaker argument can be proposed in favour of pluralism about alleged cases of necessary coextension. "Triangular particulars" and "trilateral particulars" are co-referring terms that, by Leibniz's Law, we should be able to substitute *salva veritate* in extensional contexts. It is true that triangular particulars are so-called because of their having three *angles*. However, it is false that trilateral particulars are so-called because of their having three angles. For trilateral particulars are called "trilateral" not in virtue of their having three angles but in virtue of their having three sides. This may be thought of as indicating that

ascriptions of triangularity and of trilaterality to a particular are distinct ascriptions of a property to this particular.

I believe that these arguments are susceptible to reach the conviction of many readers. But I do not believe them to be conclusive. I shall explain why in the next section.

5. The monist reply to Leibniz's Law arguments

5.1 Opacity

I do not believe that Leibniz's Law arguments for pluralism about coextension are irresistible and this is the reason why I believe that proponents of AEN can be moderate monists about coextension. The argument for pluralism about contingent coextension is structurally similar to a familiar line of argument for the non-identity of coincident material objects. The statue (Goliath) and the lump of clay (Lumpl) coincide. The lump of clay may be reshaped in the shape of a ball. The statue may not be reshaped in the shape of a ball. Therefore, the statue and the lump of clay are non-identical, or so the argument goes. But it is well-known that monists about coincident objects have replied to such arguments that they are based on linguistic illusions. I believe that monist proponents of analytic extensional nominalism can maintain that Leibniz's Law arguments for pluralism about coextension are based on similar illusions.

Consider the Leibniz's Law argument for pluralism in cases of necessary coextension first. There is no doubt that this argument is based on a linguistic illusion. For it is analogous to Quine's famous "Giorgione was so-called because of his size". Giorgione is identical to Barbarelli. But while it is true that Giorgione was so-called because of his size, it is false that Barbarelli was so-called because of his size. The predicate "is so-called because of his size" generates an opaque context. We cannot substitute co-referential terms *salva veritate* in this context. For the truth value of these predications varies with the way something *is called*. So a failure of Leibniz's Law in such a context is not a reliable guide to non-identity. Similarly, the context introduced by the predicate "are so-called because of their having three angles" is opaque for the same reason. The truth value of predications of this predicate varies depending on the way things are called. So from the conjunction of "triangular particulars are so-called because of their having three angles" with the negation of "trilateral particulars are so-called because of their having three angles" we cannot conclude by Leibniz's Law that ascriptions of triangularity are distinct from ascriptions of trilaterality.

Harold Noonan (1991) calls *abelardian* a predicate, "is *F*", if it is such that, from the claim that *a* satisfies "is *F*" and the claim that *b* fails to satisfy "is *F*", we cannot conclude by

Leibniz's Law that a and b are non-identical. "Is so-called because of its size" is *abelardian*. Noonan's terminology can be adapted to plural contexts. Following Oliver and Smiley (2013), I shall use " \mathbf{x} ", " \mathbf{y} ", etc. as plural variables. So, in general, the predicate "are F " will be said to be abelardian iff, for any \mathbf{x} and \mathbf{y} , from the claim that \mathbf{x} are F and the claim that \mathbf{y} are not F we cannot conclude by Leibniz's Law that $\mathbf{x} \neq \mathbf{y}$. In other words, abelardian predicates generate opaque contexts. The predicate "are so-called because of their having three angles" is abelardian because from the claim that the triangular particulars are so-called because of their having three angles and the negation of the claim that the trilateral particulars are so-called because of their having three angles we cannot conclude that the triangular particulars are distinct from the trilateral ones. Indeed, they are the same particulars.

An abelardian predicate is abelardian because its satisfaction is affected by the *way* we refer to or conceive of its subjects (Noonan 1991, 188). I shall reserve the term "guise" to talk about these *ways* things are referred to or conceived of. So the triangular/trilateral figures have a triangular guise and a trilateral guise. When we think of them as triangular particulars, we generate a context in which we assign great importance to their triangular guise. When we think of them as trilateral particulars, we generate a context in which we assign great importance to their trilateral guise. But, of course, these different guises should not be thought of as being different *properties* in the context of monist AEN: a triangularity property and a trilaterality property. For even monist proponents of AEN who admit properties deny that these are *non-identical* properties. So I suggest that guises are determined by the connotation, the *meaning*, of predicates. Thus the triangular guise of triangular figures is determined by what the predicate "is triangular" connotes. Likewise, the trilaterality guise of trilateral figures is determined by what the predicate "is trilateral" connotes. These two predicates, "is triangular" and "is trilateral" have distinct connotations. And as the discussion of the argument from meaning has shown, we cannot conclude from a difference in meanings of predicates to a difference of ascriptions of properties (see section 4.1).

I have explained earlier that the standard view about coextension in analytic extensional nominalism is mild monism, namely the view that *Non-identity* fails only in cases of necessary coextension. I think that mild monists should agree with my reply to Leibniz's Law arguments for pluralism in cases of necessary coextension. But this line of reply can be extended to alleged cases of contingent coextension.

In order to do so, moderate monists should first claim that cordate/renate particulars have a cordate and a reneate guise. When we think of these particulars as cordate particulars, we conceive of them under their cordate guise; when we think of them as reneate particulars,

we conceive of them under their renate guise. But we need not think of these different guises as different properties: *being renate* and *being cordate*. A moderate monist can claim that the cordate guise of cordate particulars is determined by what the predicate “is cordate” connotes, namely a relation between organisms and their *heart*; while the renate guise of renate particulars is determined by what the predicate “is renate” connotes, namely, a relation between organisms and their kidneys. In a similar vein, a moderate monist about coextension can say that the names “<Kiki is renate>” and “<Kiki is cordate>” refer to a single proposition under different guises: a renate and a cordate guise. When we refer to or conceive of this proposition as the proposition that Kiki is renate we refer to or conceive of it under its renate guise. When we refer to or conceive of it as the proposition that Kiki is cordate we refer to or conceive of it under its cordate guise.

Second, it is well-known that monists about coincident material objects have argued that predicates involving a modal modifier are abelardian. Consider the following emendation of Quine’s famous example. 8 is necessarily greater than 7. The number of planets in the solar system is contingently greater than 7. However, we would not want to conclude that the number of planets in the solar system is not identical to 8. For it is identical to 8 (Pluto is not a planet). So predicates involving a modal modifier generate opaque contexts because they are sensible to guises.

But the claim that predicates involving modal modifiers generate opaque contexts can also provide a solution to the Leibniz’s Law argument for pluralism about contingent coextension. For this argument crucially appeals to (4), namely the claim that <Kiki is cordate> and <Kiki is renate> might be non-identical ascriptions of properties to Kiki. On the other hand, we derived the absurd (5) from (2) and (4) by Leibniz’s Law. However, if the context introduced by the predicate “might be distinct ascriptions of properties to Kiki” is opaque, then we cannot validly appeal to Leibniz’s Law in order to derive (5) from (2) and (4). Therefore, moderate monists can block Leibniz’s Law arguments for pluralism about coextension.

5.2 Moderate monism and counterpart theory

The preceding reply to Leibniz’s Law arguments for pluralism about coextension can be, but need not be, implemented in counterpart theoretic terms *provided that* the relevant counterpart theory is compatible with an actualist account of modality (more on this *proviso* at the end of this section). For it is analogous to the monist reply to Leibniz’s Law arguments for the non-identity of persons and bodies that Lewis (1971) famously implemented using his counterpart

theory. What kind of counterpart theory would be required? One may think of a counterpart theory for *properties* as developed by Heller (1998). Philosophers have appealed to such a counterpart theory in other contexts (Ehring 2004, Ball 2011), and I have myself proposed to use a counterpart theory for properties in order to solve the coextension difficulty once (Guigon 2009). But a counterpart theory for properties would only serve these proponents of AEN who are committed to properties (nominalistically conceived). Yet versions of analytic extensional nominalism according to which there are no properties are challenged by Leibniz's Law arguments for pluralism about contingent coextension too. Therefore, I have come to believe that a counterpart theory for *propositions* better suits the monist needs.

There are independent reasons to embrace a counterpart theory for propositions once we endorse a counterpart theory for individuals. Cian Dorr (2005) has argued that counterpart theorists need a counterpart theory for propositions in order to account for modal judgements about propositions. Dorr (2005, 217) acknowledges that Lewis (1986, 253) holds that in some contexts identity pairs can have non-identity pairs as counterparts. On this basis, Dorr suggests that we may want to say things like "although the proposition that *a* is *F* is identical to the proposition that *b* is *F*, the former could have been true while the latter is false" (consider, for instance, the propositions that I am human and that my body is human). A counterpart theory for propositions allows us to make sense of such a claim by interpreting it as meaning that a pair of identical propositions can have a non-identity pair of propositions as counterparts. In a similar vein, monist proponents of AEN must be able to say that although the proposition that *a* is *F* is identical to the proposition that *a* is *G* the former could have been true while the latter is false in order to solve the Leibniz's Law argument for pluralism. A counterpart theory for propositions would allow them to make perfect sense of such a claim. For the proponent of AEN can maintain that, properly interpreted, the possibility that Kiki has no kidney only warrants the judgement that the identity pair of propositions <Kiki is cordate> and <Kiki is renate> have a non-identity pair of propositions as counterparts.

Appealing to a counterpart theory for propositions in the present context is not *ad hoc*. For, given the *Extensionalist Axiom* and a counterpart theory for individuals, a commitment to a counterpart theory for propositions is congenial. According to the *Extensionalist Axiom*, propositions derive their identity from the identity of the reference of their propositional subjects and of the extension of their propositional functions. Counterpart theorists maintain that the identity of individuals is bound to a world, hence that individuals are *worldbound*. Therefore, it follows from the *Extensionalist Axiom* that, if individuals are worldbound, so are propositions. But if propositions are worldbound, if their identity is fixed to a world, then the

most natural way to account for their being possibly or necessarily true is in counterpart theoretic terms: $\langle P \rangle$ is possibly true if and only if $\langle P \rangle$ has a true counterpart in some world; $\langle P \rangle$ is necessarily true if and only if every counterpart of $\langle P \rangle$ is true.

How should we account for counterpart relations between propositions? Again, the *Extensionalist Axiom* indicates us how to do so. According to AEN, the identity of a proposition is function of the identity of the semantic values of its propositional subject and its propositional function. This suggests that proponents of AEN should conceive of counterpart relations between propositions as jointly determined by (i) counterpart relations between semantic values of propositional subjects and (ii) counterpart relations between extensions of propositional functions. Thus,

Propositional counterparthood: $\langle x \text{ is } \Phi \rangle$ is a counterpart of $\langle y \text{ is } \Psi \rangle$ iff x is a counterpart of y and the Φ s are *plural* counterparts of the Ψ s.

Lewis's counterpart theory tells us when an individual is a counterpart of an individual. But it does not tell us when *several* individuals are counterparts of *several* individuals. So in order to adequately account for relations of counterparthood between propositions we need an account of plural predications of counterparthood, *i.e.* a *plural* counterpart theory.

The suitable plural counterpart theory must allow us to say that possible cordate particulars are, collectively, *plural* counterparts of the actual cordate/renate particulars under the appropriate counterpart relation and that possible reneate particulars are, collectively, *plural* counterparts of the actual cordate/renate particulars under *another* counterpart relation. Suppose thus that Kika is Kiki's cordate counterpart in w_I , and suppose that x^1, \dots, x^n are the cordate counterparts of the actual cordate/renate particulars in w_I . Let us use the rigidified definite description "the w_I -cordates" in order to refer to x^1, \dots, x^n . Then the proposition that Kika is among the w_I -cordates – or simply $\langle \text{Kika is } w_I\text{-cordate} \rangle$ – is a cordate propositional counterpart of the proposition $\langle \text{Kiki is cordate} \rangle$.

Lewis's (1968) original counterpart theory is *singularist* in that his counterpart relations are binary relations holding between *at most two* particulars. Thus, in the modal context, Lewis's relation of counterparthood is defined as follows:

Singular counterpart: for all x and y , x is a counterpart of y iff (i) x is similar to y and (ii) there is no z in x 's world such that z is more similar to y than x is.

According to Lewis's counterpart theory, a particular a is *possibly F* iff a has a counterpart that is F ; and a is *necessarily F* iff every counterpart of x is F .

By contrast, the basic idea of a plural counterpart theory is to appeal to a *plural* predicate of *counterparthood*, i.e. a dyadic predicate of counterparthood that can be saturated by plural terms. Using 'x', 'y', etc. to stand for plural variables, plural counterparthood can be defined thus:

Plural Counterpart: for all \mathbf{x} and \mathbf{y} , \mathbf{x} are counterparts of \mathbf{y} iff (i) \mathbf{x} are similar to \mathbf{y} and (ii) for any \mathbf{z} distinct from \mathbf{x} in the world of which \mathbf{x} are parts, it is not the case that \mathbf{z} are more similar to \mathbf{y} than \mathbf{x} are (where $\mathbf{x} \neq \mathbf{z}$ iff $\exists x$ such that x is among \mathbf{x} but not among \mathbf{z} or x is among \mathbf{z} but not among \mathbf{x}).

It should be noticed that the predicate "are counterparts of" is understood as being such that it is not analytic that from " \mathbf{x} are counterparts of \mathbf{y} " we can derive that every x among \mathbf{x} has a counterpart among \mathbf{y} . Whether we can make such an inference depends on the context and the relevant counterpart relation. In some contexts, the inference is clearly invalid. For instance, we might want to say things like "The Rolling Stones might have another guitarist". According to a plural counterpart theory, this statement is true iff the Rolling Stones have counterparts in some world w that together constitute a band and are such that no counterpart of Keith Richards is their guitarist.¹⁴

The basic vocabulary of a plural counterpart theory is the following:

Wx (x is a possible world)¹⁵

$I(\mathbf{x},y)$ (\mathbf{x} are in possible world y)

$A\mathbf{x}$ (\mathbf{x} are actual)

$C(\mathbf{x},y)$ (\mathbf{x} are counterparts of y)

The basic postulates of such a plural counterpart theory are the following:¹⁶

P1: $\forall \mathbf{x} \forall y (I(\mathbf{x},y) \supset Wy)$

(No things are in anything except a world)

P2: $\forall \mathbf{x} \forall y \forall z ((I(\mathbf{x},y) \& I(\mathbf{x},z)) \supset y = z)$

(No things exist in two worlds)

P3: $\forall \mathbf{x} \forall \mathbf{y} (C(\mathbf{x}, \mathbf{y}) \supset \exists z I(\mathbf{x}, z))$

(Any things that are counterparts are in some world)

P4: $\forall \mathbf{x} \forall \mathbf{y} (C(\mathbf{x}, \mathbf{y}) \supset \exists z I(\mathbf{y}, z))$

(Any things that have counterparts are in some world)

P6: $\forall \mathbf{x} \forall \mathbf{y} (I(\mathbf{x}, \mathbf{y}) \supset C(\mathbf{x}, \mathbf{x}))$

(Any things in any world are counterparts of themselves)

P7: $\exists x (Wx \ \& \ \forall \mathbf{y} (I(\mathbf{y}, x) \equiv A\mathbf{y}))$

(Some world is such that all and only its inhabitants are actual)

P8: $\exists \mathbf{x} A\mathbf{x}$

(Some things are actual)

So, according to an absolute plural counterpart theory, \mathbf{x} are possibly F iff, there are a world w and some inhabitants \mathbf{y} of w , such that \mathbf{y} are counterparts of \mathbf{x} and \mathbf{y} are F . On the other hand, \mathbf{x} are necessarily F iff, for all \mathbf{y} such that \mathbf{y} are counterparts of \mathbf{x} , \mathbf{y} are F .

Lewis (1971) famously adapted his counterpart theory in such a way that things can have different *guise* counterparts. He did so in order to defend a monist reply to Leibniz's Law arguments about the contingent coincidence of bodies and persons. Thus, on his account, I have a bodily and a personal guise. Although Lewis does account for guises in terms of properties, we need not do so (see section 5.1). We also need to distinguish between *several* plural counterpart relations in order to implement the monist reply to Leibniz's Law arguments for pluralism about coextension. For we want to be able to distinguish between the *cordate* counterparts of cordate/renate particulars and the *renate* counterparts of the cordate/renate particulars in order to be able to say that the actual cordate/renate particulars are such that, in some world, their reneate and their cordate counterparts are not the same particulars. The precise formulation of this claim is the following:

(5) There are a world w , a unique plurality of *cordate counterparts* \mathbf{x} in w of the cordate particulars, and a unique plurality of *renate counterparts* \mathbf{y} in w of the reneate particulars, such that \mathbf{x} and \mathbf{y} are not the same particulars.

Now the Leibniz's Law argument for pluralism about contingent coextension is based on the possibility that Kiki could be cordate without being reneate. On this scenario, (3), namely the

claim that $\langle \text{Kiki is cordate} \rangle$ and $\langle \text{Kiki is renate} \rangle$ might have distinct truth values, is true. But, given counterpart theory, (3) receives the following interpretation:

(3') There are a world w , a unique *cordate counterpart* $\langle P \rangle$ in w of $\langle \text{Kiki is cordate} \rangle$, and a unique *renate counterpart* $\langle Q \rangle$ in w of $\langle \text{Kiki is renate} \rangle$, such that $\langle P \rangle$ is true and $\langle Q \rangle$ is false.

Given *propositional counterparthood* the cordate counterpart $\langle P \rangle$ of $\langle \text{Kiki is cordate} \rangle$ is the proposition whose subject refers to the w -counterpart of Kiki and whose propositional function has the w -cordate counterparts of the actual cordate particulars for extension. This proposition is true at w if the w -counterpart of Kiki is among the w -cordate counterparts of the actual cordate particulars. The renate counterpart $\langle Q \rangle$ of $\langle \text{Kiki is cordate} \rangle$ is the proposition whose subject refers to the w -counterpart of Kiki and whose propositional function has the w -renate counterparts of the actual renate particulars for extension. This proposition is false if the w -counterpart of Kiki is not among the w -renate counterparts of the actual renate particulars. (3') is true in the assumed scenario. For by saying that Kiki could have been cordate without being renate, we are introducing a context in which Kiki's counterpart is among the counterparts of the cordate particulars but not among the counterparts of the renate particulars. From (3') we can derive the following counterpart theoretic interpretation of (4):

(4') There are a world w , a unique *cordate counterpart* $\langle P \rangle$ in w of $\langle \text{Kiki is cordate} \rangle$, and a unique *renate counterpart* $\langle Q \rangle$ in w of $\langle \text{Kiki is renate} \rangle$, such that $\langle P \rangle \neq \langle Q \rangle$.

On the other hand, the counterpart theoretic translation of (5) is the following:

(5') There are a world w , a unique *cordate counterpart* $\langle P \rangle$ in w of $\langle \text{Kiki is cordate} \rangle$, such that $\langle P \rangle \neq \langle P \rangle$.

Of course, (5') is as absurd as (5) is. However, (5') does not logically follow from (2) and (4') by Leibniz's Law. Therefore, given a counterpart theoretic interpretation of the premises of the Leibniz's Law argument for pluralism in alleged cases of coextension, this argument does not go through. So it does not refute moderate monism.¹⁷

Nevertheless, although a counterpart theory for propositions allows us to block Leibniz's Law arguments, this way of implementing the moderate monist solution to the

coextension difficulty is useful only if it is compatible with a version of actualism. For the main reason to prefer moderate monism over mild monism is that the former doctrine is supposed to avoid the latter doctrine's commitment to modal realism. Our preference would be illegitimate if, at the end, moderate monist proponents of AEN also had to commit themselves to modal realism because they maintain a counterpart theory for propositions.

But, first, it is important to notice that it is not compulsory for moderate monists to endorse *any* counterpart theory. For there are several ways one can implement the monist reply to Leibniz's Law arguments for pluralism that was suggested in section 5.1. The advantage of using counterpart theory is that counterpart theory allows us to account for the *opacity* of the relevant linguistic contexts: the opacity is due to the context-relativity of overall similarity. Second, I claim that the proposed counterpart theory for propositions is compatible with linguistic ersatzism, which is a form of actualism.¹⁸ Therefore, I claim that proponents of analytic extensional nominalism can appeal to the proposed counterpart theory for propositions in order to defend a moderate monism about coextension.

6. Concluding remarks

My main goal in this chapter has been to show that nominalists who are committed to each of the *Thing Nominalist*, *Analysability*, and *Extensionalist* axioms can coherently endorse a moderate monist solution to the coextension difficulty. I have explained that there are two ways proponents of AEN can accommodate alleged cases of coextension: they can be pluralists or monists about alleged cases of both contingent and temporary coextension, but they have to be monists about alleged cases of necessary coextension if genuine impossible worlds are unacceptable. Although proponents of AEN usually endorse a mild monism according to which *Non-identity* is true in alleged cases of contingent and temporary coextension, I have argued that the monist response to the difficulty of *necessary* coextension can be coherently extended to alleged cases of contingent coextension as well. This gives rise to a moderate monism about coextension. I have explained how moderate monists can appeal to a counterpart theory for propositions in order to block the Leibniz's Law argument for pluralism about coextension.

On the other hand, my goal has not been to argue that moderate monism about coextension is true nor has it been to argue that, contrary to appearances, moderate monism is *intuitive*. What I deny, however, is that the view is too counterintuitive to be plausible at all. What at first strikes many as counterintuitive about the monist strategy is the rejection of *Non-identity*. But *Non-identity* is a claim about the identity of propositions. Like Lewis (1986, 246)

and others, I do not believe that we have strong pre-theoretic intuitions about the nature and identity of propositions or that these intuitions are compelling. Propositions are theoretical entities. So what their identity conditions are is a theoretical issue. The moderate monist AE-Nominalist thinks that there are good theoretical reasons to deny *Non-identity*. For she thinks that she has independent reasons to maintain that each of her axioms is true and that it is better to avoid a commitment to modal realism. These theoretical reasons are legitimate, while alleged intuitions about the identity of propositions are objectionable. So I do not think that appealing to intuitions about propositions is sufficient to undermine the rejection of *Non-identity*. Moreover, it should be taken into account that monist proponents of AEN provide an explanation of our misleading beliefs about the identity of ascriptions of properties. These beliefs are rooted in *phenomena* of opacity and the fact that we are often confused about the relationship between meanings and properties.

Part of the reason why, it seems to me, opponents to monism about coextension claim that this view is too counterintuitive to be a serious option is that they believe that there are coextensive *properties* and that they conceive of monism about coextension as the view that coextensive properties are *identical* (see this volume, chapters 6 and 7). Agreed: the claim that there are identical coextensive properties in alleged cases of coextension is very counterintuitive. But even if one assumes that intuitions are a guide to plausibility in metaphysics (which one can dispute), this merely implies that the most plausible versions of analytic extensional nominalism are those that are not committed to (nominalistically construed) properties.

NOTES

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1. I follow the usual custom of letting expressions like “ $\langle a \text{ is } F \rangle$ ”, “ $\langle a \text{ is } G \rangle$ ” etc. stand for the proposition that a is F , the proposition that a is G , etc.
2. Alleged cases of coextension being thus conceived, a situation in which two predicates “is F ” and “is G ” are coextensive and satisfied by an object a , and in which there is no doubt that $\langle a \text{ is } F \rangle$ and $\langle a \text{ is } G \rangle$ are identical (e.g. because we know that “is F ” and “is G ” are synonymous) is not an alleged case of coextension.
3. Some have proposed reductive analyses, conceptual analyses, or paraphrase *schema*.
4. This is a simplification of Rodriguez-Pereyra’s account; see Rodriguez-Pereyra 2002. But every (other) version of resemblance nominalism – e.g. Price’s (1953, 20) version of aristocratic resemblance nominalism and the version Lewis (1999, 14-5) suggested – is a version of AEN.
5. See Dorr 2008, 47-8.
6. AEN analyses of ascriptions of polyadic properties usually appeal to n -tuples of things. I will focus on ascriptions of monadic properties in this chapter. But my arguments can easily be recast in such a way that my conclusions hold for ascriptions of polyadic properties as well.
7. The difference between sparse and abundant versions of AEN only matters with respect to the choice of examples. If there is a property of *being cordate* and a property of *being renate*, then these properties do not seem *very* natural. Still, alleged cases of coextension involving ascriptions of sparse properties are conceivable, although it is difficult to produce uncontroversial examples. My strategy in this chapter is to stick to canonical examples of coextension, although there may be reasons to

judge them problematic, and to leave it to proponents of sparse versions of AEN to replace my examples with others they judge more kosher.

8. It is important to notice that there are several ways to cast the doctrine that the identity of ascriptions of properties is an extensional matter that are not all equivalent to my *Extensionalist Axiom*, although they share its spirit. In particular, the *Extensionalist axiom* is based on the assumption that *individuals* and propositions have the same modal (and temporal) profile. Given the *Extensionalist Axiom*, if individuals are identical across possible worlds, if they are *transworld* individuals, so are propositions; but if the identity of individuals is fixed to a world, if they are *worldbound*, then so is the identity of propositions. Yet some proponents of AEN may disagree with this assumption. For instance, Lewis conceived of propositions as sets of possible worlds and of *possibilia* (possible individuals) as worldbound. True-hearted Lewisian proponents of AEN will thus prefer to formulate the identity conditions for propositions in terms of usual identity conditions for sets. But this suggests that, for them, a proposition is identical across the worlds that are its members, despite the fact that these worlds are wholly composed of numerically distinct worldbound individuals. Hence true-hearted Lewisian proponents of AEN conceive of *possibilia* and propositions as having different modal profiles. I disagree with true-hearted Lewisians on this matter; cf. section 5.
9. Dropping the *Thing Nominalism Axiom* allows us to evade the difficulty only because the rejection of the *Thing Nominalist Axiom* is assumed to entail the rejection of the *Extensionalist Axiom*. It is noticeable that Quine (2008), to whom the coextension difficulty is usually associated, accommodates the coextension difficulty without denying either of the *Thing Nominalist* and the *Extensionalist Axioms*. As a fervent extensionalist, Quine concludes from alleged cases of coextension that properties lack a clear principle of *individuation* and that we should get rid of non-extensional property talk. According to him, the lesson of the difficulty is that “anything that can be described in terms of properties and not equally directly in terms of classes is unclear (...)”. Proponents of AEN agree with Quine’s repudiation of non-extensional discourse about properties because they purport to offer an extensionally adequate interpretation of our discourse about properties. But proponents of AEN disagree with Quine’s conclusion that this purpose cannot be attained. By denying that the analytic ambitions of AEN can be achieved Quine escapes the coextension difficulty by denying the *Analysability Axiom*.
10. One may believe that three-dimensionalist eternalists can solve this problem by indexing properties to times. However, indexing properties to times *multiplies* alleged cases of coextension. Suppose that the things that are red at t_1 are all and only the things that are spicy at t_1 . If so, the indexed properties red_{t_1} and $spicy_{t_1}$ are coextensive.
11. This is true even if properties are indexed to worlds as in McDaniel 2004, p. 140. Suppose there is a property of *being renate in the actual world* and a property of *being cordate in the actual world*. These two properties are coextensive even if we assume that the actual cordate particulars exist in other possible worlds in which some of them are not renate.
12. See, however, Ira Kiourti’s (2010) impressive defence of genuine modal realism about impossible worlds.

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13. Hearts are not kidneys, angles are not sides. So by saying that an organism has a part that is a heart and by saying that it has a part that is a kidney we are expressing different propositions, and by saying that a triangle has three angles (for parts) and by saying that it also has three sides (for parts) we are expressing different propositions.
 14. Let me emphasise that in order to obtain a suitable counterpart theory for ascriptions of polyadic properties, the plural counterpart relation should be such that the *relata* of the plural counterpart relations can be pluralities of n -tuples (for $n \geq 1$).
 15. Notice that we may as well want to allow for plural quantification over worlds.
 16. I shall make no mention of the plural version of the controversial postulate P5.
 17. Extreme monists can adapt this strategy to alleged cases of temporary coextension by developing a plural version of a temporal counterpart theory and a temporal counterpart theory for propositions.
 18. According to the version of linguistic ersatzism that I have in mind, possible worlds, actualised and non-actualised, are maximal-consistent descriptions of the only concrete world, namely the actual one. Each possible world *represents what is true* and what is false in the actual world but only one world (the actualised one) is a faithful representation of what is true and what is false. By representing what is true and what is false in the concrete world, the sentences that together form possible worlds represent *propositions*. The represented propositions, which can be thought of as set-theoretical constructs, can be counterparts of each other. Douglas Ehring (this volume, chapter 7 n15) wonders how a thing nominalist who identifies properties with classes and combines a counterpart theory for *properties* with linguistic ersatzism could account for the classes that represent properties. But the present proposal, according to which properties are not identified with anything at all and which appeals to a counterpart theory for *propositions* instead of a counterpart theory for properties, is not challenged by Ehring's worry.