Contents

	1. **Singular** (‘one’)	2. **Non-singular** (‘not-one’)
3. **Plural** (‘many’)	X X X	‘things’ ‘apples’ ‘clothes’
4. **Non-plural** (‘not-many’)	‘thing’ ‘apple’ ‘sheep’	‘stuff’ ‘water’ ‘molasses’

Introduction

1

Engaging in the business of reflective, abstract thought, we nevertheless find ourselves initially most at home in contemplating the category of individual concrete *bodies*—individual chairs, tables, dogs, cats, snowflakes, ice cubes, jugs, flowers, trees, houses, stars, planets, bacteria, molecules, and so on—all seemingly distinguishable, discrete units, each countable as one, each one retaining its unique identity, possessing some cohesive causal unity, persisting for some finite period of time, surviving certain kinds of change but not other kinds of change, interacting causally with other discrete units in a common space and time.

And yet, a picture of the realm of space and time as first and foremost one of discrete bodies would be grossly incomplete. There are, for instance, large amounts of gold, and even larger quantities of salt, in the sea; but there are no discrete bits or pieces of gold, no distinguishable grains or lumps of salt in the sea.[1] Again, there is water in the atmosphere, and hydrogen in interstellar space; but the water in the atmosphere need not occur as drops or droplets—it may be simply in the diffuse form of vapour; and the hydrogen in space need not occur as discrete clouds—in varying degrees of density it is, we are told, virtually

[1] Nor, it should perhaps be said, with an eye to naturalist preoccupations, are there any *molecules* of salt in the sea. Salt, being an ionic compound, has no smallest units each of which itself is salt. As standard chemistry texts explain, ionic compounds are substances in which the typical constituent units are not, as in water, molecules combining atoms of each of the constituent substances, but are instead ions, free-floating or uncombined and electrically charged 'incomplete atoms' of the several constituent substances—objects which, unlike atoms, are electrically non-neutral, positively or negatively charged, having a surplus or deficit of electrons—such that it is the electrical imbalance of these units which serves to constitute the compound as a compound. For example, to the extent that salt may be said to be composed of constituent particles, these particles are separate sodium ions and chlorine ions, whose positive and negative charges are what collectively constitute the compound as a compound, and at the same time balance out so that the salt itself is, of course, electrically neutral.

ubiquitous.[2] That picture of the world for which all matter is 'enformed' in discrete well demarcated objects—a picture sometimes linked, perhaps mistakenly, with Aristotle's doctrines—would seem to be a kind of myth.[3]

But it is only one among a strangely influential group of myths: for it is one thing to recognize a category of stuff distinct from that of body—even if, as it may seem with Aristotle, it is denied its independence *vis-à-vis* the concrete individual—and quite another to give no place to such a category at all. Hume for instance writes in the *Treatise* of 'first

[2] A perceived multiplicity of discrete clouds in this context might well be more phenomenal than real, perhaps resolving itself into merely more or less dense concentrations of material in a rarified gaseous continuum. See P. Unger's discussion of clouds in 'The Problem of the Many', in P. French, T. Uehling, and H. Wettstein (eds.), *Midwest Studies in Philosophy* 5 (Minneapolis: University of Minnesota Press, 1980), 411–67, and N. McKinnon, 'Supervaluations and the Problem of the Many', *Philosophical Quarterly* 52 (2002), 320–39. Unger is in my view, however, unduly anxious to generalize from this kind of case; and the point has nothing to do, as McKinnon appears to think, with the micro-constitution of the clouds.

[3] Although there is a tendency to talk and think of stuff as if it comes in discrete bits and pieces, it seems obvious that in the most common sense of 'bits and pieces', this need not be the case. In this common sense, to say that stuff occurs in discrete bits and pieces is in fact to imply something which, as a universal claim, everyone knows to be false—that it occurs in a solid form, as discrete chunks. (Notice however that 'bit', unlike 'piece', has a certain ambiguity: a bit may, like a piece, be a solid chunk of stuff; but unlike a piece, a bit may just be a small amount or quantity, regardless of the state the stuff is in. Though one cannot be said to drink a *piece* of water, it is possible, colloquially at any rate, to speak of drinking a *bit* of water.) Remarkably enough, there is a tendency, reflected in a famous remark of Isaac Newton's which is quoted in Appendix I, to think of matter as fundamentally and essentially *solid*. Locke, for instance, though displaying some concern about the precise meaning of the term 'solidity', maintains that solidity is 'the idea most intimately connected with, and essential to body; so as nowhere else to be found or imagined, but only in matter' (*Essay*, bk II, ch. 4). The objectifying tendency is remarkably pervasive; it occurs not only within philosophy but also in other theoretical disciplines. The following, taken from the *New Columbia Encyclopedia*, is a straw in the wind: 'Clouds are formed when air containing water vapour is cooled below a critical temperature . . . The classification used today comprises four main divisions . . . altocumulus, a layer of patches . . . arranged in groups, lines or waves, with individual clouds sometimes *so close together that their edges join* . . . stratocumulus, a cloud layer of patches . . . arranged in groups, lines or rolls, often with the rolls *so close together that their edges join*' (W. Harris, and J. Levey (eds.), *The New Columbia Encyclopedia*. London, New York: Columbia University Press, 1975, 582–3; my emphasis).
Now 'cloud' has a familiar non-count sense—'The region was blanketed in cloud'—and what seems to be actually described in the above text, when 'clouds are formed', is not so much a class of truly discrete objects, distinct and separate clouds, as a diffuse atmospheric region of cloud displaying a certain internal structure or pattern (much as a homogeneous medium such as water displays internal structure in the form of ripples, eddies, waves, and so forth). Here however, the non-count use seems to be overlooked, and what is adopted instead is a manifestly artificial, 'pseudo-objectifying' count use of the term.

observing the *universe of objects* or of *body*; the sun, moon and stars; the earth, seas, plants, animals, men, ships, houses and other productions . . . '.[4] For all their brevity, Hume's words explicitly encapsulate a certain stark and very general picture of the concrete world of space and time—a picture of this world as simply one of concrete, discrete objects. The picture, sweeping as it plainly is, is none the less perplexing: it seems quite strikingly inadequate or incomplete. Within the realm of the material—of that which fills or takes up space—Hume's list involves no mention of the diverse kinds of stuff that loom so large in everyday experience, as in our non-reflective thought and talk—no mention of, e.g., the water, wine, or beer we drink, the air we breathe; nor of such substances as salt and sugar, silver, lead, and gold.[5] The point is not a point concerning terminology—not just a matter of the fact that Hume describes the world as one of 'objects or of body'. It is rather that his list suggests some kind of blindness to examples of the group with which I am concerned. While it seems almost inconceivable that such examples are intentionally absent from Hume's list, none the less, their absence might perhaps suggest an unarticulated intuition of their unsuitability within a list of the different sorts of 'objects or of body' there may be.

And this serves just to emphasize a general puzzle about Hume's and other such accounts: why should one omit, or somehow overlook, so prominent a category as this, and postulate instead a universe composed exclusively of 'objects or of body' in the first place? Hume is not, by any means, atypical in this connection; there would appear to be a common tendency within reflective thought to be influenced, and even gripped, by a conception of the world as intrinsically 'divided' into discrete bodies.[6] The dramatic rise of atomism in the early modern period has

[4] 'After this', he continues, 'I consider the other system of being, *viz.*, the universe of thought'. *A Treatise of Human Nature*, ed. E. Mossner (Harmondsworth, Middlesex: Penguin, 1984), 290–1, first italics in original. Although the world-of-bodies view would seem to represent a certain norm, that norm does not achieve a universal acceptance. Descartes, for example, conceives the material universe as an infinite homogeneous fluid, in which distinct material particles or bodies are differentiated from one another only by differential motions in the fluid; and Kant, as I note in the 'atomism' appendix (Appendix I), appears to embrace a not dissimilar view.

[5] Here I use the term 'substance' in the everyday sense, which is also that of the chemist, but not of course that of the Aristotelian tradition.

[6] 'The *natural* or *pre-scientific* view of the world', we are told, 'regards it as a plurality of "things", each possessing qualities, standing in relation to others, and interacting with them.' (A. E. Taylor, *Elements of Metaphysics*. London: Methuen, 1903, 120). The suggestion, I take it, is that a conception which regards the world as exclusively a 'plurality of things' (and specifically, in so far as it is concrete, as a plurality of concrete things) just is the natural or pre-scientific view. Again, Milton Munitz writes, somewhat

no doubt worked to reinforce this world-of-bodies mode of thought, resulting in an intellectual environment whereby the wood/*hyle* has become obscured on account of the trees/*atomos*. At least on a classical, pre-quantum view of what such entities are like, atoms and molecules figure as paradigms of discrete bodies: a conception of the world as essentially divided into discrete pieces finds what are intellectually the most influential of these 'pieces' in them; such object-oriented thinking thus brings with it what is effectively a marginalization or eclipse of the ('grosser') category of stuff.[7]

2

So far as discrete bodies are concerned, we may think we have a fairly solid grasp on certain central features of this category of things, and in particular on what it is for things belonging to this category *to be*. Indeed, the category was already explored in illuminating detail some

more ambiguously, albeit in a Kantian vein, that 'On the level of primitive thinking as well as in the majority of classic philosophic systems, a central role is played by the idea of "objects", "things" or "substances" . . . ' (M. K. Munitz, *Space, Time and Creation*. New York: Collier Books, 1957, 93). Since it is difficult to see what else he could mean, it would seem that by 'primitive' thinking Munitz also means 'pre-scientific' or 'everyday' thinking. With a disarming modesty, this tendency to represent material reality in its entirety as cut and dried, as simply discrete 'bits', ascribes itself to common-sense and everyday experience, or to the everyday conception of the world. The fact however is that it is theoretic or reflective—a tendency whose roots in common talk and everyday experience are tenuous at best. The phenomenology of matter is that of something which is not essentially 'divided'; it is a feature of the world, as manifest perhaps most strikingly in fluid stuff like air and water, without intrinsic boundaries; and it is just such a feature that seems quite central to those early forms of metaphysical thought which stress the underlying unity and not the separation of all things. Indeed, Susanne Langer writes: 'All science tries to reduce the diversity of things in the world to mere differences of appearance, and treats as many things as possible as variants of the same stuff. When Benjamin Franklin found out that lightning is one form of electricity, he made a scientific discovery . . . an amazing number of things can be reduced to this same fundamental 'something', this protean substance called 'electricity'. . . . Electricity is one of the essential things in the world that can take on a vast variety of forms. Its wide mutability makes nature interesting, and its ultimate oneness makes science possible' (S. K. Langer, *An Introduction to Symbolic Logic*. London: Allen & Unwin 1937, 21–2).
(In the interests of historical accuracy, it should be noted that the authenticity of Franklin's purported discovery has recently been called into question.)

[7] See now Appendix I: Atomism.

2500 years ago in Aristotle's *Categories*, through his paradigm of primary and secondary 'substance'. By way of contrast, it is a striking fact that, in the case of non-Aristotelian substances, substances in the chemist's and the ordinary sense—oil, air, water, honey, salt, and gold—the question of the general features of this category, including what it is for things of this sort to exist, is one that seems to have no very well established or compelling answer, and certainly no answer that is able to command the intellectual respect which continues to be accorded to Aristotle's own account of individual 'substance' in the *Categories*.[8] Quite the contrary: to the extent that it is addressed at all—no small qualification in itself—the question of the ontic status of such ordinary substances remains a matter of significant contention.

Being phenomenally demarcated, discrete, and countable, the *modus essendi* of individual bodies is readily represented, visualized, or imagined—hence also, maybe, readily conceived. But the *modus essendi* of oil or air or water is not so readily visualized or imagined, and maybe, therefore, not so readily conceived.[9] While bodies have a limited built-in stability and settled form, the diverse varieties of stuff appear both

[8] It goes without saying that there is no uncontentious interpretation of the system of Aristotle's *Metaphysics*; yet Aristotle certainly appears to endorse a view akin to that of Munitz et al., maintaining that, in so far as the contents of the spatio-temporal framework are concerned, it is precisely material bodies, and centrally substances, that form the ontologically basic, independent realm of being. At the same time, it is evident that Aristotle takes some notion of stuff or matter very seriously, in so far as individual material substances are themselves conceived (as he himself puts it) as 'composites' of matter along with form. The supposed fundamentality of the category of individual substances *vis-à-vis* matter might then be thought to result from the fact that, while in Aristotle's view the stuff or matter of the world, as such or in itself, is unindividuated or 'formless', it cannot exist apart from concrete individuals whose matter it must be. Bronze always, and of some sort of necessity, comes 'in the form of' statues, spheres, and discrete bits and pieces. Stuff or matter cannot be independent; the world of stuff or matter cannot but be a world of things or substances composed of matter—a world in which matter as such or in itself is hence a kind of abstraction. Perhaps then there is here a logico-metaphysical thesis to the effect that the *categories* (or concepts) of 'body' and 'matter' are distinct, alongside a metaphysical thesis concerning the ontological independence, primacy, or fundamentality of material bodies exclusively.

[9] The noted naturalist and mathematical ecologist E. C. Pielou writes: 'As liquid water changes to vapor, it becomes invisible. Although mist and the visible steam issuing from the spout of a kettle are often spoken of as "vapor", this is a misnomer. True water vapor is an invisible gas . . . Water as a vapor can only be sensed by feel—and only vaguely at that—as a moistness, dampness or mugginess in the air' (E. C. Pielou, *Fresh Water*. Chicago: University of Chicago Press, 1998).

intellectually and practically more challenging to handle; they can be messy and elusive, particularly in a granular or fluid/gaseous state.[10] Within the confines of the human sphere, we may resort to 'control-devices' such as packaging, containers, dams, and booms, but there is a certain inexorable tendency towards disorder—leaks occur, bottles break, dams burst, bags develop holes; the contained substances are readily susceptible to being spilled, scattered, spread about, or otherwise dispersed.[11] It is no doubt human to prefer order, structure, and predictability over disorder, chaos, and uncertainty; but metaphysical questions regarding the constitution of reality crucially presuppose (awareness of) some difference between order that is introduced by us, and order that is independent of our presence or activities. And when it comes to theorizing *stuff*, we are very prone to make our footprints into aspects of the independently real.

3

To further concentrate ideas, I want to juxtapose two pairs of remarks. One, a relatively abstract logico-semantic pair, is taken from philosophers; the other, more concrete, is from the writings of ecologists. Thus, on the one hand, Quine:

[10] They are sometimes dramatically depicted in works of art—for instance in the chaotic swirling air and fire and water scenes of J. W. Turner, the impressionism of Monet, and the music of Debussy. Debussy writes that, because he loves music, he tries 'to free it from barren traditions that stifle it'. Music, he continues, 'is a free art gushing forth, an open air art boundless as the elements, the wind, the sky, the sea . . . Music is the expression of the movement of the waters, the play of curves described by the changing breezes . . .' (quoted on the CD of Debussy's *Preludes*, bk 2, as performed by Gordon Fergus-Thompson). Debussy's beautiful remark highlights phenomenological analogies between music and the elements. Like music itself, the stuffs of his musical impressionism—mist, water, cloud, and fog—are in a free, diffuse, unbounded fluid motion. Nietzsche, known for his contrast of what he calls the 'Apollonian' and 'Dionysian' attitudes, famously speaks of the world as 'a monster of energy . . . a play of forces and waves of forces, at the same time one and many, increasing here and at the same time decreasing there; a sea of forces flowing and rushing together, eternally changing, eternally flooding back . . . with an ebb and a flood of its forms' (F. Nietzsche, *The Will to Power*, trans. W. Kaufmann and R. Hollingdale. New York: Vintage Books, 1968, bk 4, 1067).

[11] By the same token, it should be said that *things*—'in the plural'—can be disorderly, and are more easily manipulated and controlled when collectively confined to enclosed spaces. The comparison is theoretically significant and re-emerges especially at sect. 1.4.

We persist in breaking reality down somehow into a multiplicity of identifiable and discriminable objects, to be referred to by singular and general terms.[12]

Likewise, at a kindred level of generality, Russell:

When I say that my logic is atomistic, I mean that I share the common-sense belief that there are many separate things.[13]

And here—assuming the comprehensiveness of his 'atomistic logic'—Russell presumably intends to suggest that he shares (what he takes to be) the common-sense belief that there are *only* 'many separate things'.[14] On the other hand, the ecologist Rachel Carson writes:

Seldom if ever does Nature operate in closed and separate compartments, and she has not done so in distributing the earth's water supply. Rain, falling on the land, settles down through pores and cracks in soil and rock, penetrating deeper and deeper until it reaches a zone where all the pores of rock are filled with water, a dark, subsurface sea, rising under the hills, sinking beneath valleys. This groundwater is always on the move, sometimes at a pace so slow that it travels no more than 50 feet a year, sometimes rapidly, by comparison, so that it moves nearly a tenth of a mile in a day. It travels by unseen waterways, until here and there it comes to the surface as a spring, or perhaps is tapped to feed a well. But mostly it contributes to streams and so to rivers. Except for what enters streams

[12] 'Speaking of Objects', p. 1. It is, he appears to suggest, the *plain folk* 'we' who thus persist in 'breaking reality down somehow'—and not just those, like Quine himself, whose aim is to reflect upon and represent semantically our talk or thought. The suggestion that it is somehow we who are thus responsible does not comport well with the oddly popular realist view that the existence of discrete snowflakes, planets, organisms, and the like is not typically a result of human (cognitive or non-cognitive) activity.

[13] 'The Philosophy of Logical Atomism', in *Logic and Knowledge*, ed. R. C. Marsh (London: Allen & Unwin, 1956), 178. To explicate the force of his remark, Russell here continues: 'I do not regard the apparent multiplicity of the world as consisting merely in . . . unreal divisions of a single indivisible Reality'. As F. J. Pelletier succinctly notes, 'Many writers have taken the position that our conceptual scheme presupposes an ontology of things, and therefore that sortal terms set the paradigm for predication.' (For Pelletier, as for most others, sortal terms are understood to be a subset of count nouns.) ('Mass Terms, Count Terms and Sortal Terms', in F. J. Pelletier, (ed.), *Mass Terms: Some Philosophical Problems*. Dordrecht: Reidel, 1979, vi). Surprisingly, this remains the (one and only) collection of essays on 'the problem of mass nouns'. Similarly, Jose Benardete contrasts the outlook of 'the early pre-Socratics', and in particular what he calls their 'mass-noun ontologies'—their preoccupation with the ancient elements of earth, air, fire, and water—with the outlook of the 'count noun ontologists who came to dominate the field forever after' (*Metaphysics: The Logical Approach*. New York: Oxford University Press, 1989, 36–7). For further examples of discrete object-oriented outlooks, see my 'Theories of Matter' in the Pelletier volume, especially sect. 1, 'The Ontology of Objects', and sect. 3, 'The Meaning of the Doctrine'.

[14] Roughly, the point is one that for Russell concerns the constituents of facts, and does not, I take it, concern 'the facts' themselves.

directly as rain or surface runoff, all the running water of the earth's surface was at one time groundwater. And so, in a very real and frightening sense, pollution of the groundwater is pollution of water everywhere.[15]

Again, and also speaking of water, the naturalist and mathematical ecologist E. C. Pielou writes that it

flows through the ground beneath our feet, floats as vapor in the air above, and collects in lakes, rivers, and streams everywhere. It is always in motion, forever cycling, from the earth's surface into the air and back again. Wherever it flows, it shapes the land; it carves canyons in the rock and dissolves caverns deep underground; it permeates wetlands; it caps the mountain peaks with snow; and eventually it finds its way to the sea. Fresh water is an active force of nature; ever present, always at work. . . . Fresh water as nature made it is all around us, in rivers, lakes and wetlands, some of them still pristine; as hidden groundwater that bubbles to the surface in springs; as invisible water vapor in the air becoming apparent when it forms clouds; as rain, snow and ice.[16]

Their different levels of generality notwithstanding, these two pairs of remarks, it seems to me, are intuitively in tension—the contrast between the concept of an homogeneous substance, or what Michael Hallett calls an 'undifferentiated material', air or gold or water, and the idea of a range of 'identifiable and discriminable objects', tables, trees, or planets, is both undeniable and striking.[17] To gesture at the character of this tension in traditional metaphysical terms, the remarks might perhaps be described as relating to one another as the discrete relates to the continuous, the bounded to the boundless, or even, indeed, as solid Democritean atoms relate to fluid Thalesian stuff.[18] Furthermore, while the continuous might in some sense be analysed in terms of the

[15] *Silent Spring* (Cambridge, Mass.: Houghton Mifflin, 1962). Jonathan Porritt writes, in a promotional brochure published by the Folio Society: 'Before *Silent Spring* the world was largely silent on the assault on Nature that was already under way by 1962. Most people were ignorant of what was happening. Some saw it as an acceptable price to be paid for material progress. A few cried plaintively in the wilderness. Rachel Carson changed all that. She took the battle to the big farmers, the chemical companies and the corrupted politicians, stripped bare their arrogance and the inadequacies of their science, and spoke with a measured lyricism of the intricate, fragile interdependence of humankind and the natural world. If anyone did, Rachel Carson sowed the seeds (both philosophical and tactical) of the modern environmental movement, and inspired a generation of academics and activities to carry on her work in defence of the Earth.'

[16] Pielou, *Fresh Water*, dust jacket and p. x.

[17] M. Hallett, 'Continuous/Discrete', *A Companion to Metaphysics*, ed. J. Kim and E. Sosa (Oxford: Blackwell, 1995), 97–9.

[18] Somewhat more precisely, the relationship could be said to be that of the essentially discrete to the not essentially discrete, or of the essentially bounded to the not essentially bounded.

discrete—the 'reduction' of a geometrical line, for instance, to a set of real points, or for that matter the theorization of a postulated fundamental stuff in atomistic terms—not only are the two sorts of concepts prima facie utterly distinct, but they seem clearly to be opposed.

To approach this opposition more concretely, it is enough to broach the question of where, in Carson's or Pielou's discourses on water, Quine's 'identifiable and discriminable objects', or Russell's atomistic 'many separate things', actually make their appearance. It is noteworthy that in the ecologists' remarks the use of anything akin to genuinely referential expressions is displaced by discourse that seems somehow less determinate in form, and often has a markedly generic flavour.[19] In this regard, their focus differs from that of characteristic philosophical approaches. Examination of the semantics of words for stuff tends to focus upon modes of talk, particularly the use of referential expressions and definite descriptions, which reflect an obvious phenomenal discreteness—'the water in this glass', 'the gold of which his ring is made', and so forth. Evidently, the phenomenal discreteness that is reflected in the use of such descriptions is a *contingent* fact of sorts, a function of distinct containers or of constituted objects; it is entirely adventitious from the standpoint of the stuff in such containers or such constituted objects. Nevertheless, the fact is that an holistic ecological perspective such as that exemplified above would not normally be thought to constitute a serious problem for the formal Quinean/Russellian conception of discrete object-centred thought. Indeed, it would typically be thought entirely irrelevant to it; and my purpose in this work is to explore some of the elements which underlie this kind of formal view.[20]

[19] Pielou writes in concrete detail concerning the various states and conditions of water, sometimes from the standpoint of the field naturalist; more suggestive—and perhaps representative—uses of definite descriptions are available in her work. She writes, for instance, that '[to] judge whether flowing water is safe to wade, multiply its depth in meters by the speed of flow in meters per second . . . then avoid wading without a life jacket if the result is greater than one. Since you cannot foretell the depth of the water ahead of you, apply the test repeatedly as you wade . . . ' (*Fresh Water*, 88). Since the phrase 'the water ahead of you' applies to flowing water, this use of a definite description, however exactly it is to be understood, is very different from that of, say, 'the bridge ahead of you'; for, *pace* Heraclitus, even while denoting continuously, it does not denote the same water from one moment to the next.

[20] At the same time, it must be acknowledged that this approach is not quite canonical. Thus, Quine himself, perhaps following the earlier example of Strawson, has described his so-called mass terms as 'pre-individuative', and subsequently as terms that (unlike 'apple' and 'rabbit') do not 'divide their reference'. Quine's views on this matter are deeply problematic; but his work can be thought of as being fundamentally an attempt to account for the intuition that stuff like water, although *scattered*, is not *divided*

4

Now the issues I have thus far touched upon have every semblance of being ontological or metaphysical; and there is indeed a certain sense in which this really is the case. However, appearances notwithstanding, the underlying nature of these issues (or at any rate, the nature of the underlying issues) is in no way metaphysical, but is purely semantical; and the way the issues have been here presented is at least potentially misleading. I have adopted such a superficially metaphysical strategy, simply because it represents a central aspect of what is in effect the 'standard' route into this set of issues. But the fact is that these issues themselves will not be adequately understood, let alone resolved, unless and until the metaphysical aspect which they have here assumed is set aside. This guiding thought is one which is developed incrementally throughout the work; my intent is to begin, albeit critically, from within the confines of the more common metaphysical perspective.

To begin to make these initial comments more appropriately concrete and precise, we shall need before all else to explicate a contrast between words for identifiable and discriminable objects, trees, and tables and the like—and words for such materials as gold and water. Now linguists often distinguish *count* and *non-count* nouns (*count* + and *count* − nouns; CNs and NCNs, for short); and the contrast between 'gold' and 'water' on the one hand and 'tree' and 'table' on the other is certainly a contrast of NCNs and CNs. However the CN/NCN contrast itself is one of two much broader, heterogeneous groups, each of which, it goes without saying, includes both concrete and non-concrete nouns; this contrast extends far beyond the one that is here at issue.[21] CNs evidently

into discrete individual objects, whereas an individuative type or kind, e.g. humankind, might be whimsically or metaphorically described as being both scattered and *also* divided into a multiplicity of distinct individuals. Happily, as I have noted, Quine describes his account as an artifice (99), involving what he characterizes in a discreet footnote as 'the reduction of universals to particulars' (98, fn. 3); and such an artifice it surely is. The issue is pursued in a brief appendix, 'Substances and physical objects: Quine's labyrinth' (Appendix II).

[21] It may turn out that narrowing the focus of enquiry in certain ways—much as the authors I have cited do—will be helpful to the progress of enquiry at a later stage; but the significance of any such narrowing will be clear only within the context of an initially more comprehensive distinction. To begin with a focus of the narrower sort is to risk decentring, or even losing sight of, what is, so I believe, the theoretically fundamental issue. I comment further on this point at sect. 1.3.

include such terms as 'hill', 'house', 'word', 'number', 'atom', 'planet', 'attribute', and 'cat', while NCNs, by contrast, include such terms as 'wine', 'wool', 'tension', 'furniture', 'xenon', 'leisure', 'refinement', 'beer', 'food', and 'good'.[22] With CNs we may ask, almost truistically, 'How many…?' whereas with NCNs, whether abstract or concrete, we may only ask 'How much…?'.[23] In the nature of the case, CNs alone accept numerical adjectives ('one', 'two', etc.) along with the quantifiers 'every', 'each', 'a number of', 'few', and 'many' ('so few', 'too few', 'so many', 'too many').[24] NCNs by contrast characteristically accept either 'a

[22] I use 'good' here in the sense in which we say 'It will not do you any good'; 'It will do me some/no/a lot of good', etc.

[23] 'Almost truistically', since the criteria for identifying CNs, and for distinguishing between CNs and NCNs, are not entirely clear. And in particular, there is a diverse assortment of syntactically plural nouns, including e.g. 'ashes', 'clouds', and 'groceries', which do not (always or ever) come with determinate criteria for counting that of which they are true. Natural language—perhaps reflecting reality in this regard—can be a pretty messy business. And while my focus here is upon concrete nouns, and while the appellation 'mass noun' is typically applied to concrete nouns exclusively, abstract CNs and NCNs are commonplace (among the former group, such terms as 'word', 'number', 'attribute', and 'vice'; among the latter, such terms as 'tension', 'leisure', 'refinement', and 'pleasure'). Here I focus upon concrete nouns, or uses or occurrences of nouns, in part to mark a contrast with those contexts in which nouns are used generically, or as so-called 'abstract' nouns. For the fact is that the very words we class as NCNs in such contexts may themselves be used for counting—for counting kinds or types—and phrases like 'a wine', 'one wine', and 'several wines' are perfectly in order. And it seems appropriate to speak of uses or occurrences of nouns, in part because on one view of word individuation, some words are used concretely both as NCNs and as CNs. Not only do we have 'less beer', 'less cheese', and so forth, we also have the non-generic 'fewer beers' and 'fewer cheeses'. There are numerous expressions which, like 'cheese' and 'hair', can figure as both CNs and NCNs; and Quine points out that 'apple' has a non-count use. (But, whereas nothing need be done to hairs to justify the application of the non-count 'hair' to them, that of which 'apple' as an NCN is true is the result of doing certain things to apples such as chopping or pulping them).

[24] To echo and expand on the previous note, these remarks are hardly sufficient to precisely demarcate the categories; the categories themselves are far from being neat and tidy. For one thing, it is plainly not the case that all CNs take 'one'. There are various kinds of irregular nouns—plural invariable nouns, among others; nouns such as 'riches', 'goods', 'baked goods', 'goods and chattels', 'hops', 'groceries', 'wares', 'housewares', 'clothes', 'cattle', 'droppings', and so on—which have no singular, hence do not fit the paradigm. Indeed, though these particular nouns all have a syntactically plural form, it is not even clear that they are all semantically CNs. Somewhat arbitrarily, perhaps—the issue is both theoretical and insufficiently explored—I shall take it to be necessary and sufficient for a noun to be classed as semantically count that it allows talk of *few*, *some*, and *many* items of the type, even if the assignment of specific numerical adjectives, e.g. 'seven clothes', is not standard English. By the same token, if a term 'P' is to be counted as semantically plural, then, whatever its syntactic stripe, it seems to be essential that such forms of words as 'one of the P' and 'each of the P' should make sense; and this is evidently not the case with bona fide NCNs. (Again, where 'one of the P' makes sense, there must also be at least the possibility of some singular CN 'S' such that 'one of the P'

degree of' or 'an amount of', as well as 'much' and 'little' ('so much', 'too much', 'so little', 'too little').[25] The distinction, though hardly simple, is both exhaustive and entirely natural, and precisely how it is to be understood is, it seems to me, a matter of some considerable interest.

Nevertheless, given an interest specifically in the metaphysical contrast of discrete bodies and undifferentiated materials, and in this sense in a correlated contrast between 'words for things' and 'words for stuff ', it is clear these two pairs of contrasts, and that of CNs and NCNs, do not coincide. Among other things, the latter contrast includes non-concrete nouns; and among the concrete nouns there is a substantial group which, though semantically non-count, are ontologically or metaphysically terms denoting discrete, concrete *things*. This group includes, for instance, 'furniture', 'cutlery', 'traffic', 'machinery', and 'footwear'; and since too much furniture might simply be too many chairs, the contrast with CNs is rather obviously non-metaphysical. To make an existential assertion to the effect that there is furniture (cutlery, traffic) in a certain place is to say no more than that there are pieces of furniture (items of cutlery, moving vehicles of one sort or another) in that place. Consequently, and especially in philosophical writings, it is not unusual to employ a linguistic dichotomy which is conceived as reflecting the purely metaphysical contrast; and it is in this way that the dichotomy of count nouns and *mass nouns* (MNs) is commonly although not universally introduced and understood.

counts also as 'one S'. This does not, naturally, preclude the typographical identity of 'P' and 'S'.) On this view of the matter, 'riches', for example, would probably not be classed as a CN. Furthermore, the boundaries between CNs and NCNs are far from clear. For example, the contrast between 'ash' and 'ashes', in the sense of what, for instance, burning wood results in, looks as if it is that between an NCN and a plural invariable CN. But do we or can we speak of few or many ashes? And finally, some nouns that seem to be semantically non-count can take syntactically plural forms: 'snows', 'sands', 'waters', 'molasses', and the like. It may of course turn out that intuition of what is semantically a bona fide plural fails us at the borders, and that for the purposes of a neatly regimented theoretical account, some such condition as the one I have suggested may have to be simply stipulated as criterial.

[25] This feature of the entire class of NCNs extends beyond the class of concrete NCNs, but it none the less remains of fundamental interest when we focus only upon NCNs that are concrete. Work is evidently called for on distinguishing bona fide abstract nouns (which correspond to concrete adjectives) from the generic uses of what are otherwise concrete nouns. The contrast is that of 'humility', as in Quine's 'Humility is a virtue', and 'water', as in 'Water is a liquid'. As against Putnam *et al*., it is my working hypothesis that generic ('abstract') uses of nouns in general, and of NCNs in particular, are best approached by way of their concrete or specific cognates, and not, Platonistically, vice versa.

Among philosophers, the appellation 'mass noun' tends to be reserved for the metaphysically distinctive subset of NCNs.[26]

Perhaps the first author to use an expression of the 'mass noun' genre is Otto Jespersen, who speaks of *mass words*, contrasting these with what he calls 'countables' or *thing words*. Jespersen writes:

> There are a great many words which do not call up the idea of some definite thing with a certain shape or precise limits. I call these 'mass-words'; they may be either material, in which case they denote some substance in itself independent of form, such as . . . water, butter, gas, air, etc., or else immaterial, such as . . . success, tact, commonsense, and . . . satisfaction, admiration, refinement, from verbs . . .[27]

Subsequent writers typically differ from Jespersen in treating the domain of 'mass words' as one of concrete nouns exclusively; but in so far as these latter nouns are concerned, Jespersen's approach would seem to represent a certain norm: with Jespersen, it would appear, a certain die was cast. In particular, whereas 'water', 'butter', and 'air' may be said to 'denote a substance in itself independent of form', 'furniture', 'cutlery', and the like may not; and, for essentially this reason, the appellation *mass noun* is not uncommonly witheld from them. Peter Hacker, for example, classifies such words as *pseudo-mass*, remarking that they are not what he calls 'stuff nouns', since they do not represent an ontic category distinct from 'things', and are conceptually derivative from what he calls 'antecedently given' CNs, such thing-words as 'knife', 'slipper', 'table', and the like.[28] But in any case, given that 'words for substances independent of form' do not 'call up the idea of some definite thing with a certain shape or precise limits', the question then arises, of what idea, precisely, they do 'call up'.

[26] With Vere Chappell and Peter Hacker, among others, the contrast of MNs and CNs is explicitly and directly correlated with an ontic contrast between *stuff* and *things*. See Chappell's 'Stuff and Things', *Proceedings of the Aristotelian Society* 71 (1971), 61–76; and also Hacker's 'Substance: The Constitution of Reality', in P. French, T. Uehling, and H. Wettstein (eds.), *Midwest Studies in Philosophy* 4 (Mineapolis: University of Minnesota Press, 1979), 239–61. The fact remains however that, although the concrete CN/MN contrast is not usually taken to be exhaustive, there are no generally agreed upon criteria for the relationship or difference between this and the concrete CN/NCN contrast.

[27] Otto Jespersen, 'Mass-Words', *The Philosophy of Grammar* (London: Allen & Unwin, 1924), 198–201.

[28] Hacker avers, of his class of so-called stuff nouns, that such nouns 'designate stuff, not things, or properties of things' ('Substance: The Constitution of Reality', 247).

CNs, so it is commonly supposed, are quite well understood; but NCNs are another matter altogether. These nouns just do not figure in our logico-semantic canon; they typically receive no significant examination—perhaps not even a single mention—in standard logic texts. What Donald Davidson has called 'the problem of mass nouns'—which would for him, presumably, include the problem of the logical form of non-count sentences, and so perhaps of their ontological significance—remains in my view unresolved.[29] Now this putative linkage between questions of ontology and representations of logical form is vividly expressed in a remark of Quine's: 'The quest of a simplest, clearest overall pattern of canonical notation', he declares, 'is not to be distinguished from a quest of ultimate categories, a limning of the most general traits of reality.'[30] And here I attempt to elucidate a certain sense in which an account of the distinctive semantics of NCNs is a crucial precondition of explicating the logico-semantic structure of the concept of stuff or matter, and thereby also of explicating the *modus essendi* of matter, the modality in which the concept is realized or made manifest.

In this respect, my strategy diverges markedly from that of certain views that have been influential in the recent past: I have in mind a loosely constituted group of views which construe talk of stuff in terms of talk of things, or which in effect simply assimilate, in one way or another, the semantics of NCNs to that of CNs. While the so-called 'mass nouns' are widely perceived to resist assimilation into Quine's basic 'canonical notation', the first-order calculus of predicates, one chief response to this is to contrive some strategy whereby, ironically, resistance can be somehow overcome. Quine's theory itself, considered briefly here in an appendix, is an example of just this sort of view. And, in a remark that is entirely representative of this general tendency, another author writes that his analysis 'will consist in showing how to translate sentences containing mass nouns into a "logically perspicuous notation" . . . our background "logically perspicuous notation" simply is the first-order predicate calculus . . . the task is to paraphrase mass nouns in terms of names and count nouns'.[31]

[29] D. Davidson, 'Truth and Meaning', *Synthese* 17 (1967), 304–23, p.103, fn. 9.

[30] W. V. Quine, *Word and Object* (Cambridge, Mass.: MIT Press, 1960), 161.

[31] T. Parsons, 'An Analysis of Mass Terms and Amount Terms', in Pelletier, *Mass Terms: Some Philosophical Problems*, 138. Surprisingly, this remains the (one and only) collection of essays on 'the problem of mass nouns'. Some central features of the leading treatments of such nouns are nicely illustrated in an essay by a perceptive (and indeed

But there is, it seems to me, a major problem with approaches of this sort; indeed there is a threat of paradox. While the study of generality is typically pursued within the formal framework of one or another variant of the predicate calculus, the issue of the formal scope and limits of this calculus itself is not so commonly addressed. Yet the fact is that our canonical notation, with its standard apparatus of singular terms, individual constants, and variables, is contrived precisely for the representation of CNs, and a restricted group of them at that. It is hardly surprising that Quine speaks of his so-called 'mass terms' as being 'archaic', 'protean', 'ill fitting', and 'indecisive' in relation to his so-called 'adult' dichotomy of 'singular and general terms', and proposes a theory described as an 'artifice' involving the 'reduction of universals to particulars'. In fact, he strongly suggests that there can be no objectively correct account of these nouns within 'our adult scheme' of the world, but only ones that inevitably, somehow, misrepresent the phenomena they aim at understanding: he notes, on the one hand, that his mass terms are 'ill-fitting' our adult scheme, but on the other hand insists that they can be made to fit.

NCNs, as I will urge, are semantically non-singular—a concept that also comprehends the category of the plural; and, while plural nouns seem rather less intractable than NCNs, the plain fact is that neither of these categories can be said to be well understood. Semantically, the categories have much in common—a fact which, in one form or another, is now increasingly recognized—and they are distinguished from singular nouns, in the everyday, syntactico-semantic sense of 'singular', in roughly parallel ways. Examination of their mutual interplay, so I believe, throws light on both; and among other things, a commonplace 'ontologized' conception of plurality is thereby called in question. Plurality, so it is here maintained, is a semantical but not also an ontological construction. In consequence, the semantic scope of the enquiry is a good deal more wide-ranging than its metaphysical concerns.

sceptical) sponsor of one such approach, in which the writings of a fair selection of other sponsors are cited and discussed. See D. W. Zimmerman, 'Theories of Masses and Problems of Constitution', *Philosophical Review*, 104 (1995), 53–110.