The Metaphysic
of Abstract Particulars

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1. THE CONCEPTION OF PROPERTIES AS PARTICULAR

A classic tradition in first philosophy, descending from Plato and Aristotle, and recently reaffirmed by D. M. Armstrong,[1] proposes two equally essential, yet mutually exclusive, categories of reality: Substances (or Particulars), which are particular and concrete, and Properties (and Relations), which are universal and abstract. Material bodies are the most familiar examples of Concrete Particulars, and their characteristics, conceived of as repeatable entities common to many different objects, are paradigms of Abstract Universals.

Particular being's distinguishing mark is that it is exhausted in the one embodiment, or occasion, or example. For the realm of space, this restricts particulars to a single location at any one time. Particulars thus seem to enjoy a relatively unproblematic mode of being.

Universals, by contrast, are unrestricted in the plurality of different locations in space-time at which they may be wholly present. Altering the number of instances of a universal (being a bee, for example), increasing or decreasing it by millions, in no way either augments or diminishes the universal itself. In my opinion, the difficulty in comprehending how any item could enjoy this sort of reality has been the scandal which has motivated much implausible Nominalism in which, with varying degrees of candor, the existence of properties and relations is denied.

The scandal would disappear if properties were not really universal after all. In modern times, it was G. F. Stout who first explicitly made the proposal that properties and relations are as particular as the substances that they qualify.[2] Others have given the notion some countenance,[3] but its most wholehearted advocate, perhaps, has been D. C. Williams.[4] What are its merits?

In the first place, that a property should, in some sense, enjoy particular being, is not a contradiction in terms. The opposite of Particular is Universal, whereas the opposite of Concrete is Abstract. In this context, an item is abstract if

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it is got before the mind by an act of abstraction, that is, by concentrating attention on some, but not all, of what is presented. A complete material body, a shoe, ship, or lump of sealing wax, is concrete; all of what is where the shoe is belongs to the shoe—its color, texture, chemical composition, temperature, elasticity, and so on are all aspects or elements included in the being of the shoe. But these features or characteristics considered individually, e.g., the shoe's color or texture, are by comparison abstract.

The distinction between abstract and concrete is different from that between universal and particular, and logically independent of it. That some particulars as well as universals should be abstract, and that, specifically, cases or instances of properties should be particulars, is at least a formal possibility.

In the second place, it is plain that one way or another, properties must take on or meet particularity in their instances. Consider two pieces of red cloth. There are two pieces of cloth, *ex hypothesi*. Each is red. So there are two occurrences of redness. Let them be two occurrences of the very same shade of redness, so that difference in quality between them does not cloud the issue. We can show that there really are two pieces of cloth (and not, for example, that one is just a reflection of the other) by selective destruction—burn one, leaving the other unaffected. We can show that there really are two cases of redness in the same sort of way; dye one blue, leaving the other unaffected. In this case there remain two pieces of cloth. But there do *not* remain two cases of redness. So the cases of redness here are not to be identified with the pieces of cloth. They are a pair of somethings, distinct from the pair of pieces of cloth. A pair of what? The fact that there are two of them, each with its bounded location, shows that they are particulars. The fact that they are a pair of *rednesses* shows them to be qualitative in nature. The simplest thesis about them is that they are not the compound or intersection of two distinct categories, but are as they seem to reflection to be, items both abstract and particular. Williams dubs abstract particulars *tropes.*

The argument above is to the effect that tropes are required in any proper understanding of the nature of concrete particulars (in this case specimen material bodies, pieces of cloth) and that this becomes evident in the analysis of local qualitative change.

A third ground for admitting tropes in our ontology is to be found in the problem of universals itself. The problem of universals is the problem of determining the minimum ontological schedule adequate to account for the similarities between different things, or the recurrence of like qualities in different objects. Take a certain shade of red as an example. Many different items are the same color, this certain shade of red. There is a multiple occurrence involved. But what, exactly, is multiple? The *universal* quality, the shade of red, is common to all the cases but is not plural. On the other hand, the red *objects* are plural enough, but they are heterogeneous. Some are pieces of cloth, others bits of the skin of berries, others exotic leaves, dollops of paint, bits of the backs of dangerous spiders, and so on. There is no common recurrent substance.

What does recur, the only element that does recur, is the color. But it must be

the color as a particular that is involved in the recurrence, for only particulars can be many in the way required for recurrence.

It is the existence of resembling tropes which poses the problem of universals. The accurate expression of that problem is: What, if anything, is common to a set of resembling tropes?

2. TROPES AS INDEPENDENT EXISTENCES

Williams claims more for tropes than just a place in our ontology; he claims a fundamental place. Tropes constitute, for him, "the very alphabet of being," the independent, primitive elements which in combination constitute the variegated and somewhat intelligible world in which we find ourselves.

To take this line, we must overcome a long-standing and deeply ingrained prejudice to the effect that *concrete* particulars, atoms or molecules or larger swarms, are the minimal beings logically capable of independent existence.

We are used to the idea that the redness of our piece of cloth, or Julius Caesar's baldness, if they are beings at all, are essentially dependent ones. Without Julius Caesar to support it, so the familiar idea runs, his baldness would be utterly forlorn. Without the cloth, no redness of the cloth. On this view, concrete particulars are the basic particulars. Tropes are at best parasitic.

Being used to an idea, of course, is not a sufficient recommendation for it. When it is conceded that, as a matter of fact, tropes tend to come in clusters and that a substantial collection of them, clinging together in a clump, is the normal minimum which we do in fact encounter, we have conceded all that this traditional point of view has a right to claim. The question at issue, however, is not what is in fact the ordinary minimum in what is "apt for being," but what that minimum is of metaphysical necessity. The least which could exist on its own may well be less than a whole man or a whole piece of cloth. It may be just a single trope or even a minimal part of a single trope.

And some aspects of experience encourage the view that abstract particulars are capable of independent existence. Consider the sky; it is, to appearance at least, an instance of color quite lacking the complexity of a concrete particular. The color bands in a rainbow seem to be tropes dissociated from any concrete particular.

All Williams requires here, of course, is that dissociated tropes be possible (capable of independent existence), not that they be actual. So the possibility of a Cheshire Cat face, as areas of color, or a massless, inert, impenetrable zone as a solidity trope, or free-floating sounds and smells, are sufficient to carry the point.

The way concrete particularity dissolves in the subatomic world, and in the case of black holes, suggests that dissociated tropes are not just possibilities but are actually to be encountered in this world.

On the view that tropes are the basic particulars, concrete particulars, the whole man and the whole piece of cloth, count as dependent realities. They are collections of co-located tropes, depending on these tropes as a fleet does upon its component ships.

3. THE ANALYSIS OF CAUSATION

D. Davidson has provided powerful reasons why some singular causal statements, like

> The short circuit caused the fire,

are best interpreted as making reference to events.[5] Davidson's example is a specimen of an *event-event* singular causal claim.

But by no means all singular causal statements are of this type. Many involve *conditions* as terms in causal connections. For example:

Condition-event: The weakness of the cable caused the collapse of the bridge.

Event-condition: The firing of the auxiliary rocket produced the eccentricity in the satellite's orbit.

Condition-condition: The high temperature of the frying pan arises from its contact with the stove.

Now the conditions referred to in these examples, the cable's weakness, the orbit's eccentricity, the frying pan's temperature, are properties, but the particular cases of properties involved in particular causal transactions. It is the weakness of this particular cable, not weakness in general or the weakness of anything else, which is involved in the collapse of this bridge on this occasion. And it is not the cable's steeliness, rustiness, mass, magnetism, or temperature which is at all involved. To hold that the whole cable, as concrete particular, is the cause of the collapse is to introduce a mass of irrelevant characteristics.

The cause of the collapse is the weakness of this cable (and not any other), the whole weakness, and nothing but the weakness. It is a particular, a specific condition at a place and time: so it is an abstract particular. It is, in short, a trope.

Events, the other protagonists in singular causal transactions, are widely acknowledged to be particulars. They are plainly not ordinary concrete particulars.[6] They are, in my opinion, best viewed as trope-sequences, in which one condition gives way to others. Events, on this view, are changes in which tropes replace one another. This is a promising schema for many sorts of change.

Attempts to avert reference to tropes by use of *qua*-clauses do not succeed. If we affirm that

> The cable *qua* weak caused the collapse

yet deny that

> The cable *qua* steely caused the collapse,

then we are committed to the view that

> The cable *qua* weak ≠ the cable *qua* steely.

So at least one of these terms refers to something other than the cable. What could it be referring to?—only the weakness (or steeliness) of the cable, that is, only to the trope.

The philosophy of cause calls for tropes. That on its own is virtually suffi-
cient recommendation for a place in the ontological sun.

4. PERCEPTION AND EVALUATION

The introduction of tropes into our ontology gives us an extremely serviceable
machinery for analyzing any situation in which specific *respects* of concrete partic-
ulars are involved.

In the philosophy of perception, tropes appear not only as terms of the
causal relations involved but also, epistemically, as the immediate objects of percep-
tion. The difficulties involved in Direct Realism with material objects disappear.
Notoriously, we do not see an entire cat, all there is to a cat, for a cat has a back
not now perceived and an interior never perceived. The immediate object of vision
cannot even be part of the front surface of the cat, for that front surface has a tex-
ture and temperature which are not visible, and a microscopic structure not per-
ceptible by any means. So that when you look at a cat what you most directly see
is neither a cat nor part of its front surface. This conclusion has, to say the least,
encouraged Idealist claims that the immediate object of perception is of a mental
nature, a percept or representation standing in some special relation to the cat.

In the trope philosophy, a Direct Realist theory of perception would hold
that not cats, but tropes of cats, are what is seen, touched, and so on. The cat's
shape and color, but not its temperature or the number of molecules it contains,
are objects of vision. Some of the tropes belonging to the cat are perceptible, some
not. On any one occasion, some of the perceptible ones are perceived, others are
hidden. That is the way in which the senses are selectively sensitive; that is why
there is no need for embarrassment in admitting that the senses can give us knowl-
edge only of certain aspects of concrete particulars.

Evaluation is another field in which the admission of tropes does away with
awkwardness. Concrete particulars can be simultaneously subject to conflicting
evaluations—in different respects, of course. A wine's flavor can be admirable and
its clarity execrable, a pole vaulter's strength be splendid and his manners ill. On a
trope analysis, the immediate object of evaluation is the trope, so that strictly
speaking, different objects are being evaluated when we consider the flavor and the
clarity of the wine, and thus the incompatible evaluations give rise to no problem
at all.

5. THE PROBLEM OF CONCRETE INDIVIDUALS

The problem of concrete individuals is the problem of how it is possible for many
different qualities to belong to one and the same thing. To answer it is to give the
constitution of a single individual. For convenience's sake, we tend to discuss the
issue in terms of items of medium scale, such as books, chairs, or tables, although
we know such objects are not really single units but assemblies of parts which are
themselves also individuals. The question of the constitution of a single individual

is, of course, quite distinct from the relationship between complex wholes and their simpler parts. To avoid confusion we might do better to use as an example some more plausible specimen of a single concrete individual, such as one corpuscle in classical Atomism. Our question is: what is it, in the reality of one corpuscle, in virtue of which it is one, single, complete, distinct individual?

In an ontology that recognizes properties and relations only as *universals*, no satisfactory solution to this question can be found. There are two ways of tackling it:

(i) A complete individual is the union of universal properties with some additional, particularizing reality. For Aristotelians, this will be the Prime Matter that qualities inform, for Lockeans the substratum in which qualities inhere. The common ground of objection to solutions of this type lies in their introduction of a somewhat which, because it lies beyond qualities, lies by its very nature beyond our explorations, describings, and imaginings, all of which are of necessity restricted to the qualities things have. We do well to postpone as long as possible the admission into our ontology of elements essentially elusive and opaque to the understanding.

To avoid such elements, we must deny that in the ontic structure of an individual is to be found any non-qualitative element. Which is precisely the course followed in the other main tradition:

(ii) A complete individual is no more than a Bundle of qualities, viz., all and only the qualities that, as we would ordinarily say, the thing has. In banishing "metaphysical" particularizers, such views are appealing to Empiricists, for as long as they can forget their Nominalism, which is, of course, incompatible with any Bundle theory.

Where the bundle is a bundle of universals, the very same repeatable item crops up in many different bundles (the same property occurs in many different instances). And herein lies the theory's downfall. For it is a necessary truth that each individual is distinct from each other individual. So each bundle must be different from every other bundle. Since the bundles contain nothing but qualities, there must be at least one qualitative difference between any two bundles. In short, this theory requires that the Identity of Indiscernibles be a necessary truth.

Unfortunately, the Identity of Indiscernibles is not a necessary truth. There are possible worlds in which it fails, ranging from very simple worlds with two uniform spheres in a non-absolute space to very complex ones, without temporal beginning or end, in which the same sequence of events is cyclically repeated, with non-identical indiscernibles occurring in the different cycles.

Bundle theories with elements that are universal qualities thus come to grief over the status of the Identity of Indiscernibles. But where the elements in the bundle are not repeatable universals but particular cases of qualities, not smoothness-in-general but the particular smoothness here, in this place, qualifying this particular tile, the situation is quite different. Now the elements in the bundles are tropes, and no matter how similar they are to one another, the smoothness trope in one tile is quite distinct from the smoothness trope in every other tile. So the bundles can never have any common elements, let alone coincide completely.

The question of the Identity of Indiscernibles becomes the question whether all the elements in one bundle match perfectly with all the elements in any other, which is, as it should be, an *a posteriori* question of contingent fact.

Tropes of different sorts can be *compresent* (present at the same place). In being compresent they, in common speech, "belong to the same thing." Taken together, the maximal sum of compresent tropes constitutes a complete being, a fully concrete particular. Each fully concrete individual is, of necessity, distinct from every other.

There is no need for any non-qualitative particularizer, nor any problem over the Identity of Indiscernibles. In the trope philosophy, the Problem of Individuals has an elegant solution.

A. Quinton recently proposed that an individual is the union of a group of qualities and a position, and D. M. Armstrong has endorsed a similar view.[7] If we take this as a version of the Lockean *substratum* strategy, it invites the criticism that it involves an *a priori* commitment to absolute space or space-time, anterior to the placing of qualities. To avoid such objectionable *a priori* cosmology, we must hold not that place and the quality present at that place are distinct beings, one the particularizer and the other a universal, but that quality-at-a-place is itself a single, particular, reality. And this second view is just the trope doctrine re-expressed.

6. THE PROBLEM OF UNIVERSALS

Tropes can be compresent; this makes possible a solution to the problem of individuals. Tropes can also resemble one another, more or less closely. Williams holds that this facilitates a solution to the problem of universals. I regret to report that I cannot fully share his optimism.

The Problem of Universals is the problem of how the same property can occur in any number of different instances. "The Problem of Universals" is not really a good name, since the principal issue is whether there *are* any universals; the problem is: what ontological structure, what array of real entities, is necessary and sufficient to account for the likenesses among different objects which ground the use on different occasions of the same general term, 'round', 'square', 'blue', 'black', or whatever. "The Problem of Resemblance" would thus be a better name; proposed solutions consist in theories of the nature of properties.

As with the problem of individuals, philosophical tradition exhibits an ominous unstable oscillation between unsatisfactory alternatives. Realism claims the existence of a new category of entities, not particular, not having any restricted location, literally completely present, the very same item, in each and every different circular object, or square one, or blue one, or whatever. Nominalism holds that roundness and squareness are no more than shadows cast by the human activity of classifying together, and applying the same description to, sundry distinct particular objects. The classic objection to Realism is Locke's *dictum* that all things that exist are only particulars. This amounts to the difficulty of believing in universal beings. The objection to Nominalism is its consequence that if there were no human race (or other living things), nothing would be like anything else.

Can a philosophy of abstract particulars be of any assistance? Williams claims that a property, such as smoothness, is a set of resembling tropes. Members of this set are instances of the property. Tile A's smoothness, tile B's smoothness, tile C's smoothness, insofar as they resemble one another, all belong to a set S. There are no *a priori* limits on how many members S should have, or how they should be distributed through space and time. So in this respect S behaves as a universal must. Moreover, since the members of S are particular smoothnesses, each of them is fully smooth, not merely partly smooth. This is again a condition which anything proposed as a universal must meet.

The closeness of resemblance between the tropes in a set can vary. These variations correspond to the different degrees to which different properties are specific. According to this view, Resemblance is taken as an unanalyzable primitive, and there are no non-particular realities beyond the sets of resembling tropes. So this view holds that there is *no* entity literally common to the resembling tropes; it is a version of Particularism.

Can we take Resemblance as a primitive? Resemblance between tropes, rather than between concrete particulars, avoids two classic objections to this line.

Objection 1. The Companionship Difficulty[8]

Attempts to construct a property as a Resemblance-Class of the items that "have the property" face this objection: there could be two *different* properties (say, *having a heart* and *having a kidney*) which, as a matter of fact, happen to be present in the very same objects. But if each property is no more than the Resemblance-Class containing all and only those objects, since these two different properties determine the same Resemblance-Class it will turn out that the 'two' properties are not different after all. The theory falsely identifies *having a heart* with *having a kidney*, and indeed any pair of co-extensive properties.

This problem cannot arise where the members of the Resemblance-Class are *tropes* rather than whole concrete particulars. Although the *animals* that have hearts coincide with the animals with kidneys, the instances of having a heart, as abstract particulars, are quite different items from the instances of having a kidney. The Resemblance-Classes for the two properties have no members in common, and there is no basis for the objectionable identification.

Objection 2. The Difficulty of Imperfect Community[9]

In constructing a Resemblance-Class, we cannot just select some object O and take all the objects that resemble O in some way or other. That would yield an utterly heterogeneous collection, with 'nothing in common', as we would intuitively put it.

To avoid saying that the members of the Resemblance-Class must all resemble O in the same respect, which introduces *respects* as Realistically conceived universals, we have to require that all the members of the Resemblance-Class must not only resemble O but must also resemble one another.

But although necessary, this restriction is not sufficient. For consider the case where

O_1 has features P Q R
O_2 has features Q R S
O_3 has features R S T
O_4 has features S T P

Each of these objects does resemble all the others. But they share no common property. This is the phenomenon of *imperfect community*. Family resemblance classes are examples. Not all resemblance classes pick out a genuine universal property. More precisely, this is the case where the members of the resemblance classes are objects with many different features.

The problem of imperfect community cannot arise where our resemblance sets are sets of tropes. For tropes, by their very nature and mode of differentiation, *can* only resemble in one respect. An instance of solidity, unlike a complete material object, does not resemble a host of different objects in a host of heterogeneous ways. The difficulty of imperfect community springs from the complexity of concrete particulars. The simplicity of tropes puts a stop to it.

Although the prospects for a resolution of the problem of universals through appeal to resemblances between tropes are better than those for resemblance between concrete particulars, it is by no means plain that this line succeeds.

The difficulty is that we have an answer to the question: What do two smooth tiles have in common, in virtue of which they are both smooth? They both contain a trope of smoothness; *matching* tropes occur in their makeup. But then we at once invite the question: What do two smooth tropes have in common, in virtue of which they match? And now we have no answer, or only answers that re-state the situation: These tropes resemble, or are alike, in virtue of their nature, in virtue of what they are. This leaves us with no answer to the question: Why isn't the way a rough trope is, a ground for matching a smooth trope? We cannot say it is the wrong *sort* of thing. We must just say: because it isn't.

Now explanations must stop somewhere. But is this a satisfactory place to stop?

7. THE ROLE OF SPACE IN A FIRST PHILOSOPHY

The metaphysic of abstract particulars gives a central place to Space, or Space-Time, as the frame of the world. It is through *location* that tropes get their particularity. Further, they are identified, and distinguished from one another, by location. Further yet, the continuing identity over time of the tropes that can move is connected with a continuous track in space-time.

Still further, space (and time) are involved in *co-location*, or compresence, which is essential to the theory's account of concrete particulars. So the theory seems to be committed to the thesis that *every* reality is a spatio-temporal one.

This would make a clean sweep of transcendent gods, Thomist angels, Cartesian minds, Kantian noumena, and Berkeley's entire ontology. But that is too swift, too dismissive.

There is, in fact, a less drastic possibility open. That is, that to the extent that there can be non-spatial particulars, to that extent there must be some analogue of the locational order of space.[10] And in that case, there will be an analogue of location to serve as the principle of individuation for non-spatial abstract particulars.

To concede that there can be non-spatial particulars to the extent that they belong in an array analogous to space is generous enough toward such dubious items.

We are, however, not yet at the end of the special status of space. The geometric features of things, their form and volume, have a special role. Form and volume are not tropes like any others. Their presence in any particular sum of tropes is not an optional, contingent, matter. For the color, taste, solidity, salinity, and so on, which any thing has are essentially spread out. They exist, if they exist at all, *all over* a specific area or volume. They cannot be present except by being present in a formed volume. Tropes are, of their essence, regional. And this carries with it the essential presence of shape and size in any trope occurrence. The often-noticed fact that shape and size, like Siamese twins, are never found except together, is part of this special status of the geometrical features.

Color, solidity, strength are never found except as the-color-of-this-region, the-solidity-of-this-region, and so on. So wherever a trope is, there is formed volume. Conversely, shape and size are not genuinely found except in company with other characteristics. A mere region, a region whose boundaries mark no material distinction whatever, is only artificially a single and distinct being.

So the geometric features are doubly special; they are essential to ordinary tropes and in themselves insufficient to count as proper beings. Form and volume are therefore best considered not as tropes in their own right at all. Real tropes are qualities-of-a-formed-volume. The distinctions we can make between color, shape, and size are distinctions in thought to which correspond no distinctions in reality. A change in the size or shape of an occurrence of redness is not the association of the same red trope with different size and shape tropes, but the occurrence of an (at least partly) different trope of redness.

There is no straightforward correlation between distinct *descriptions* and distinct tropes. That predicates may not go hand-in-hand with tropes is important, for therein lies the possibility of reduction, exhibiting one trope as consisting in tropes which before the discovery of the reduction would have been considered "other" tropes. Reduction is the life and soul of any scientific cosmology. Reductions involving elements in familiar human-scale material bodies provide the best of explanations why tropes ordinarily occur in compresent bundles which cannot be dissociated and whose members resist independent manipulation.

8. THE PHILOSOPHY OF CHANGE AND MODERN COSMOLOGY

The admission of abstract particulars as the basic ontological category gives us a way into the philosophy of change. We all feel in our bones that there is a quite radical distinction to be made between the sorts of changes involved in becoming bald and the sorts involved in becoming a grandfather. The first sort are closer to home. They are intrinsic, whereas the others are in some way derivative, dependent, or secondary. If we content ourselves with an analysis of change in terms of the applicability of descriptions, however, the two sorts of change seem to be on a par.

We can do justice to the feeling in our bones by distinguishing changes in which different descriptions apply to O in virtue of a new trope situation at O itself, from changes in which the new descriptions apply as a consequence of a new trope situation elsewhere. Trope changes become the metaphysical base from which other sorts of change derive.

We can recognize three basic types of change into which tropes enter:

1. *Motions,* the shifting about of tropes which retain their identity. When a cricket ball moves from the bat to the boundary, it retains its identity, and the tropes that constitute it retain their identity also. Many *instances of relations,* of being so far, in such direction, from such and such, are involved. For all that has been said so far, these are tropes too. Many such enjoy a brief occurrence during any motion. Because there cannot be relations without terms, in a metaphysic that makes first-order tropes the terms of all relations, relational tropes must belong to a second, derivative order.

2. *Substitutions,* in which one, or more, trope passes away and others take its place. Burning is a classic case. The object consumed does not retain its identity. Its constituent tropes are no more. In their place are others which formerly had no existence.

3. *Variations.* An object gets harder or softer, warmer or cooler. With such qualities which admit of degree, I think we should allow that the same trope, determinable in character though determinate at any given point in time, is involved. Call an abstract element in a situation, extending over time, a *thread.* Variations are homogeneous threads; processes, such as burning, are heterogeneous ones.

The concept of a thread is very useful in ordering categories. Stability is represented by the most homogeneous threads of all. Variations in a quantity, as we have seen, involve no deep discontinuity; different parts of the thread are plainly instances of the same type of property. *Events* are of various sorts: a rise in temperature is a quantitative alteration along a homogeneous thread: an *explosion* terminates many threads and initiates many different ones. Events, processes, stabilities, and continuities are all explicable as variations in the pattern of presence of tropes. All these are categories constructable from the same basis in abstract particulars.

Attempts to relate these three kinds of change are of course a perfectly proper part of cosmology. Classical Atomism, for example, the very apotheosis of concrete particularism, involves the thesis that all three types of change resolve, on finer analysis, into motions, in particular the motions of corpuscles.

But Classical Atomism is false, and any type of atomism looks unpromising at the present time. The cosmology of General Relativity takes a holistic view of space-time. And it seems positively to call for a trope metaphysic and a break with concrete particularism. The distinction between "matter" and "space" is no longer absolute. All regions have, to some degree, those quantities which in sufficient measure constitute the matter of the objects among which we live and move and have our being.

The world is resolved into six quantities, whose values at each point specify the tensor for curved space-time at that point. Material bodies are zones of relatively high curvature.

The familiar concept of a complex, distinct, concrete individual dissolves. In its place we get the concept of quantities with values in regions. Such quantities, at particular locations, are dissociated abstract particulars, or tropes. Considered in their occurrence and variation across all space and all time, they are pandemic homogeneous threads.

The metaphysic of abstract particulars thus finds a vindication in providing the most suitable materials for the expression of contemporary cosmology.

Notes

1. D. M. Armstrong, *Universals and Scientific Realism* (Cambridge, 1978).

2. G. F. Stout, *The Nature of Universals and Propositions* (Oxford [British Academy Lecture], 1921).

3. G. E. L. Owen, "Inherence," *Phronesis* 10 (1965):97-108; N. Wolterstorff, "Qualities," *Philosophical Review* 69 (1960):183-200 and *On Universals* (Chicago, 1970). A. Quinton, "Objects and Events," *Mind* 87 (1979):197-214. J. Levinson, "The Particularisation of Attributes," *Australian Journal of Philosophy* 58 (1980):102-15. P. Butchvarov, *Being Qua Being* (Indiana, 1979), pp. 184-206, discusses but rejects the view.

4. D. C. Williams, "The Elements of Being," in *Principles of Empirical Realism* (Springfield, Ill., 1966).

5. D. Davidson, "Causal Relations," *The Journal of Philosophy* 64 (1967):691-703; "The Logical Form of Action Statements," in *Logic of Decision and Action*, ed. N. Rescher (Pittsburgh, 1966).

6. If Quine is right, they are four-dimensional concrete particulars whose boundaries are determined not by material discontinuities but by discontinuities in other respects, which we pre-theoretically describe as discontinuities in *activity*.

7. A. Quinton, *The Nature of Things*, part 1 (London, 1973); D. M. Armstrong, *Universals*, chap. 11.

8. See N. Goodman, *The Structure of Appearance*, 2nd ed. (Indianapolis, 1966), chap. 5.

9. See *ibid.*, chaps. 5 and 6.

10. Cf. P. F. Strawson, *Individuals* (London, 1959), chap. 2.