

Resemblance Nominalism
April 1, 2004

1 Two simple versions of the view

The leading idea of Resemblance Nominalism is to take as our sole primitive some predicate having to do with *resemblance*; we'll use this sole primitive to provide real definitions for other resemblance-notions, for 'is a natural class', and for predicates like 'electron'.

Before we talk about the version of Resemblance Nominalism Armstrong is concerned with, let's consider two simpler versions of the view.

Version 1 The sole primitive predicate is the binary predicate ' x is a duplicate of y '.

Putting aside various pressing questions (e.g. how might one define 'electron' in terms of 'duplicate'?), let's first consider how one might go about defining the notion of a "natural" class in terms of 'duplicate'? Here's the obvious solution:

- (1) A class is natural just in case any two members of it are duplicates, and nothing that is not a member of it is a duplicate of all its members.

This has the surprising result that no two natural classes ever overlap. But this is not a good fit for the notion of 'sameness of type' we're trying to analyse: intuitively, things can be of the same type (in *some* respect) without being *exactly alike* (duplicates).

Well, maybe that just means we should adopt a more complicated definition than (1). But there is some reason to think that the problem is insoluble: there are genuine distinctions between possible worlds, or ways for reality to be, that can't be captured by looking at the pattern of which things are duplicates of which. Consider two possible worlds.

World 1: there are four different kinds of fundamental particles: no particle resembles any particle that is not a duplicate of it in any respect.

World 2: the distribution of the four different kinds of fundamental particles is the same as in World 1. But at world 2, 1-particles and 2-particles belong to the same more general *type*, as do 3-particles and 4-particles.

If this is a genuine, objective difference between two different ways for the world to be, Version 1 of Resemblance Nominalism must fail.

Version 2 The sole primitive predicate is the binary predicate ‘ x resembles y in some respect.’

Here’s the obvious way to define ‘natural class’ in terms of resemblance-in-some-respect:

- (2) A class is natural just in case any two members of it resemble in some respect, and nothing that is not a member of it resembles-in-some-respect all of its members.

(2) faces two famous problems or ‘difficulties’, pointed out by Nelson Goodman in his book *The Structure of Appearance*. First, it entails that it never happens that one natural class is *wholly contained in* another. But intuitively, that seems possible: e.g. the class of 1-particles and the class of 1- and 2-particles at World Two. This is the *Companionship Difficulty*.

Second, it entails that the following is a necessary truth:

- (3) Suppose A , B and C are three natural classes. Then there is a single natural class that includes $A \cap B$, $B \cap C$ and $C \cap A$, although it does not include all of A , B or C .

For consider any two things from $(A \cap B) \cup (B \cap C) \cup (C \cap A)$: they are either both members of A , or both members of B , or both members of C ; in any case, they are both members of some natural class; so the resemble-in-some-respect.

(3) seems implausible. Suppose particles can vary in any of three respects: they can be ‘up’ or ‘down’, ‘plus’ or ‘minus’, and ‘red’ or ‘green’. These might be the *only* types under which particles fall: it doesn’t seem that there has to be any *single* type of particle that comprises all the particles that are up and plus, plus and red or red and up.

Might these difficulties just be an artifact of the bad definition (2)? To argue that they are not, we might again try constructing a difference between possible worlds that seems like a genuine difference, but where the facts about which things resemble-in-some-respect are the same. This isn’t hard, in the case of the Companionship Difficulty:

World Two: as before.

World Three: like World Two, but here there are really only two kinds of particle: the 1-particles and 2-particles are duplicates, alike in all respects.

2 Comparative resemblance as primitive?

Armstrong considers a more powerful version of the view:

Version 3 The sole primitive predicate is the four-place predicate ‘ a resembles b at least as much as c resembles d ’.

Following a suggestion of H.H. Price’s, he proposes the following definition of ‘natural class’:

- (4) A class C is natural if there is some class P (‘the paradigms’) such that C comprises all and only those objects that resemble every member of P at least as much as any two members of C resemble one another.

Any collection of things we choose as paradigms will determine some natural class, comprising all those objects that resemble them at least as much as they resemble one another. For example, if we take a red ball, a red postbox and a red flag, we might get the class of all red things. Perhaps the same class would be determined by any other sufficiently heterogeneous collection of red things. If we add an orange, we might get the class of all red or orange things. If we then subtract the postbox and the flag, we might end up with the class of all red or orange round things. And so on.

This solves the Companionship Difficulty: there is no problem with a natural class being contained in another natural class.

But the Imperfect Community Difficulty seems to be still with us. Consider the natural class we’ll get by taking as paradigms an ‘up’, ‘plus’, ‘green’ particle; an ‘up’, ‘minus’, ‘red’ particle, and a ‘down’, ‘plus’, ‘red’ particle. This class will plausibly comprise all and only those objects that are either ‘up’ and ‘plus’, ‘plus’ and ‘red’ or ‘up’ and ‘red’. But it doesn’t seem that these objects all belong to any one type that other particles don’t belong to.

3 Defining ‘electron’

How might a proponent of any of these views answer questions like ‘what is it for something to be an electron’? We could bring in ‘paradigms’ here, coming up with something along the lines of

(5) To be an electron is to be a duplicate of e .

or

(6) To be an electron is to be something that resembles each of e_1 , e_2 and e_3 at least as much as they resemble one another.

Analyses like these, which bring in particular ‘paradigm’ electrons into the analysis of what it is to be an electron, face two main problems.

1. The problem of *arbitrariness*. It seems to be wholly *arbitrary* which electron we choose to be the paradigm: there’s no hidden fact of the matter as regards which one it is.

Perhaps this isn’t such a serious problem: the proponent of (5) or (6) could respond that it’s *indeterminate* which electrons are the paradigms: this indeterminacy doesn’t generate any vagueness as regards which things count as electrons because the extension is the same no matter how the indeterminacy is resolved.

2. The modal objection. (5) seems to entail that

(7) Necessarily, if anything is an electron, then e exists.

and similarly for (6). But surely any given electrons could have failed to exist without thereby ceasing to be any electrons. Indeed, it seems that there could have been electrons even if *no* actual electrons had existed.

4 The problem of relations

How is the Resemblance Nominalist to capture those aspects of the world that a Realist would characterise by talking about *relations*? If you believe in unrestricted composition and give yourself ‘part of’ as an additional primitive, you can do a fair bit by talking about resemblance between composite entities. For example, you can paraphrase the Realist’s claim ‘there is a relation that holds between all and only those point-sized objects which are one metre apart’ as follows:

- (8) There is a natural class which comprises all and only those things which are sums of two point-sized objects which are one metre apart.

But this trick won’t let one handle non-symmetric relations like ‘hotter than’. For that, there are at least the following two possible solutions:

- (9) Admit ordered pairs, triples, etc. as genuine entities, and the predicates for talking about them (e.g. ‘is the first member of’ and ‘is the second member of’) as new primitives.
- (10) Add new polyadic primitive predicates to your list of primitive predicates. EG: as well as taking ‘ x is a duplicate of y ’ as primitive, take something like ‘ x_1 stands to x_2 in exactly the same way that y_1 stands to y_2 ’.
- Will we end up having to recognise infinitely many distinct primitive predicates, on this approach?

5 Explaining necessary truths about resemblance

For each of the predicates the Resemblance Nominalist might contemplate taking as primitive, there are or appear to be *necessary truths* which involve only that predicate together with logical vocabulary. EG:

- (11) If x is a duplicate of y and y is a duplicate of z , then x is a duplicate of z .
- (12) Everything resembles itself in some respect.
- (13) If a resembles b at least as much as c resembles d , and a resembles e at least as much as a resembles a , then e resembles b at least as much as c resembles d .

If the relevant predicates are primitive, these necessities cannot be *explained* by appeal to facts about *what it is*, e.g., for one thing to be a duplicate of another. They must be taken as *brute* necessities.

Can there be brute necessities?

Even if there can, is it acceptable to regard *these* as brute necessities?

6 What 'grounds' facts about resemblance?