

CRITICAL NOTICE

Armstrong, D.M., *A Combinatorial Theory of Possibility*, Cambridge: Cambridge University Press, 1989, pp. xiii, 156, A\$80.00 (cloth), A\$27.50 (paper).

Two Unfamiliar Questions, Jointly Answered

Later we shall see how Armstrong answers some familiar questions about the metaphysics of modality. But the core of his theory lies elsewhere. He raises two unfamiliar questions, and answers them jointly as follows.

- (1) What is the range of different possibilities? — The range of all recombinations of actually instantiated universals.
- (2) What does it take to make a possibility statement true? — The universals thus recombined.

Armstrong's Combinatorialism: The Positive Side

The range-of-possibilities question is everyone's question. It can be framed in different ways to suit different views about the nature of possibilities; and no matter how we frame it, we can, if we like, borrow Armstrong's answer. We can say that for any way of recombining all or some of the universals that are found within our actual world, there is another 'concrete' world wherein these constituents are thus recombined; or there is an 'abstract' ersatz world that represents these universals as being thus recombined; or it is primitively possible, without benefit of any entities to play the role of possible worlds, that they might have been thus recombined.

If we like, we can say positively, as Armstrong (almost) does, that no recombination is excluded: there are no exclusions or necessary connections between genuine, distinct universals. Roughly, anything can coexist with anything, and anything can fail to coexist with anything.

It does seem that we have mutually exclusive properties, gamuts of alternative determinates of the same determinable. If we are to follow Armstrong, we must diagnose any such case in one of three ways. (1) The exclusive properties may not be genuine universals; for instance, when *F* excludes non-*F*. A genuine universal must be quite specific, else its miscellaneous instances could not plausibly be thought to have some one thing in common. It's unlikely that *F* and non-*F* both would qualify. Or (2) the exclusive properties may be genuine universals that are not wholly distinct: conjunctive or structural universals, built up somehow out of simpler universals, with common constituents. Shapes are mutually exclusive, for instance, and shapes are structural if anything is. Armstrong suggests that more cases of exclusion could be treated in the same way: colours, for instance, if colours are really structural properties of the coloured surface. Or mass, if we

identify *being five kilograms* with the structural property of *consisting of five distinct one-kilogram parts*. (But here I see a problem. Armstrong's explanation of why different mass properties are exclusive, pp. 78-79, seems to presuppose that a whole cannot share a universal with its own part. Why not? If something has a mass of five kilograms by consisting of five one-kilogram parts, how does that prevent it from also having a mass of one kilogram?) Or (3) the exclusion may be not an absolutely necessary exclusion, but a merely lawful exclusion. Suppose that unit positive and negative charge really are as simple as current theory says they are. Then Armstrong's combinatorialism decrees that it is possible *simpliciter* that a single particle might have both charges at once; but if this possibility violates the contingent laws of nature, that might be exclusion enough.

It is essential to have the third diagnosis available. Else we run the risk that metaphysics may force us to posit hidden structure where science discerns none. We might indeed discover that charge was a matter of hidden structure, but we have no business discovering it by philosophy! But when we look up Armstrong's account of exclusion laws in *What is a Law of Nature?* (Cambridge: Cambridge University Press, 1983), pp. 143-146, we hit trouble. He says, for good reasons that I won't repeat here, that exclusion laws are derived laws. A law that no *F* is a *G* must be a consequence of some positive law that every *F* is an *H*, where *H* excludes *G*. And the exclusion between *H* and *G* is not a further law, on pain of regress; it is an absolutely necessary exclusion. Further, we cannot assume that the excluder *H* is a structural universal, on pain, again, of letting philosophy dictate to science. In short: since combinatorialism disallows necessary exclusion between distinct universals, it must allow exclusion laws as a substitute; but exclusion laws turn out to depend on necessary exclusion! The problem for Armstrong is urgent. I shall return to it later, and offer at least the beginning of a solution.

Combinatorialism: The Negative Side

The other side of Armstrong's combinatorialism is the thesis that recombination gives all the possibilities there are. There is no 'outer sphere' of possibilities wherein are found new and different universals, alien to the actual world. There could not, for instance, have been some extra fundamental properties of fundamental particles.

Surely it is possible in *some* sense that there might have been alien universals. That is not to be denied. What may be up for grabs, though, is whether to reclassify such outer-sphere possibilities as merely doxastic (or epistemic) possibilities. When we think some long sentence in a logic exercise 'might' be true, when really it is contradictory, ignorance masquerades as contingency; and to follow Armstrong, we must say the same about our offhand impression that there 'might' have been universals different from all the ones there actually are. It matters little whether we call an outer-sphere possibility a genuine possibility, or whether we call it a merely doxastic possibility instead. What's in a name? What does matter, though, is that we must have a serious theory of these outer-sphere whatchamacallums, alongside our combinatorial theory of the inner sphere. And

here Armstrong still owes us something. His section on doxastically possible worlds (pp. 73-76) doesn't help, because it mostly concerns the doxastic possibilities that arise if we take universals to be wholly distinct when really they are not. That is a different case. He does say (p. 73) that alien universals 'fit smoothly into the present account of doxastically possible worlds' but doesn't really explain how. We must still await his developed theory of the outer sphere.

What is There to Recombine?

Almost anyone could be some kind of combinatorialist. But Armstrong's own brand of combinatorialism depends heavily upon his account of the constitution of this world — *the* world, if he is right, the one and only world. What possibilities we get by recombining the elements of the world depends on what those elements are. If we think the elements are point particles, we can use recombination to generate all manner of weird and wonderful rearrangements of particles, but we cannot get new kinds of particles. We can combine the head and neck of an emu with the body of a kangaroo, but not the mass of an electron with the charge of a quark. (We might still think such novel particles were possible, but not in virtue of any principle of recombination.) Whereas if we think with Armstrong that even the smallest particles are 'layer-cakes' made of a particular substratum plus several universals, one for mass and one for charge and so on, then indeed we can get new kinds of particles by recombining the layers of the cake.

For Armstrong, the world is made of universals and 'thin' particulars, always bound together into states of affairs. A state of affairs *Fa* exists if particular *a* instantiates universal *F*. (Likewise for dyadic, triadic, . . . universals, if there are any.) 'Thick' particulars, ordinary things like dogs and shoes, consist of states of affairs. The most inclusive of these things, consisting of all the states of affairs there are, is the world. Outside it there is nothing.

To me, it is mysterious how a state of affairs is made out of its particular and universal constituents. We may not think of it as the composition of a whole out of its parts: first, because different states of affairs may have the very same constituents; and second, because the existence of the constituents by no means entails the existence of the state of affairs. It is some sort of unmereological composition, and to my mind, that is a contradiction in terms. In any case the universals, just as if they were literally parts of the world, are the elements available for recombination.

Why just the universals? Why not the universals and particulars both, since both are equal partners in making a state of affairs? As an opening move, Armstrong presents the system of Brian Skyrms' 'Tractarian Nominalism' (reprinted as an appendix), which does indeed apply recombination to the universals and particulars both. But Armstrong revises this bit by bit, and soon arrives at a combinatorialism of universals alone. The particulars ('thin' particulars) are still there, but they function only as interchangeable hooks whereby universals are fastened together in patterns of coinstantiation. For Armstrong, what identifies a possibility is just the pattern in which universals are

hooked together, it makes no difference which hooks are used to do the fastening. The possibility $Fa \ \& \ Ga \ \& \ Fb \ \& \ aRb$ is no different from $Fb \ \& \ Gb \ \& \ Fc \ \& \ bRc$. Armstrong rejects haecceitistic differences between possibilities. In Carnap's terms, his possibilities are given by structure-descriptions, not state-descriptions.

Further, Armstrong's combinatorialism of universals alone is not limited by the actual supply of hooks. Universals are repeatable, and some ways of recombining them involve more extensive repetition than actually happens. Maybe the world is finite in extent and detail, but could have been infinite; maybe it is infinite, but could have had a greater infinite size. A world with more particulars than there actually are seems perfectly possible. Yet it cannot be made just by hanging the universals differently on the same old hooks, if there are not enough hooks to go around. To ensure that a bigger world is possible, Armstrong must admit the possibility of additional hooks.

Armstrong departs in one more way from the simple combinatorialism of 'Tractarian Nominalism'. Once we might have thought that *Hydrogen atom* was a simple universal instantiated by homogeneous blobs of matter; but no, it is a structural universal instantiated by composites of an electron orbiting a proton. We might have thought next that *Proton* was simple; but no, it is a structural universal instantiated by triplets of quarks. Maybe *Quark* is simple; or maybe the simples are still a few levels further down. Or maybe not; maybe the world is infinitely complex. Maybe there are no simples, and all universals are structures built out of simpler universals. Armstrong will not rule out this hypothesis of infinite complexity *a priori*. In case it is true, the recombination of universals that generates alternative possibilities must always be recombination of structural universals. But in that case the universals being recombined are not wholly distinct, as simples would be, so there may be necessary exclusions or connections between them. If *Hydrogen atom* and *Helium atom* were simples, combinatorialism would have to insist that there might have been an atom that was both at once. ('Might' in the sense of absolute possibility, not in the sense of conformity to the laws of nature.) But since they are structural universals, with some of the same simpler universals as shared constituents, they are entitled to be incompatible — as, of course, they are. Structural universals may also be involved in necessary connections: whenever something instantiates *Helium atom*, there must be a part of it that instantiates *Neutron*. We may still hope that unconstrained recombination will reappear when we reach the ultimate simples out of which all these structural universals are constructed — but not if it's structures all the way down.

(The building of structural universals out of simpler universals is no less mysterious than the building of states of affairs. When Armstrong says that *Hydrogen atom* and *Helium atom* are allowed to be incompatible because they are not wholly distinct, I think he relies on an illicit assimilation of unmereological 'composition' to composition rightly so called. But I've said my say elsewhere: 'Against Structural Universals', *Australasian Journal of Philosophy* 64 (1986) pp. 25-46, and needn't repeat it here.)

The Demand for Truth-Makers

Armstrong's other central question, what makes possibility statements true, is by no means everyone's question. It presupposes Armstrong's principle that every truth must have a truth-maker: for any true contingent statement, there is some entity whose existence entails that statement. The existence of certain universals entails the truth of any possibility statement that says how those universals might have been recombined. (Since those universals might not have been instantiated, and if so would not have existed, the possibility statement is indeed contingent. If there had been fewer universals to recombine, there would have been fewer possibilities. What is actual, namely a certain roster of universals, might have been impossible. Hence Armstrong's modal logic is S4, without the 'Brouwersche Axiom'.) The existence of the recombining universals is enough to make the possibility statement true, because no restrictions of exclusion (well, almost none) need to be satisfied. And nothing less will make it true, because there are no possibilities that involve alien universals found nowhere in actuality.

We can scarcely exaggerate the importance of the demand for truth-makers throughout Armstrong's writings; but unfortunately he takes it so much for granted that we may find it hard to recognise when his arguments are premised on it. (It would be a helpful thing for him to give it a much fuller and more explicit discussion.) For instance, consider one part of Armstrong's attack on the 'Ostrich Nominalism' of Quine, Devitt, and many more of us. The Ostrich says 'there are no universals but the proposition that *a* is *F* is perfectly all right as it is'; he 'sees no need for any reductive analyses' of the schema of predication; he thereby dodges a compulsory question (*Universals and Scientific Realism*, Cambridge: Cambridge University Press, 1978, vol. I, pp. 16-17). He 'gives the predicate what has been said to be the privilege of the harlot: power without responsibility. The predicate is informative, it makes a vital contribution to telling us what is the case, the world is different if it is different, yet ontologically it is supposed not to commit us. Nice work: if you can get it.' ('Against "Ostrich" Nominalism', *Pacific Philosophical Quarterly* 61 (1980) p. 443.) What is going on here? When I first read these passages, the best explanation I could find was that Armstrong demanded that we do away with all unanalysed predication. That seemed strange. Because not only the Ostrich, but also Armstrong's own theory, and all the rival theories that Armstrong deems to be wrong but not evasive, must resort to primitive predication sooner or later. Everyone knows that a chain of definitions cannot, without circularity, go on forever. There will always be primitives. So what is *really* going on? I suggest that Armstrong has an unfamiliar notion of analysis. Analysis is not, primarily, a quest for definitions. Rather, it is a quest for truth-makers. The 'harlot's privilege' is not the privilege of using undefined terms. It is the privilege of truth without benefit of truth-makers. The Ostrich should be redefined more generally as one who can't see why true predications have to have truth-makers. Then he needn't be an Ostrich *Nominalist* (as Armstrong says, p. 41). If I were committed to universals myself, I would be an *Ostrich Realist*: I would think it was just true, without benefit of truth-makers, that a particular instantiates a universal.

Or consider Armstrong's idea of a supervenient free lunch (ch. 8, and many other recent writings). If the *S*'s supervene on the *R*'s, in the sense that the existence of the *R*'s entails the existence of the *S*'s, then the *S*'s are a 'free lunch'; they are redundant, given the *R*'s; they are no real addition to our ontology. Why not? After all, Armstrong is not denying that the *S*'s really do exist. He isn't saying, as a Meinongian might, that they are some of the things there are of which we may truly say that there are no such things; or, as a Quinean might, that in saying they exist we are indulging in a misleading *façon de parler*. Nor does he mean that each of the *S*'s is identical to an *R*. Nor does he mean that each *S* is composed of *R*'s; a mereological free lunch is only one kind of supervenient free lunch among others. Then what does he mean? I submit that, just as he has an unfamiliar notion of analysis, so he has an unfamiliar notion of ontology. *Pace* Quine, his question is not: what is there? But rather: what does it take to provide truth-makers for all the truths? That way, it makes perfect sense to say that supervenient entities add nothing to our ontology. A supervenient entity is still an entity, but it is altogether superfluous as a truth-maker. If the existence of some *R*'s entails the existence of a certain *S* which in turn entails the truth of a certain statement, then those *R*'s, taken together, already make the statement true.

It's easy to believe that *some* truths have truth-makers, for instance the existential truth that there are dogs. Dog Harry suffices to make it true. (At least, provided he is essentially a dog, and so could not have existed without a dog existing. That is no problem for Armstrong, since he thinks that at least the thickest version of Harry is essentially a dog; see p. 52.) Dog Milo also suffices to make it true; and so does any other dog.

Other truths are existential truths more or less thinly disguised, for instance the truth that I am an uncle. A disjunction has a truth-maker if either disjunct has one. And we could go on. But should we agree with Armstrong that *every* truth (every contingent truth) has a truth-maker? I think not.

How about negative existential truths? It seems, offhand, that they are true not because things of some kind *do* exist, but rather because counterexamples *don't* exist. They are true for lack of false-makers. Why defy this first impression?

(Don't say: 'Aha! It's a *lack* that makes it true.' The noun is a happenstance of idiom, and to say that a negative existential is true for lack of false-makers is the same as to say that it's true because there aren't any false-makers. The demand for truth-makers might lead one into ontological seriousness about lacks, but not *vice versa*.)

And how about predications? They seem, for the most part, to be true not because of *whether* things are, but because of *how* things are. (Exceptions: those that are equivalent to existentials or negative existentials, as predications of unclehood or bachelorhood are; and those that predicate an essential property.) Even if we grant that ways to be are entities — universals, or properties in some other sense — still the predication is true not in virtue of the mere existence of the thing and the property. It's true just because the thing instantiates the property. So says the Ostrich; why isn't he right?

We've already met Armstrong's truth-makers for predications: the states of affairs. The existence of the state of affairs composed unmereologically out of a

and F entails that a is F . Whether states of affairs are crucial to the theory of universals, as Armstrong thinks, or a gratuitous and mysterious addition, as I think, depends on whether he's right that they're needed to do a job of truth-making.

Armstrong's truth-makers for negative existentials first appear in this book (pp. 92-97). Suppose Bruce, Bruce, Bruce, Bruce, and Michael are the entire department. Then there is a relation of *totality* that the aggregate A (or maybe the class) of the Bruces and Michael bears to the property M of being a member of the department; and if that aggregate does bear that relation to that property, then there can be no other members of the department. We may suppose that the relation of totality is a genuine universal T (a dyadic universal, and second-order in its second argument place, being a relation to a property). Then when T is instantiated by A and M , we have a state of affairs $T(A,M)$: a *totality fact*. Its existence entails the negative existential truth that there are no other members of the department, and so is the desired truth-maker. In a similar way, Armstrong appeals to totality facts as truth-makers for negated predications. Suppose universals G and H comprise the entire nature of a ; we have a totality fact that relates the aggregate of G and H to the property of being a property of a ; the existence of this totality fact entails that a is not also F . Or suppose that Fa , Gb , and aRb are all the (first-order) states of affairs there are; we have a totality fact that relates $Fa \& Gb \& aRb$ to the property of being a (first-order) state of affairs. The existence of this totality fact entails several negated predications: b is not F , a is not G , and b does not bear R to a . It also entails negative existentials: there are no monadic universals except F and G , no dyadic universals except R , no triadic universals at all; and there are no (first-order) states of affairs except for the given three. Thus the totality fact serves as a truth-maker for several negative truths.

(We may look askance at such properties as being a member of the department, being a property of a , or being a state of affairs. What are these things doing in Armstrong's system? He wouldn't take them to be genuine universals! His answer is that they get in as supervenient free lunches. Insubstantial though these lunches may be, evidently they are good enough to be constituents of states of affairs.)

Totality facts break the rules of combinatorialism. The idea was that anything can coexist with anything, yet these totality facts have as their very *raison d'être* to refuse to coexist with other facts. But sometimes a specialist in exceptional exclusions may come in handy. Recall our problem about exclusion laws: to get them, we needed some absolutely necessary exclusions. And now we have some. Given a universal F , let us use the totality relation to construct a relational property TF , the property of *having F as total nature*. Something instantiates TF iff it instantiates F (and TF) and nothing else. TF does look like a candidate for a genuine universal: its instances are not at all miscellaneous. A state of affairs TFa is a totality fact; *pace* combinatorialism, it excludes all other states of affairs involving the particular a , for instance Ga . Now suppose we have a positive law that every F is a TF . Then we have the derived exclusion law that no F is a G . Unfortunately, we have more besides: the derived law is that F excludes *all* other

universals. Maybe laws involving totality facts could also be made to yield less peculiar, weaker exclusion laws. But I have no space here to discuss how this might be attempted.

Truth and Being

It is plain to see how much damage Armstrong's demand for truth-makers has done to his combinatorialism. The intuitive price is very high — and all for nothing if, as I think, the demand for truth-makers is wrong in the first place. Yet it is not altogether wrong. I think it is an over-reaction to something right and important and under-appreciated. What's right, roughly speaking, is that truths must have *things* as their subject matter.

The special case of a negative existential is the exception that proves the rule. Exactly because there are no things of the appropriate sort, very little is true about them. The whole truth about arctic penguins is: there aren't any. Whereas the whole truth about antarctic penguins would fill many a book. Indeed, a subject matter can be empty. That's one way for it to be — just one way. But a subject matter can be non-empty in ever so many different ways.

To be less rough, I borrow a slogan from John Bigelow: 'Truth is supervenient on being'. (*The Reality of Numbers*, Oxford: Oxford University Press, 1988, pp. 132-133 and 158-159.) As an Ostrich — a matter on which Bigelow is of two minds — I want to construe 'being' broadly: it covers not only *whether* things are, but also *how* they are. Then the slogan means that no two possibilities can differ about what's true unless they also differ in what things there are, or in how they are. In saying just this much, we do not join Armstrong in demanding truth-makers for negative existentials, or for all predications. Yet I think we do justice to the insight behind his demand: truths are about things, they don't float in a void. The slogan must be rightly construed. 'How things are' must not be taken to cover just any old condition that things satisfy, on pain of trivialization. As often happens, the thought we want is out of reach so long as we burden ourselves with an egalitarian theory of properties. Given Armstrong's sparse theory of universals, 'how things are' could be taken to mean 'which genuine universals things instantiate'. In his 'Real Possibilities', *Philosophical Studies* 53 (1988) pp. 37-64, Bigelow speaks of 'what things there are and how they are arranged'; he surely doesn't mean that truth supervenes on spatiotemporal arrangement alone, but he might well mean 'what particulars and universals there are and how they are arranged into a pattern of coinstantiation'. For myself, since I remain uncommitted about universals, I would prefer a more neutral formulation: truth is supervenient on what things there are and which perfectly natural properties and relations they instantiate.

All too often, philosophical positions posit truths that fail to supervene on being. Consider phenomenalism, with its brute counterfactual truths about nonexistent experience. Armstrong has told us how Charlie Martin long ago persuaded him to smell a rat. (C.B. Martin, 'Counterfactuals, Causality, and Conditionals', in John Heil (ed.), *Cause, Mind and Reality: Essays Honouring C.B. Martin*, Dordrecht: Kluwer, 1989.) Right! But the way Martin explained the

bad smell, namely as the stink of truths without truth-makers, cast suspicion not only on the ratty counterfactuals that well deserved it, but also on innocent negative existentials and predications. By all means find something wrong with phenomenalist counterfactuals. But if my denial that there are arctic penguins is likewise true without benefit of any truth-maker, true just because there aren't any arctic penguins to make it false, then is it really a companion in guilt?

Other philosophical positions that fall victim to the principle that truth is supervenient on being (*a fortiori* to the demand for truth-makers) include Ryleanism, with its brute counterfactuals about nonexistent behaviour. Also, Prior's presentism, which says that although there is nothing outside the present, yet there are past-tensed and future-tensed truths that do not supervene on the present, and hence do not supervene on being. Also, the view that the distinction between laws of nature and accidental regularities is primitive, supervening neither on patterns in the array of particular fact nor on relations of universals. Exercise: find more.

Two Familiar Questions

Besides his questions about the range of possibilities and the truth-makers for possibility statements, Armstrong addresses other questions more familiar to metaphysicians of modality.

- (3) Do we need any primitive modal concepts? — No.
- (4) What do we quantify over in quantifying over possibilities? If there are three ways events might possibly go, what are there three of? — Nothing.

Primitive Modality

Armstrong specifies, clearly and in detail, just when a recombination of universals into a pattern of coinstantiation — in other words, a conjunctive state of affairs — is possible. If the universals that enter into it are distinct, and if it includes no totality facts or laws, the necessary and sufficient condition for its possibility is that the universals in question must exist. If it does include totality facts that break the rules of combinatorialism, there is another necessary condition: the exclusions imposed by the totality facts must be respected. If it includes laws, there is yet another necessary condition: if we have a state of affairs $N(F,G)$ that makes it a law that all F s are G s, and a state of affairs Fa , we must have Ga as well. (Unless $N(F,G)$ is defeated by some overriding law; see *What is a Law of Nature?* pp. 147-150.) And if the universals in question are not wholly distinct, we must analyse them into simpler universals until we reach distinctness, and then apply the conditions as above. That is the whole story; and nowhere does any modal primitive appear. We need no extra clause to say, for instance, that the universals involved are compatible; because for Armstrong distinct universals are always compatible. (With an exception for totality facts, but that can be mentioned by name.) So we need no primitive notion of compatibility. Nor must we amend the conditions of possibility to say that there are or *might be* such-and-such universals; for Armstrong, the only universals there might be are the ones there are. So far, so good.

But when we speak of whether it is possible that _____, we will seldom fill the blank with an explicit description of some recombination of universals. Suppose we fill it instead with 'a donkey talks'. Elsewhere, I've argued that this example poses a problem for any theory that treats possibilities as story-like: as composed of sentences (or of representations in a system analogous to language, or of propositions). Suppose the sentences describe just the basic structure of the world — the arrangement of particles, or the pattern of coinstantiation of genuine universals, or whatever — and say nothing explicit about such supervenient features as talkers and donkeys. Then it is possible that a donkey talks iff some such story *S* implicitly represents that a donkey talks. And what does that mean? We don't know any recipe for a talking donkey in terms of elements of the basic structure; and if we did, we still wouldn't know it *a priori* and so wouldn't be entitled to build it into our analyses. Armstrong agrees (pp. 101-102). All we can say is that *S* implicitly represents that a donkey talks iff, necessarily, *S* is true only if a donkey talks. And here we resort to unanalysed necessity.

(It won't help to switch to stories in a richer language, which do explicitly address the question whether a donkey talks. For then we'd have to restrict ourselves to consistent stories; that is, to stories in which what is implicitly represented in the chapter about the basic structure of the world agrees with what is explicit in the chapter about talking donkeys.)

Armstrong's states of affairs look like sentences, sometimes short and sometimes long conjunctions, about the basic structure of the world. So I used to think he faced the problem of implicit representation and couldn't get rid of primitive modality. But I was forgetting his doctrine of thick particulars. Armstrong's world of states of affairs is a world of facts *and* a world of things, because the things are themselves made out of facts. Dog Harry, taken as a thick particular, is a big conjunctive state of affairs. And so would a talking donkey be, if there were one. States of affairs are sentence-like, sure enough, but they're thing-like as well. So Armstrong has a way around my problem. He can say that a world, taken as a big state of affairs, implicitly represents that a donkey talks iff part of it is a talking donkey. No unanalysed modality there!

So far, all's well; but we shall return to the issue of primitive modality later.

Armstrong's Fictionalism

According to Armstrong, other possible worlds, and unactualized possible individuals, just don't exist. They are fictions. (That is why he cannot say that the truth-makers for possibility-statements are the possibilities themselves.) We often say that useful idealizations, like frictionless planes and ideal gasses, are nonexistent fictions. These things are unactualized possible individuals, and Armstrong's plan is simply to say the same about *possibilia* in general.

To call a possible world fictitious is to say that it does not exist, but does exist according to some fiction. So we must ask: what fiction? A fictionalist has two alternatives. There could be many little fictions of one world each; or one big fiction of many worlds.

The immediate problem with the many-fiction alternative is that the many fictions don't exist. Nobody has even once told a fully detailed story about what

goes on in an alternative world (except maybe for stories of very simple worlds). Still less have our busy authors given us the countless such stories that we need. The world-stories are no less fictitious than the worlds themselves.

A remedy is to say that all the world-stories exist as mathematical representations — set-theoretical models, sets of sentences, or what-not. This is the theory I have called 'linguistic ersatzism'. I have asked how alien universals can be unambiguously represented using the resources of this world; but Armstrong needn't worry about that, so long as he ignores the outer sphere. I have asked how to distinguish consistent from inconsistent representations; but combinatorialism gives an answer to that, provided the representations represent only the recombination of universals and say nothing explicit about whether there are talking donkeys. Further, Armstrong argues that the resources of this world afford a naturalistic foundation for all of set-theoretical mathematics. (See ch. 9. I will not discuss this chapter. It is tangential to the rest of the book, and it may in part be superseded by Armstrong, 'Classes are State of Affairs', *Mind* 100 (1991) pp. 189-200.) If that is right, he has all the mathematical modelling clay he needs to represent the worlds of the inner sphere.

It is hard to see why Armstrong should not be a naturalistic ersatzter. He says that 'if this could be done satisfactorily, it would be a particularly economical solution' (p. 31). But he says no more; and instead goes on to consider and reject *non*-naturalistic ersatzism, in which the representing entities are actual but 'abstract', causally inert and outside of space and time. Later, after explicitly mentioning mathematical constructions, he says 'My quarrel with the ersatzter is perhaps not very deep . . . But the quarrel is real. Mere representations of possibilities . . . are not to be identified with the possibilities that we seek to represent' (p. 41). Agreed. There are 'constructivist' philosophers who treat the real world as if it were a story, full of features that are artifacts freely put in by the author. Armstrong will have none of that, of course. An ersatzter who treated all the worlds as constructed representations, the real one along with the rest, would be travelling in unwelcome company. But most ersatzters nowadays take good care to distinguish their world-stories from worlds. They would never confuse this world itself with the true one among all the world-stories. It's not wrong to treat a story as if it were a story!

If we abandon ersatzism, there is another way to rescue the many fictions of one world each. The problem is that these many untold stories are themselves fictitious. We can grant the point, and go for a *compound fictionalism*. If a novel concerns the life of a story-teller, there may be stories that exist according to that novel but do not really exist: fictitious fictions. And there may be things that, according to the novel, exist according to these stories; but do not exist according to the novel itself; and do not exist. So we could have one big (fantastic!) fiction according to which all the little fictions of one world each do exist. So then a possible world would be doubly fictitious, something that exists according to a fiction that exists according to another fiction. This is the solution Armstrong adopts.

Compound fictionalism is clumsy. We see just how clumsy it is if we consider not a plain possibility statement, but rather a numerical possibility statement.

Suppose we say that a certain course of events, say the break-up of the Soviet Union, might unfold in three quite different ways. It's not that three quite different possible worlds exist. It's not that according to some fiction, there is some other fiction according to which three such worlds exist. What's true, rather, is that according to one 'outer' fiction, three 'inner' fictions exist; and according to the outer fiction, it's true according to the first inner fiction that the break-up happens in one way; and according to the outer fiction, it's true according to the second inner fiction that the break-up happens in quite another way; and according to the outer fiction, it's true according to the third inner fiction that the break-up happens in another way still. (And if you think this isn't bad enough yet, note how I've been fudging by appearing to quantify over 'ways', whatever those are. That would need cleaning up, somehow, in a correct compound-fictionalist translation.) I don't say this is unacceptable; I do say that it should move Armstrong to see if he can patch up his quarrel with naturalistic ersatzism.

Many-Worlds Fictionalism

Armstrong might abandon the many fictions of one world each, and go instead for the one big fiction of many worlds. This would lead to a position that houses his combinatorialism within the sort of 'modal fictionalism' considered by Gideon Rosen (in his excellent article of that name, *Mind* 99 (1990) pp. 327-354). Does a fiction exist according to which there exist many 'concrete' worlds? Yes, if indeed it is a fiction — I wrote it myself. We could join that fiction of the plurality of worlds with Armstrong's doctrine that a world is a world of particulars and universals bound together in states of affairs; and we could strike out the part about the alien universals and the worlds of the outer sphere; and we could add that the worlds are subject to Armstrong's form of the principle of recombination. Consider it done. Then Armstrong could say that possible worlds exist according to this one big fiction of many worlds. And he could say, as Rosen does, that it is possible that there are blue swans iff, according to that big fiction, together with its factual background, at least one world has blue swans in it. In general, this many-worlds modal fictionalism borrows its analyses from the many-worlds theory of modality, and consequently shares many of its advantages.

The main cost, as Rosen says, is that we need the primitive notion of truth according to a fiction. Indeed, any version of fictionalism needs this notion: not only the one big fiction of many worlds, but also the many little fictions of one world each and the big fiction of many little fictions. The notion is modal: it is the notion of being implied by, being implicitly represented by, the fiction. Or worse, in case we are dealing with impossible fictions, it is hyperintensional. However thing-like Armstrong's states of affairs may be, fictions about states of affairs are story-like and not thing-like. So I fear that by going fictionalist, Armstrong has brought back the problem of implicit representation and the need for primitive modality — or worse.

But even setting that aside, all is not rosy. Many-worlds fictionalism is close enough to the many-worlds theory to share not only its advantages but its problems. One problem for the many-world theory is that the many worlds may

appear to be parts of one big divided actuality, rather than alternative possibilities. I think this is a spoils-to-the-victor issue: if you accept the many-worlds theory on other grounds, as I do, you should denounce that appearance as an illusion; whereas if you reject the many-worlds theory on other grounds, as Armstrong does, you should take the appearance at face value, as Armstrong does. That is why Armstrong rejects many-worlds fictionalism. 'The trouble with this idea is that the fiction would be a fiction of a monstrously swollen actuality. But the merely possible worlds are *alternative* to the actual world' (p. 50). I reply that in dealing with a fiction, we ought to suspend disbelief. One thing true according to the fiction — Armstrong needn't agree that it is true *simpliciter* — is that the many worlds are not all actual.

There is a better reason why Armstrong should reject many-worlds fictionalism. It shares another of the many-world theory's problems: the problem of demarcation. If there are many worlds, where does one leave off and another begin? (No problem for the many fictions of one world each, because different worlds are creatures of different fictions.) Armstrong rejects demarcation by spatiotemporal isolation. He thinks it possible that a single world might contain spatiotemporally isolated 'island universes' (p. 16). How else can he solve the demarcation problem? For him it would be a problem about what's true in the fiction, not about what's true; but no less of a problem for that.

(The intuitive case that island universes are possible has been much strengthened by a recent argument in John Bigelow and Robert Pargetter, 'Beyond the Blank Stare', *Theoria* 53 (1987), pp. 97-114. First, mightn't there be a world of *almost* isolated island universes, linked only by a few short-lived wormholes? And mightn't the presence of the wormholes depend on what happens in the islands? And then wouldn't it be true that if the goings-on in the islands had been just a little different, there wouldn't have been any wormholes? Then wouldn't there have been a world of altogether isolated islands?)

Armstrong does have another solution available for the demarcation problem, but it's a solution that brings new trouble. The world — or a world, according to the fiction of many worlds — is a world of states of affairs; and it includes a fact of totality. If many worlds coexist, as the fiction says they do, they are demarcated by their facts of totality. If there is a fact of totality for the conjunctive state of affairs $Fa \ \& \ Gb \ \& \ aRb$, but also there is a state of affairs Ga , the latter state of affairs must belong to a different world. It cannot be part of a world whose totality fact excludes it. But this shows that the fiction of many worlds, understood Armstrong's way, is an *impossible* fiction. (The many-worlds theory itself, if burdened with Armstrong's doctrine of totality facts, would be inconsistent outright.) The fiction says that states of affairs somehow manage to coexist with totality facts that ought to exclude them. Maybe there are ways to say what's true according to an impossible fiction; maybe that's a problem we must solve anyway to handle other cases; but maybe solutions that apply to other cases won't carry over to this case. Anyhow, it's a most unwelcome complication. It's a good reason why Armstrong should choose compound fictionalism, as he did, or else naturalistic ersatzism.

Conclusion

By now it will be evident that Armstrong's position on possibility is important and attractive and worthy of very serious attention. His book presents it admirably.

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