Truth-Makers

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When I speak of a fact . . . I mean the kind of thing that makes a proposition true or false. (Russell, 1972, p. 36.)

§ 1. Making True

During the realist revival in the early years of this century, philosophers of various persuasions were concerned to investigate the ontology of truth. That is, whether or not they viewed truth as a correspondence, they were interested in the extent to which one needed to assume the existence of entities serving some role in accounting for the truth of sentences. Certain of these entities, such as the *Sätze an sich* of Bolzano, the *Gedanken* of Frege, or the propositions of Russell and Moore, were conceived as the *bearers* of the properties of truth and falsehood. Some thinkers however, such as Russell, Wittgenstein in the *Tractatus,* and Husserl in the *Logische Untersuchungen,* argued that instead of, or in addition to, truth-bearers, one must assume the existence of certain entities *in virtue of which* sentences and/or propositions are true. Various names were used for these entities, notably 'fact', '*Sachverhalt*', and 'state of affairs'.[1] In order not to prejudge the suitability of these words we shall initially employ a more neutral terminology, calling any entities which are candidates for this role *truth-makers*.[2]

The fall from favour of logical realism brought with it a corresponding decline of interest in the ontology of truth. The notions of correspondence and indeed of truth itself first of all came to appear obscure and 'metaphysical'. Then Tarski's work, while rehabilitating the idea of truth, seemed to embody a rejection of a full-blooded correspondence.[3] In the wake of Tarski, philosophers and logicians have largely turned their attentions away from the complex and bewildering difficulties of the relations between language and the real world, turning instead to the investigation of more tractable set-theoretic surrogates. Work along these lines has indeed expanded to the extent where it can deal

with a large variety of modal, temporal, counterfactual, intentional, deictic, and other sentence-types. However, while yielding certain insights into the structures of language, such semantic investigations avoid the problem of providing an elucidation of the basic truth-relation itself. In place of substantive accounts of this relation, as proffered by the *Tractatus* or by chapter II of *Principia Mathematica,*[4] we are left with such bloodless pseudo-elucidations as: a monadic predication '*Pa*' is true iff *a* is a member of the set which is the extension of '*P*'. Whatever their formal advantages, approaches of this kind do nothing to explain how sentences about the real world are made true or false. For the extension of '*P*' is simply the set of objects such that, if we replace '*x*' in '*Px*' by a name of the object in question, we get a true sentence. Set-theoretic elucidations of the basic truth-relation can, it would seem, bring us no further forward.

Putnam (pp. 25 ff.) has argued that Tarski's theory of truth, through its very innocuousness, its eschewal of 'undesirable' notions, fails to determine the concept it was intended to capture, since the formal characterisation still fits if we re-interpret 'true' to mean, for example, 'warrantedly assertable' and adjust our interpretation of the logical constants accordingly. Putnam's conclusion (p. 4) is that if we want to account for *truth*, Tarski's work needs supplementing with a philosophically non-neutral correspondence theory. This paper is about such a theory. If we are right that the Tarskian account neglects precisely the atomic sentences, then its indeterminacy is not surprising.[5] If, as we suggest, the nature of truth is underdetermined by theories like that of Tarski, then an adequate account of truth must include considerations which are other than purely semantic in the normally accepted sense. Our suggestion here -- a suggestion which is formulated in a realist spirit -- is that the way to such a theory lies through direct examination of the link between truth-bearers, the material of logic, and truth-makers, that in the world in virtue of which sentences or propositions are true.

The glory of logical atomism was that it showed that not every kind of sentence needs its own characteristic kind of truth-maker. Provided we can account for the truth and falsehood of atomic sentences, we can dispense with special truth-makers for, e.g., negative, conjunctive, disjunctive, and identity sentences. As Wittgenstein pregnantly put it:

> My fundamental idea is that the 'logical constants' do not represent; that the *logic* of facts does not allow of representation. *(Tractatus,* 4.0312)

This insight is an indispensable prerequisite for modern recursive accounts of truth. It adds further weight to the idea that our attentions should be focused on atomic sentences. We shall in fact concentrate on those which predicate something of one or more spatio-temporal objects. Whether this is a serious limitation is not something that we need here decide, for sentences of this kind must at all events be handled by a realist theory.

The neutral term 'truth-maker' enables us to separate the general question of the need for truth-makers from the more particular question as to what sort -- or sorts -- of entities truth-makers are. In the main part of the paper we shall consider the claims of one class of entity, which we call *moments,* to fill this role. Since moments, once common in philosophical ontologies, have been relatively neglected in modern times, we shall both explain in some detail what they are, and suggest arguments for their existence independent of their possible role as truth-makers. We shall then consider the light that is thrown by this discussion of moments on better-known theories of truth-makers -- and particularly upon the theory of the *Tractatus.*

§ 2. Moments

A moment is an existentially dependent or non-self-sufficient object, that is, an object which is of such a nature that it cannot exist alone, but requires the existence of some other object outside itself. This characterisation needs sharpening, but it will be useful to provide some preliminary examples of types of moments, and some indications of the honourable pedigree of the concept in the philosophical tradition.

Consider, first of all, that sequence of objects described at the beginning of Robert Musil's novel *The Man without Qualities:*

A depression over the Atlantic

an area of high pressure over Russia,

patches of pedestrian bustle,

the pace of Vienna,

a skidding,

an abrupt braking,

a traffic accident,

the carelessness of a pedestrian,

the gesticulations of the lorry driver,

the greyness of his face,

the prompt arrival of the ambulance,

its shrill whistle,

the cleanliness of its interior,

the lifting of the accident victim into the ambulance.

It might at first seem strange to admit expressions like '*a*'s carelessness' or '*b*'s cleanliness' as referring expressions at all. There is an ingrained tendency amongst contemporary philosophers to regard such formations as mere *façons de parler,* properly to be eliminated from any language suitable for the purposes of philosophical analysis in favour of more robust talk involving reference only to, for example, material things. Here, however, we wish to revert to an older tradition which can readily accommodate expressions of the type illustrated as designating spatio-temporal objects, albeit objects which exhibit the peculiarity that they depend for their existence upon other objects.[(6)]

A skidding, for example, cannot exist unless there is something that skids and a surface over which it skids. A smiling mouth smiles only in a human face.

The concept of moment makes its first appearance in the philosophical literature in the *Categories* of Aristotle, chapter 2. Here Aristotle introduces a fourfold distinction among objects according as they are or are not said of a subject and according as they are or are not in a subject:[7]

	Not in a Subject *[Substantial]*	In a Subject *[Accidental]*
Said of a Subject *[Universal, General]*	*[Second Substances]* man	*[Non-substantial Universals]* whiteness, knowledge
Not said of a Subject *[Particular, Individual]*	*[First Substances]* this individual man, horse, mind, body	*[Individual Accidents]* this individual whiteness, knowledge of grammar

An individual accident is, in our terms, one special kind of moment, being such that, to use Aristotle's words, 'it cannot exist separately from what it is in' (*Cat*., 1ᵃ20). This 'being in' is not the ordinary part-whole relation; for the parts of a substance are themselves substances (*Met.*, 1028ᵇ9-10), where the entities 'in' a substance are its individual accidents. If we are prepared to follow Aristotle and many Scholastics in accepting that there are particulars standing to many non-substantial predicates as individual substances stand to substantial predicates, then we tap a rich source of moments. The particular individual redness of, say, a glass cube, which is numerically distinct from the individual redness even of a qualitatively exactly similar cube, is a moment, as is the snubbedness of Socrates' nose, and the particular individual knowledge of Greek grammar possessed by Aristotle at some given time.

Whilst accidents or particularised qualities are the kinds of moments most commonly found in the tradition, it must be pointed out that many other objects meet our definition. One group of examples not foreign to Aristotle are boundaries (the surface of Miss Anscombe's wedding ring, the edge of a piece of paper, the Winter Solstice). And further examples are provided by all kinds of configurations and disturbances which require a medium, such as a smile on Mary's face, a knot in a piece of string, sound waves, cyclones, etc., and more generally all events, actions, processes, states, and conditions essentially involving material things: the collision of two billiard balls or Imperial State carriages, the thrusts and parries of dueling swordsmen, the explosion of a gas, the remaining glum of Mary's face, John's having malaria, two billiard balls' being at rest relative to each other, and countless more.

We make no attempt here to carry out the task of dividing all these examples into mutually exclusive and exhaustive categories. It is important for our purposes only to realise that moments may be parts of other moments, that moments, like substances, may be divided into simple and complex. This is most clearly shown for temporally extended moments. The first wrinkling of John's brow is a part of his frown, the first dull throbbing a part of his headache, the final C major chord a part of a performance of Beethoven's Fifth. More controversially, perhaps, we would regard certain kinds of spatially extended moments as parts of others, as the redness of one half of a glass cube is part of the redness of the whole cube.[8]

Although we have cast our net wide, we know a priori that not everything can be a moment: the world is not a moment, since if it were, it would require some thing outside itself in order to exist, in which case it would not be the world.[9]

Moments reappear in post-Scholastic philosophy as the modes of Descartes, Locke, and Hume. For Descartes, a mode is that which is not a substance, where

> By substance we can mean nothing other than a thing existing in such a manner that I has need of no other thing in order to exist. (Principia philosophiae, I, LI)

While transposed into the idiom of ideas, Locke's definition is in accord with that of Descartes:

> Modes I shall call complex Ideas, which however compounded, contain not in them the supposition of subsisting by themselves, but are considered as Dependencies on, or Affectations of Substances; such are the Ideas signified by the Words Triangle, Gratitude, Murther, etc. (Essay, Book II, chap. XII, § 4)

Hume, though he has less to say about modes than Locke, assumes that it is well-known what they are, and gives a dance and beauty as examples (Treaties, Book I, Part II, § VI).

It was, however, in the philosophy of the German-speaking world that the Aristotelian ontology, and particularly Aristotle's theory of substance and accident, was most systematically preserved.[10] Thus the doctrine of moments was fundamental to many students of Brentano, having ready application is psychology. Carl Stempf explicitly distinguished among the contents of mental acts between dependent ('partial') and independent contents (1873, p. 109), a distinction refined and generalised to all objects by his student Husserl.[11] In his early ontology Meinong took it for granted that properties and relations are particulars, not universals.[12]

In modern Anglo-|Saxon philosophy commitment to entities of this kind is rarer, a notable swimmer against the tide being Stout, with his 'characters'. Support for the notion has been otherwise sporadic, and never enthusiastic, often coming, again, from philosophers acquainted with the Scholastic notion of accident.[13]

We have taken the term 'moment' from Husserl's masterful and painstaking study of the notions of ontological dependence and independence and of associated problems in the theory of part and whole.[14] A moment is an object whose existence is dependent upon that of another object. This dependence is itself no contingent feature of the moment, but something essential to it. An adequate theory of moments must therefore involve appeal to the notion of de re or ontological necessity,[15] in

contrast to both de dicto (logical) necessity and causal necessity. The objects on which a moment depends may be called its fundaments. Now an object one of whose parts is essential to it (as, say, his brain is essential to a man) is in one sense dependent on that part, dependent as a matter of necessity. Here, however, the whole contains the part it needs. Thus it is already, in relation to that part, self-sufficient, by contrast with other parts -- organs other than the brain, for example -- which can exist together in a whole of this kind only in so far as they are bound up with (are moments of) the brain. So we specify that the fundaments of a moment cannot be wholly contained within it as its proper or improper parts. This also excludes the undesirable consequence of having everything figure as its own fundament, and hence, trivially, as a moment o f itself. Moments may accordingly be defined as follows: a is a moment iff a exists and a is de re necessarily such that either it does not exist or there exists at least one object b, which is de re possibly such that it does not exist and which is not a proper or improper part of a. In such a case, b is a fundament of a, and we say also that b founds a or a is founded on be. If c is any object containing a fundament of a as proper or improper part, but not containing a as proper or improper part, we say, following Husserl, that a is dependent on c. Moments are thus by definition dependent on their fundaments. Objects which are not moments we call independent objects or substances. There is nothing in this account which precludes fundamenta from themselves being moments, nor the mutual foundation of two or more moments on each other.[16]

Clearly moments, like substances, come in kinds, including natural kinds.[17] And just as commitment to individual substances or things entails neither the acceptance nor the rejection of an ontology of universals or species which these exemplify, so we can distinguish a realist and a nominalist option with regard to kinds of moments. A strong realism, as in Aquinas and perhaps Aristotle, sees both substances and moments as exemplifying universals. On the other hand, a thoroughgoing nominalism, which is only one step -- but it is an important step -- removed from reism, accepts only particular substances and moments, conceiving the existence of our talk about moment-kinds as having its basis simply in relations of natural resemblance among examples of moments given in experience.

Further details about the kinds of moments and substances may be spared here. Suffice it to note that all the intuitive examples offered above clearly fit our specification, since in each case there exist objects, not part of those in question, whose existence is a prerequisite for that of the respective moments. In most of the examples it is clear that the moments are not of the right category to be even possible parts of their fundaments, which reinforces Aristotle's remark that accidents are in their substances but not as parts. At the same time his 'in' is frequently inappropriate; for instance a duel is 'in' neither of the duelers, not is it 'in' the dueling pair or the aggregate of duelers.[18]

§ 3. Moments as Truth-Makers

The idea that what we call moments could serve as truth-makers is perhaps unusual, but it is not without precedent. If we return to Russell, we find that amongst the examples of facts he gives is the death of Socrates, "a certain physiological occurrence which happened in Athens long ago" (loc. Cit.). From this we infer that, for Russell, at least some states and events are truth-makers. This indicates that he is not conforming to the ordinary usage of 'fact', since what is normally said to be a fact is not the death of Socrates but that Socrates died.[19] Socrates' death took place in Athens, and was caused by his drinking hemlock. We do not however say that Socrates' death is true, but that he died had no cause and did not take place anywhere, at any time. This discrepancy was pointed out by Ramsey, who drew the conclusion that facts are not to be distinguished from true propositions.[20]

Here then, we shall distance ourselves from Russell's usage, but not from his theory.

Support for Ramsey's distinction and, surprisingly, for a view of some moments as truth-makers comes from other quarters. Davidson, not known as a friend of facts, says of a sentence like 'Amundsen flew to the North Pole in 1926' that "if [it] is true, then there is an event that makes it true" (1980), p. 117) and holds that "the same event may make 'Jones apologized' and 'Jones said "I apologize"' true" (op. cit., p. 170).

The clue that moments may serve as truth-makers comes initially from linguistic considerations. Most terms which describe moments, or under which moments fall, are in fact nouns formed by nominalisation of verbs and verb-phrases. These are morphologically varied: some have separate but related forms ('birth', 'flight', 'death'), some are simply gerunds ('overturning', 'shooting'), some are homeomorphic with the corresponding verb ('hit', 'kiss', 'smile', 'jump', 'pull'), and some are formed using particular morphemes for the purpose ('generosity', 'redness', 'pregnancy', 'childhood', etc.). Of these the most neutral and universally applicable is the gerundial form '----ing', which, when applied not to a verb but to a noun or adjective complement, attaches to the copula to give phrases of the form 'being (a) ----'. Gerundial phrases are often equivalent to other morphological forms: there is no difference in our view (or Aristotle's) between a cube's being white and its whiteness, nor is there a difference between the collision of two objects and their colliding. All of these forms are, however, radically distinct from nominalisations constructed by means of the conjunction 'that', a fact not always appreciated in the analytic literature on propositions, states of affairs, facts, etc.

Thus, following Russell's suggestion, we shall here consider the theory obtained from the view that what makes it true that Socrates died is Socrates' death, what makes it true that Amundsen flew to the pole is his flight, what makes it true that Mary is smiling is her (present) smile, and so on. Or, in other words, that for many simple sentences about spatio-temporal objects the truth-makers for these sentences are the moments picked out by gerundials and other nominalised expressions closely related to the main verbs of the sentences in question. In place of Tarski-biconditionals of the form:

> 'This cube is white' is true iff this cube is white,

we thereby obtain -- at least in simple cases -- sentences of the form:

> If 'This cube is white' is true, then it is true in virtue of the being white (the whiteness) of this cube, and if no such whiteness exists, then 'This cube is white' is false.

Because the whiteness in question here is a particular dependent on the cube, and not a universal whiteness shared by all white things, its existence does nothing to make sentences about other things being white either true or false.

If all atomic sentences contain a main verb, and all nominalisations denote moments, then it would follow, in fact, that all truth-makers are moments, that what makes it true that a is F is a's being F, what makes it true that a R's b is a's R-ing b, and so on. This simplest possible version of the theory is inadequate as it stands, however. Not only because, as we shall see, there are certain types of not obviously non-atomic sentences, for example existence and identity sentences, recalcitrant to the analysis, but also, and more importantly, because the theory which claims that by nominalising a sentence we have thereby designated the relevant truth-maker can hardly count as a substantial elucidation of making true. It seems -- like Tarski's theory -- to turn on a linguistic trick.

In fact the device of nominalisation gives us only the kernel of a theory. That this kernel requires considerable expansion may be gathered from certain intuitive considerations relating to the status of moments as entities in the world existing independently of our sentence-using acts. For we want to say, surely, that if a moment a makes the sentence p true, and b is any moment containing a as part, then b makes p true as well. That John's head ached between 1 p.m. and 1:10 p.m. is made true not just by that ten-minute segment of his headache, but by any part of it containing this segment. So p may have a minimal truth-maker without having a unique one.[21] Further, a sentence may be made true by no single truth-maker but only by several jointly, or again only by several separately. Thus we know that viral hepatitis comes in two sorts: acute infectious or A-hepatitis, and homologous serum or B-hepatitis. If the hapless Cyril has both A- and B-hepatitis simultaneously, then that he has viral hepatitis is made true both by the moment or moments which make it true that he has A-hepatitis, and by the moment or moments making it true that he has B-hepatitis, though either would have sufficed alone. So the sentence 'Cyril has viral hepatitis' has in such circumstances at least two truth-makers. In general there is no guarantee that the logical simplicity of a sentence guarantees the uniqueness or the ontological simplicity (atomicity) of its actual or possible truth-maker(s).

There is, of course, a temptation to argue that 'Cyril has viral hepatitis' is not logically simple but implicitly disjunctive, its logical form being not adequately mirrored in its grammatical form, which is that of a logically simple sentence. But we believe that the given sentence is indeed logically simple: it contains no logical constants and no expression, 'viral hepatitis' included, which is introduced into the language by definition as equivalent to an expression containing a logical constant.

In taking this view we are consciously departing from a dogma that has characterised mush of analytic philosophy since its inception: the dogma of logical form. This has many manifestations. One version appears in The Principles of Mathematics where Russell, whilst on the one hand regarding all complexity as mind independent, nevertheless holds that this same complexity is capable of logical analysis (1903, p. 466). This idea of a perfect parallelism of logical and ontological complexity is the misery of logical atomism, leading Russell to a metaphysics of sense-data and Wittgenstein to supraexperiential simples.[22] Here, in contrast, we uphold the independence of ontological from logical complexity: ontologically complex objects (those having proper parts) are not for that reason also in some way logically complex, any more than there is reason to suppose that to every logically complex (true) sentence there corresponds an ontologically complex entity which makes it true.

A second and more elusive version of the dogma enjoys wider support. It includes the Russell-Wittgenstein position as a special case, but is not confined to logical atomists. Roughly speaking, it says that if a sentence has or could have more than one truth-maker, then it is logically complex. If the sentence appears nevertheless to be simple in form, this complexity is hidden and is to be uncovered by a process of analysis.

One possible argument for this view may be put in terms of truth-makers thus: since disjunctive and existential sentences may have more than one truth-maker, and conjunctive and universal sentences must, except in degenerate cases, have more than one, sentences which may or must have more than one truth-maker are implicitly disjunctive or existential, or conjunctive or universal. As it stands this argument is palpably invalid, being of the form 'All A are B, therefore all B are A'; but there are other reasons why the position has been found attractive.[23] Here, however, we shall confine ourselves to registering our dissent from the view. Although 'Cyril has viral hepatitis' may be logically equivalent to (i.e., have the same truth-conditions as) 'Cyril has A-hepatitis or Cyril has B-hepatitis', this is not

something that can be established by any lexical, grammatical, or logical analysis of the meaning of the sentence, but at most by empirical research. This research does not uncover a hidden ambiguity in the term 'hepatitis'; we simply discover that the term is determinable.

Since we are realists in respect to moments, and regard their investigation as a substantial, often as an empirical matter, we hold it to be perfectly normal for us to know that a sentence is true, and yet not know completely what makes it true. Thus the characterisation of that theory whereby the meaning of a sentence is given by its truth-conditions as 'realist' (Dummett, chap. 13) is for us ironical. A knowledge of truth-conditions takes us at most one step towards reality: one can, surely, envisage understanding a sentence (knowing its meaning), whilst at the same time having only partial knowledge of the nature of its possible truth-makers. Those who used the term 'hepatitis' before the discovery of its varieties did not fail to understand the term; they were simply (partly) ignorant about hepatitis. That the investigation of what makes a particular sentence true is thus fundamentally an empirical, not a philosophical one, is not belied by the fact that for many sentences we can pick out the relevant truth-makers by nominalisation. There is, in the general case, no cheap and easy way to determine the truth-makers even of simple descriptive sentences via linguistic transformations.

Are all truth-makers moments? For three kinds of sentences this may be questioned. The first are predications which are, as Aristotle would say, in the category of substance: predications like 'John is a man', 'Tibbles is a cat', and so on, telling us what a thing is. Since these are true atomic sentences, but logically contingent, we should expect them to have truth-makers. In virtue of the special status of such sentences, might it not be the things themselves, John and Tibbles, which play the role of making true, or are there certain moments of John and Tibbles which are essential to them as men or cats which serve to make the given sentences true? One reason for thinking the latter is that, if John makes the sentence 'John is a man' true, then he also makes 'John is an animal' true, which means that these two sentences, having the same truth-maker, have the same truth-conditions, and are logically equivalent. Only if logical equivalence and synonymy are the same, however, is this objection really telling. We conceive it as in principle possible that one and the same truth-maker may make true sentences with different meanings: this happens anyway if we take non-atomic sentences into account, and no arguments occur to us which suggest that this cannot happen for atomic sentences as well. A more important point is that if John makes it true both that John is a man and that John is an animal, and Tibbles likewise makes it true both that Tibbles is a cat and that Tibbles is an animal, then there is no non-circular way of accounting via truth-makers for the fact that both are animals but that one is a man and the other a cat. Such an account could be provided if there are moments characteristic of humanity and of felinity which are both characteristic of animality.

A second group of problem sentences are singular existentials such as 'John exists'. These are certainly logically contingent, and perhaps atomic, and so they ought intuitively to have truth-makers, but then the question arises what these are. We baulk, for reasons familiar from the tradition, at providing John with a special moment of existence. The resort to the sentence 'a.a=John', widely held to be equivalent to 'John' exists, is no step forward, since we are left with the question what, if anything, makes the sentence 'John = John' true, and such sentences belong to our third problem group. A natural way out is, again, to elect John himself truth-maker of the given sentence, which would once more lead us to a view according to which at least some truth-makers are not moments. Indeed, a reist who recognised the need for truth-makers would have no option but that of taking things to do the job in every case. One the other hand, someone who has committed to moments would in any event have the problem of providing an account of sentences expressing their existence, and again the relevant moment itself would seem to be the most obvious candidate truth-maker.[24]

The third kind of problem sentences are identities. One possible line is that these too are made true by the objects in question, for instance that 'Hesperus = Phosphorous' is made true by Venus. This has the consequence that the identity is equivalent to 'Venus exists' as this sentence has been conceived above. A different solution is required for the view of those logicians and metaphysicians who think that an identity of the form 'a = a' may be true even though there exists no object designated by the term 'a'. One alternative here is to embrace commitment to non-existent objects which may be taken as truth-makers for the given sentences even in those circumstances where 'a exists' is false. Proponents of such a view will need to embrace a new entity, such as a moment of existence, as truth-maker for true sentences of the form 'a exists'.[25] The view is, we believe, worth pursuing, though we do not follow it up here. But there is another view which holds that in some cases 'a' may not designate, yet 'a = a' be true. Here we cannot imagine what might serve as truth-maker. An indeed this suggests the most plausible solution: there is none. The grounds for believing that 'a = a' be true. Here we cannot imagine what might serve as truth-maker. And indeed this suggests the most plausible solution: there is none. The grounds for believing that 'a = a' is true even when 'a' is empty are that the sentence is a logical truth, i.e., that identity is a logical constant. This account is therefore in harmony with the logical atomist principle that no special objects correspond tot he logical constants. As in the case of singular existentials, the special status of identity sentences is reflected in their special position in regard to truthmakers.[26]

Whether or not it is correct that thins as well as moments can be truthmakers, the possibility emphasises one merit of the present theory over rival correspondence theories of truth which invoke a special category of non-objectual entity--facts, states of affairs, or whatever--simply to serve as truth-makers. For if we are convinced for other reasons that things and moments exist, and if--as we shall argue below--we can be said unproblematically to be acquainted with them, for example perceptually, then the resultant theory of truth-makers is both more economical and stronger than rival theories whose truth-makers are less firmly tied into our ontology and epistemology.

The relation of making true is to be distinguished both from that of designation and from that between an object and a predicate or concept under which the object falls. Truth-makers cannot, on our theory, be the designata of the sentences they make true, even if we confine ourselves to atomic sentences. This is, of course, no news to those who believe (as we do) that sentences do not designate at all. But for those who incline to the contrary it only needs pointing out that sentence with more than one truth-maker would on their account have to be treated either as ambiguous or as multiply-designating. Both alternatives are implausible. We argued against the first above. As to the second, we are not against plural or multiple designation as such--quite the contrary[27]--but there is no distinction amongst multiple designating or plural terms which corresponds to that between several objects' jointly (i.e., conjunctively) making a sentence true, and their severally (i.e., disjunctively) making a sentence true.

A further difficulty faced by any view to the effect that (true) atomic sentences designate their truth-makers is that, if we are right about singular existential sentences being made true by their subjects, then both 'a and 'a exists' have the same designatum, so one has the problem of explaining their syntactic and semantic diversity. Since the nominalisations considered above can appear as rightfully in designating phrases as any other common nouns, truth-makers can be designated. But this is not to say that they are designated by the sentences they make true. It is still more obvious that truth-makers do not fall under sentences as objects fall under predicates. The semantic relations of designating, falling under and making true are all distinct. What makes 'John's headaches true--a

moment of John--is something that falls under the predicate 'is a headache' and is designated by 'John's (present) headache'. But from the fact that sentences, terms, and predicates have different syntactic and semantic roles, it does not follow that there are three kinds of entity standing over against them. Nor however does the fact that truth-makers are designated by terms and fall under predicates imply that any of these syntactic and semantic roles collapse into one another.

Since truth-makers can be designated, they can be quantified over. From 'John's singing exists',[28] we can infer 'a.a is a singing and John does a' or, more idiomatically, 'John is singing', and conversely. That many normal sentences about events are equivalent to existential sentences was asserted already by Ramsey (1978, p. 43), and the same view has also been taken by Davidson (1980, p. 118). It is certainly true that 'Amundsen flew to the North Pole' does not, where 'Amundsen's flight to the North Pole' does not, where 'Amundsen's flight to the North Pole took place' does, imply that only one flight took place. Both Ramsey and Davidson conclude from this that sentences like the former are existential sentences in which events are quantified over. But this is an instance of the dogma of logical form at work. The sentence is undoubtedly logically equivalent to such an existential generalisation, but that tells us only that they have the same truth-conditions. Despite this, and despite their having the same event as truth-maker, the two are of quite different form. The Ramsey-Davidson view may spring in part from an echo of the false view that truth-makers are designated by their sentences. Realising that uniqueness is not guaranteed, they move from designation to the next best thing, quantification. No doubt events make quantificational sentences true, but they make other, non-quantificational sentences true as well, including sentences equivalent to the quantificational ones.[29]

§ 4. Moments as Objects of Perception

Most philosophers will acknowledge the credentials of at least some of the objects we have called moments. However, many of the sentences of the types we have considered require, on our theory, truth-makers whose existence is controversial, such as particularised qualities. So if moments are to play the role we suggest, it is incumbent on us to give a general defence of their existence, controversial cases included, which is as far as possible independent of their putative status as truth-makers. This is the more important since we have dissociated ourselves from the Ramsey-Davidson argument via logical form, which is treated by many as a principal reason for believing in events and their ilk.

A number of arguments can be offered by friends of moments against the sceptic.[30] We shall concentrate here on just one such, which turns on the fact that moments, like things, may be the objects of mental acts, in particular of acts of perception. If it is conceded that there are episodic mental acts such as seeings, hearings or smellings which have as their objects such things as Mary or a table, then, the argument goes, acts of similar kinds must be recognised which take as their objects such moments as the roughness of the table, Mary's smile, John's gait or Rupert's howling[31] The philosopher staring hard at a picture of two swordsmen en face may be tempted to think that only independent objects are depicted--the two swordsmen, their swords. But whoever observes swordsmen in the real world sees not only them and their swords but also their particular lunges, parries and much else. These are also depicted in fencing manuals, and it is perception of them, not simply of the swordsmen, which forms the basis for our judgments of a swordsman's competence. Similarly what his mother hears is Rupert's howling, and it is this, or perhaps a particular pitch this howling suddenly takes on, which causes her to get up to feed him. This last point makes clear that,

counting events as moments, we accept that moments can stand in causal relations to one another. Rupert's howling causes Susan's hearing him howl, and this (given the prevalent neural conditions underlying maternal concern) causes her to get up. The episodic perceivings are themselves moments standing in causal relations to other events.

This argument has the advantage that it can claim to be neutral with respect to particular theories of perception. The proponent of moments claims merely that whatever connection a theory of perception makes between perceptions and their objects, this connection holds whether the object is a think or a moment or a combination of the two. This includes theories which award a central role to a causal connection between object and perceptual act. Thus any account of the role of sensations in perceiving things will, we claim, h ave a parallel in the perception of moments. Profile and perspective problems will present themselves in precisely the same way for perceivings of things and moments. (Do I see the swordsman or just the profile presented to me? Do I see his easy parry or only the phase not obscured by his interposed shoulder?) Further, the problems posed by the interplay between cognition or background knowledge and perception, and by the intentionality (opacity) of perception are--quite reasonably--assumed to arise for both things and moments. Thus the proponent of moments as the sorts of moments they are, only that what we perceive in such cases are moments. Someone seeing a flash of lightning sees a moment: a discharge dependent on the charged air and water-molecules in which it takes place. But he may well not know that it is such a discharge, and there is, surely, a sense in which he does not see its fundaments.[(32)](#)

Many philosophers are prepared to accept truth-bearers as abstract entities, and would argue that this obviates the need for truth-makers, since predications about truth-makers can, they contend, be traded in for predications about truth-bearers, with little or no trouble. It is a distinguishing feature of the perceivability-argument for moments that it thwarts a move of this kind. For the moments we have given as examples can, but their associated abstract truth-bearers cannot, be objects of perceptual acts.[(33)](#)

The main objection to moments has always been that any job they do can be done by independent objects, together with (on a weak option) the senses of predicate expressions and the relation of falling under, or (on a strong option) universals and the relation of exemplifying. But whoever wishes to reject moments must of course give an account of those cases where we seem to see and hear them, cases we report using definite descriptions such as 'the smile that just appeared on Rupert's face'. This means that he must claim that in such circumstances we see not just independent things per se, but also things as falling under certain concepts or as exemplifying certain universals. On some accounts (Bergmann, Grossman) it is even claimed that we see the universal in the thing. But the friend of moments finds this counterintuitive. When we see Rupert's smile, we see something just as spatio-temporal as Rupert himself, and not something as absurd as a spatio-temporal entity that somehow contains a concept or a universal. The friend of moments may simply take the everyday descriptions at face value, which means that his account has a head-start in terms of naturalness.

Confronted with prima facie examples of perceivings of moments, such as John's hearing the angry edge to Mary's voice, or Tom's seeing the kick that Dick gives Harry, or Susan's seeing Rupert's smile, the opponent of moments may react in a number of different ways. One ploy is to claim that the noun-phrases apparently designating moments may be replaced salva veritate by expressions designating only independent things; 'Susan sees Rupert's smile' by 'Susan sees the smiling Rupert', for example. For moments of moments, as in our first example, or relational moments, as in our second, the replacements will have to be more complicated. 'John hears Mary's angrily edged voice'

will not do, as a voice is itself a moment, so it must be something like 'John hears the angrily-speaking Mary', or, mor implausibly still, 'John hears the with-an-angrily-edged-voice-speaking Mary', the hyphenated phrase being treated as an unanalysed predicate. For the relational example we need two perceptual acts: 'Tom sees the kicking Dick and the kicked Harry', or, since we have ostensibly only one act here: 'Tom sees the two-person complex consisting of the kicking Dick and the kicked Harry'.

Leaving aside all worries as to the precise nature of the relation between Rupert himself and the smiling Ruper,[34] and questions as to whether there are such things a person-complexes, such attempts are thwarted by opacity problems. For Susan can of course see the smiling Rupert without seeing his smile, John can hear Mary, and, we should add, her angry voice, while missing its angry edge, and Tom can see the two men and miss the kick. In saying this we are deliberately using the perceptual verb 'see' transparently. It might be thought that a way round the recognition of a separate category of moments would be to distinguish between this transparent sens, and an opaque or phenomenological sense, e.g., by subscripting the vert with 't' and 'p' respectively. But however we try to capture 'Susan sees Rupert's smile', e.g., with 'Susan sees$_p$ the smiling Rupert', or 'Susan sees$_t$ the smiling Rupert and sees$_p$ someone smiling', we always miss the mark. For instance, Susan may see$_p$ the smiling Rupert when in fact he is frowning--she mistakes his expression--or she may see$_t$ someone who is smiling, and mistake him for Rupert.

Similar problems beset attempts to use paraphrases involving propositional complements: 'Susan sees that Rupert is smiling' (she may see the smile, but fail to recognise its bearer), or complements using 'as': 'Susan sees Rupert as smiling' (so she might, but he may be frowning).

To rescue his position, the opponent of moments may resort to a series of de re perceptual predicates, 'sees-to-be-smiling', 'hears-to-be-angrily-speaking', etc., which allow that, e.g., Susan may see-to-be-smiling (Rupert), without recognising that it is he, i.e., by taking the terms for the fundaments outside the scope of the intentional verb and putting them in extensional positions.[35] But this ploy cannot cope with situations like the following. Tom wrongly thinks that Dick's kicking of harry constitutes an attack on him, where it is in fact simply their somewhat unusual way of greeting each other. The moment theorist can accept that Tom sees$_t$ Dick's kick, and since this is his greeting, Tom seest Dick's greeting of Harry. But the opponent cannot capture this true material equivalence since he has the true 'Tom sees-to-kick (Dick, Harry)', where all the argument places are extensional, but his 'Tom sees-to-greet (Dick, Harry)' is false, since Tom does not recognise the kick for the greeting it is. There is no way for the opponent to cope with this, short of creating a new extensional position for a term designating something (i.e., some moment) which is both a kick and a greeting, and this is to concede defeat.[36]

It may be that reserves of ingenuity may turn up new ploys to keep moments at bay, but we dare to predict that they will be no more successful than these. Alternative attempts to cope with the cases we have mentioned in ways that do not involve commitment to moments will, we suggest, either fall short of adequacy or be ontologically and epistmologically more complex and more implausible.[37]

§ 5. Truth-Making and the *Tractatus*

We have argued that it is possible to establish a cast for the existence of moments, and for the role of

moments as truth-makers, at least for certain large and important classes of sentences. In the present section we wish to supplement these arguments with a brief discussion of what is still almost certainly the most sophisticated account of truth-making to have appeared to date, the isomorphism theory of the *Tractatus*.

The structure of the objects which make a sentence true is not, we have argued, something that can be read off from the sentence itself by purely logical means. The determination of this structure may be at least as difficult and empirical a matter as the determination of the truth-value of the sentence in question. For Wittgenstein, by contrast, the determination of the structure of truth-makers is a task not of ontology and of the various material disciplines, but of logic, for which nothing is accidental. He could not, therefore, have included truth-makers among the objects found in everyday experience and treated of by the different sciences. He embraced instead a special category of non-objectual entities, which he called *Sachverhalte*, to do the job of making true. Yet there is much that we can learn from his theory of the *Sachverhalt*. We have indeed already taken to heart the doctrine which underlies this theory that it is a mistake to postulate special truth-makers corresponding to logically compound sentences. And we shall have occasion in § 6 below to reflect upon Wittgenstein's own ingenious development of this doctrine--in his theory of the *Tatsache*.

The theory of *Sachverhalte* may be summarised briefly as follows: the simple objects which, in Wittgenstein's eyes, make up the substance of the world, are configured together in various ways. An elementary sentence is true iff the simple objects designated by its constituent simple names are configured together in a *Sachverhalt* whose constituents correspond one-to-one with the constituents of the sentence, the configuration of the objects being mirrored in the structure of the sentence. Sentence and *Sachverhalt* are then said to have the same *logische (mathematische) Mannigfaltigkeit* (4.04).

Wittgenstein tells us little as to the nature of the objects which are configured together into *Sachverhalte*; but he does supply certain hints, as for example at 2.0131, where we are told that

> A speck in the visual field need not be red, but it must have some colour...A tone must have some pitch, the object of the sense of touch must have some hardness, etc.

Consider, then, a sentence like: 'This speck [here before me now] is red'. This sentence is made true, it would seem, by a *Sachverhalt* which is a combination of two objects, the speck itself and its colour. One interpretation of *Sachverhalte* sees them as involving both spatio-temporal particulars and universal properties and relations (colour, pitch, hardness, lies between, and the like).[38] Again, it is not clear how particulars and universals may both be constituents of a single entity. A more promising interpretation may be constructed on the basis of some of Wittgenstein's own remarks on the forms and natures of simple objects at the beginning of 2. It is, Wittgenstein tells us, not accidental to an object that it can occur in those *Sachverhalte* in which it does occur. Every one of its possibilities of occurrence in states of affairs must be part of the nature of the object itself, must be written into the object from the very start (2.012, 2.0121, 2.0123). Its possibility of occurring in states of affairs Wittgenstein calls the form of an object (2.0141). Distinct objects may exhibit distinct forms, may be located, so to speak, in distinct spaces of possible states of affair (2.013).[39] Som objects are such that, in virtue of their form, they call for others as a matter of necessity; a tone must have some pitch, objects of the sense of touch must have some degree of hardness, and so on. Some objects are, that is to say, founded on other objects in the sense of our discussion above.[40]

It is, we suggest, because analytic-philosophical interpreters of the *Tractatus* have standardly lacked a theory of lateral foundation relations, relations which may bind together *individual* objects, that they have been constrained to resort to views of the kind which see *Sachverhalte* as involving both individuals and universal properties. It is open to us here, however, to develop a view of *Sachverhalte* as involving individuals alone, linked together by relations of foundation. 'This speck is red' might be made true, on such a view, by a two-object *Sachverhalt* comprising the speck and an individual moment of redness linked by a relation of mutual foundation. A sentence like 'Atom *a* strikes [at some given instant of time] atom *b*' might be made true by a three-object *Sachverhalt* comprising *a, b,* and that event or individual moment *c* which is their momentary impact, linked by relations of one-sided foundation: between *c* and *a*, and between *c* and *b*. Here the impact moment is distinct in its ontological form from the independent objects with which it is configured, but it is no less particular than these objects.[41] A realist semantics of a non-trivial sort, to be established on the basis of an investigation of the range of possible forms and kinds of (dependent and independent) objects, seems therefore not, after all, to be so completely at variance with a semantics of the kind presented in the *Tractatus.* We are driven back to one important difference, that Wittgenstein believed that an adequate semantic theory must embrace commitment to *absolutely* simple objects, where we are willing to content ourselves with the question of *relative* simplicity, for example of the simplicity that is determined by the elementary sentences of the various material sciences.[42] An investigation of the natures of dependent and independent objects treated of by these sciences then reveals itself as an investigation of objects in the light of their possible configurations into *Sachverhalte,* and a taxonomy of objects in our sense is seen go give rise to an exactly corresponding taxonomy of different kinds of *Sachverhalt*--something like the zoology of facts mentioned by Russell in his lectures on logical atomism (1972, p. 72 f.).[43]

As an interpretation of the *Tractatus,* however, even of a *Tractatus* modified by the admission of the possibility of our grasping the natures of (relatively) simple objects and of (relatively) simple object-configurations, an account of this kind is still so far inadequate. For it has not been made clear what these simplest kinds of object-configurations *are,* merely that, in order to exist at all, they must involve objects which manifest a distinction in form something like the distinction defended above between moments and independent objects. Wittgenstein himself, as already noted, was ever keen to emphasise that *Sachverhalte* are entities of a peculiar kind, entirely distinct from object. And this view has acquired the status of orthodoxy amongst contemporary philosophers, despite the fact that Wittgenstein himself offered no more than loose, metaphorical indications of the difference in question. But how *is a Sachverhalt* such as, for example, that which involves the three objects *a, b,* and *r,* to be distinguished from the corresponding complex object (*a*'s-standing-in-the-relation-*r*-to-*b*)? Wittgenstein seems to have been content to regard this distinction as not further explicable, embracing mysticism of a kind which may have done much harm to the enterprise of a correspondence theory of truth. Can we do better? One course would be to develop a view of *Sachverhalte* as being distinguished from the corresponding complexes in involving, or in being in some send dependent upon, the sentences or sentence-using acts through which they are disclosed: for example, and most naively, by treating *Sachverhalte* as ordered pairs consisting of the relevant complex object and some appropriate sentence. Such a move is however tantamount to sacrificing the conception of *Sachverhalte* as entities in the world existing independently of mind and language. To treat *Sachverhalte* in this way, or a logical fictions of any kind, is to abandon the project of a realist semantics.

Here we wish to leave open the question whether a more acceptable account of the distinction between *Sachverhalt* and complex could be developed.[44] It is one implication of our arguments above that some, at least, of the considerations which have been held to motivate the distinction are

lacking in force. But are there other reasons why the logical difference between name and (elementary) sentence should be held to be reflected in a corresponding ontological difference between objects and somehow non-objectual and intrinsically unnameable *Sachverhalte*? Or is the assumption of special categories of entities to do the job of making true one more reflection of the running together of logic and ontology so characteristic of analytic philosophy?

§ 6. Some Principles of Truth-Making

We shall sketch one possible beginning of a formal theory of the relation of making true. Such a theory is, we shall assume, constrained by the requirements we have placed on a realist semantics, and by the principle of the heterogeneity of logic and ontology that forestalls any too ready imputation of logical structure to the objects--both dependent and independent--of the material world.[45] Thus we assume that the (ontological) relations holding among truth-makers--most importantly the relations of part and whole--are distinct from the logical relations holding among propositions or sentences. The fragments outlined here are otherwise intended to be consistent not only with the views outlined above, but also with a range of possible variants.

For the relation of truth-making we use the sign '$\models$', which can be read 'makes true that'. Individual truth-makers--whether moments, things, or other, more complex entities--we shall represent by letters *a, b, c;* sentences (or any other candidate bearers of truth) by letters *p, q, r.* '$\rightarrow$' in all that follows will signify a connective at least as strong as the entailment of Anderson and Belnap.

The first principle of truth-making must be that what is *made* true *is* true, i.e.

(1) $a \models p. \, p.$

But is the converse of (I) also valid; i.e., is it true that

(2) $p \rightarrow \exists a.a \models p?$

We have argued that (2) can be affirmed even of simple descriptive sentences only in certain circumstances. A simple sentence like 'Cyril has hepatitis' may be true although there is no single object that makes it true: from the point of view of its truth-makers the sentence may behave as a non-degenerate conjunction. Similarly in regard to, say, 'Jack likes Jill and Jill likes Joe' or 'There have been forty U.S. Presidents to 1981' it is surely counterintuitive to assume that there are any single composite objects making these sentences true, a *Jack's liking Jill* and a *Jill's liking Joe* mereologically fused together, or a mereological fusion of all and only U.S. Presidents from Washington to Reagan (in which Grover Cleveland somehow gets counted twice). Rather we should accept that the given sentences are made true by not one but several truth-makers jointly or, as we like to put it, by a manifold or plurality of truth-makers. Such a manifold is not a new, conjunctive object such as a set. There are no conjunctive objects, any more than there are disjunctive, negative,

or implicative objects. A manifold is nothing other than the objects it comprehends (and thus a manifold comprehending a single object is simply that object itself).

This suggests a means of dealing formally with conjunctive sentences and related forms by introducing terms for manifolds corresponding in natural languages to singular and plural definite referring expressions like 'Jack and Jill', 'the men in this room', 'Jason and the Argonauts', and so on. Here $\mathbf{G}$, $\mathbf{D}$, etc., will be used to stand in for non-empty lists of such expressions. '$a \,\varepsilon\, \mathbf{G}$' will signify that the individual a is one of $\mathbf{G}$, that some term designating a occurs on the list $\mathbf{G}$.[(46)]

We can not generalise (1) to the following axiom:

$$(3)\ \mathbf{G} \models p. \rightarrow p.$$

 And its converse

$$(4)\ p \rightarrow \exists \mathbf{G}.\mathbf{G} \models p$$

is seen to be acceptable for all simple descriptive sentences and for their conjunctive compounds.

Disjunctive sentences raise no special problems for the theory, since a disjunctive sentence is true only to the extent that one or other of its disjuncts is true--which implies that even a disjunctive sentence like 'This rabbit is male or this rabbit is female', which exhausts the usual possibilities, is made true not by nothing at all, but by whatever is the relevant actually existing condition of the rabbit. Difficult problems are however posed by compound sentences involving negation. Can it be said that all negative sentences about spatio-temporal objects are, like positive sentences, made true by some relevant object or manifold of objects, i.e., that

$$(5)\ \neg p \rightarrow \exists \mathbf{G}.\mathbf{G} \models \neg p?$$

A duality of this kind can be maintained, it would seem, only for certain kinds of sentences.[(47)] 'This snow is not warm', for example, may reasonably be conceived as being made true by the individual moment of coldness actually inhering in the snow; 'This salt is not sweet' by the individual moment of taste inhering in the salt: the respective moments of the coldness and taste are such that they *exclude* those moments whose existence is denied in the given sentences. What, however, of a sentence like 'This liquid is odorless'? Here there need be nothing in the liquid which excludes its being odorous: it may simply *lack* any odor.

We may be tempted in regard to this and similar examples to appeal to things themselves, rather than to moments in the things, as that which does the job of making true (to say that the liquid itself makes it true that it is not odorous); but even such a move will be inadequate to deal with other classes of negative sentences like 'Ba'al does not exist'. Here there is quite literally no thing which can do the job of making true, and whilst some might be tempted to appeal to the world as a whole to do this job, it seems more adequate to regard sentences of the given kind as true not in virtue of any truth-maker of their own, but simply in virtue of the fact that the corresponding positive sentences have no truth-maker.

The otherwise attractive principle

(6) $p \leftrightarrow \exists \mathbf{G}.\mathbf{G} \models p$

must therefore be rejected in its full generality. Manageable principles having nice truth-functional properties can however be defended if we restrict our attention to those propositions satisfying (6). The stronger principle (2) picks out the propositions in this class which are atomic, but only in the sense that they can be made true by some one individual: it does not even come near to delineating the class of logically atomic propositions, since there are logically compound sentences satisfying (2), and logically atomic sentences for which (2) is false.

Clearly any whole containing a truth-maker of some proposition p which is atomic in the sense of (2) itself makes p true, i.e.,

(7) $\forall b: a \models p \wedge a \leq b. \rightarrow b \models p,$

where '$\leq$' signifies the relation of proper or improper part to whole.[48] The principle embodied in (7) may be extended to positive propositions in general by defining a relation of mereological containment between manifolds. Intuitively we wish '$\subseteq$' to express the proposition that the matter of is contained in the matter of, such that if '$\mathbf{G}$' and '$\mathbf{D}$' are singleton-lists then '$\subseteq$' is just '$\leq$'. The definition

(8) $\mathbf{G} \subseteq \mathbf{D}: = \forall a \in \mathbf{G}. \exists b \in \mathbf{D}. a \leq b$

will not serve, since may carve up the matter of in such a way that there are individuals in which comprehend no single individuals in . On the other hand the definition

(9) $\mathbf{G} \subseteq \mathbf{D}: = \forall a \in \mathbf{G}. \forall c(c \leq a \rightarrow \exists b \in \mathbf{D}. \exists d. d \leq c \wedge d \leq b)$

appears acceptable.

We accordingly assert:

(10) $\mathbf{G} \models p. \rightarrow \forall \mathbf{D}.\mathbf{G} \subseteq \mathbf{D} \rightarrow \mathbf{D} \models p,$

which implies a principle of thinning:

(11) $\mathbf{G} \models p. \rightarrow \forall \mathbf{D}.\mathbf{G},\mathbf{D} \models p.$

Two further intuitive axioms are

(12) $\mathbf{G} \models p. \wedge \mathbf{D} \models q: \rightarrow \mathbf{G},\mathbf{D} \models p \wedge q$

(13) $\mathbf{G} \models p. \wedge p \rightarrow q: \rightarrow \exists \mathbf{D}.\mathbf{D} \subseteq \mathbf{G} \wedge \mathbf{D} \models q.$ [49]

And (10) and (13) in turn imply

(14) $\mathbf{G}{\models}p. \wedge p{\rightarrow}q{:}{\rightarrow}\mathbf{G}{\models}q$

whence, in particular,

(15) $\mathbf{G}{\models}p.{\rightarrow} \mathbf{G}{\models}p \vee q,$

so that

(16) $\mathbf{G}{\models}p.{\vee} \mathbf{G}{\models}q{:}{\rightarrow}\mathbf{G}{\models}p \vee q,$

the converse of which we affirm as an axiom:

(17) $\mathbf{G}{\models}p \vee q{:}{\rightarrow} \mathbf{G}{\models}p.{\vee} \mathbf{G}{\models}q,$

and by (14) and (12) we have also

(18) $\mathbf{G}{\models}p \wedge q{:}{\rightarrow} \mathbf{G}{\models}p. \wedge \mathbf{G}{\models}q.$

Quantified sentences may be managed in a similar way as follows:

(19) $\mathbf{G}{\models}\exists a.p{:}{\leftrightarrow} \exists a.\mathbf{G}{\models}p$

(20) $\mathbf{G}{\models}\forall a.p{:}\forall a.\mathbf{G}{\models}p,$

which brings us back once more, within the province of truth-functional logic, to the problem of dealing with compound sentences involving negation.

It was in the face of this problem that Wittgenstein developed his theory of *Tatsachen* (facts). Wittgenstein introduces the term 'fact' as meaning 'the existence and non-existence of states of affairs.' The existence of states of affairs he calls a positive fact, their non-existence a negative fact (2.06).[(50)] Intuitively the idea seems to be that we can produce a more adequate theory of truth-makers, a theory which can cope equally with all truth-functional compounds (including--though these were perhaps not uppermost in Wittgenstein's mind--the most intractable cases of sentences asserting or denying the existence of complexes), if truth-makers are conceived not, as in the simple *Sachverhalt*-theory, as configurations of objects, but rather as new entities, formed from *Sachverhalte* by application of special functors, *the existence of*...and *the non-existence of*..., in a way which allows the construction of compound facts whose structure would mirror exactly the structure of logically compound propositions.

We can produce a formal approximation to what Wittgenstein might have had in mind if we introduce variables '*s*', '*t*', '*u*' to stand in for names of actual and possible *Sachverhalte* (or of other candidate elementary truth-makers), writing

as an abbreviation for 'the existence of s' and
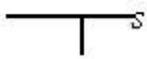
as an abbreviation of 'the non-existence of s'[(51)] To enable us to build up recursively a vocabulary of expressions capable of designating compound facts we shall introduce
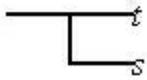
as an abbreviation for 'the exclusion of the non-existence of t by the existence of s'. If we now define **BF**, the manifold of basic candidate fact-expressions, consisting of all expressions of the forms

then the totality **F** of candidate fact-expressions may be defined as the closure of **BF** under successive applications of the functors
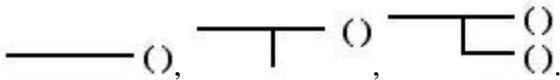
It is clear that both **F** and **BF** are in a certain sense too large: they contain expressions which do not designate facts (which do not designate anything at all). An expression 'A' in **BF** designates a fact iff

(i) for 'A' of the form '   ', s exists,

(ii) for 'A' of the form '   ', s does not exist (or, equivalently, 's' does not designate),

(iii) for 'A' of the form '   ', not both 's' and 't' designate facts.

An expression 'A' in **F** but not in **BF** designates a fact iff

(i) for 'A' of the form '   B   ', 'B' designates a fact,

(ii) for 'A' of the form 'B   B   ', 'B' does not designate a fact,

(iii) for 'A' of the form 'C   C B   ', not both 'B' designates a fact and 'C' does not designate a fact.

Thus 'A' designates a fact iff '   A   ' also designates a fact. (For '"   A   "

designates a fact', or equivalently, 'A is a fact', we may also write '⊢——A   '.)

There is clearly a certain tension between this ontology of positive and negative facts and the 'fundamental idea' of logical atomism expressed by Wittgenstein in the passage cited in § 1 above. Yet it would contradict Wittgenstein's pronouncements at 1 and 1.1 perhaps too charitably to dismiss his talk of facts, of 'the existence and none-existence of states of affairs', as a mere *façon de parler*. Not only Wittgenstein, but indeed almost all other philosophers who have investigated the relation of making true, have felt compelled in the fact of the problems raised by negative propositions to adopt an ontology of truth-makers as special, non-objectual entities having a complexity which is essentially logical. We remain convinced nevertheless that it is possible to develop a theory of the truth-relation which appeals only to objects firmly tied into our ordinary and scientific experience. For it is in such experience, and not in the abstract models of logical semantics, that there lie the origins of knowledge of truth and falsehood.[(52)]

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Endnotes

1. Ontologies of *Sachverhalte* were defended also by Reinach (in his 1911) and Ingarden (1964/65, chap. XI; cf. The discussion in Smith, 1978). Meinong preferred to use the term '*Objective*'.

2. Cf. Husserl, LU VI, § 39: "At each step ... one must distinguish the true-making state of affairs from the state of affairs constitutive of the self-evidence itself."

3. Aristotle's famous "To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, or of what is not that it is not, is true" (*Met.,* 1011^{b}32 ff.) is, as Tarski himself is anxious to claim (1944, p. 343), less than full-blooded correspondence theory, but Aristotle is elsewhere (op. Cit., 1027^{b}22, 1051^{b}32 ff.) prepared to speak of truth reflecting 'combinations' of subject and attribute in reality.

4. Cf. Also the opening sections of Weyl, 1918.

5. It parallels, perhaps, the indeterminacy of a theory of the natural numbers founded on the five Peano axioms. It is not only the natural numbers as we normally conceive them which provide a model for such a theory, but also, for example, the negative integers, the even numbers, the natural

numbers greater than a million, and many other progressions. Even if we add recursive axioms for addition and multiplication to eliminate the interpretations above, we cannot rule out non-standard models. We can narrow down to the natural numbers only if we take account of their application, outside the formal theory, in counting.

6. We use 'object' for all those entities which can be named, leaving open whether there are other, non-objectual entities, such as the *Sachverhalte* and *Tatsachen* of the early Wittgenstein.

7. On the provenance of such diagrams, cf. Angelelli, 1967, p. 12.

8. Cf. Husserl LU III, § 4; Smith and Mulligan, 1982a, § 3.

9. According to Spinoza (*Ethics,* Part I) this is the *only* non-moment and similar views can be found in Husserl. Campbell, 1976, p. 103, suggests that Spinoza's views may be upheld on the basis of modern physics. However, as Husserl indicates, there are various possible senses of 'dependent', which accordingly allow different notions of moment and substance to be defined (cf. Simons, 1982). Individual organisms, conceived by Aristotle as substances, are mere modes for Spinoza and mere aggregates for Leibniz; since all three, we may suppose, were operating with different notions of substance, these conceptions need not in fact be incompatible.

10. Cf. Smith and Mulligan, 1982, § § 1-3.

11. See the third Logical Investigation and also Husserl, 1894, which represents a hand-way stage between the early Brentanist theory and Husserl's fully developed formal ontology.

12. Findlay, 1963, pp. 129, 131; Grossmann, 1974, pp. 5, 100 f.

13. The following list is not complete, but it shows the tenacity of the idea, despite its lack of general acceptance.

> J. Cook Wilson, 1926, II, p. 713, P.F. Strawson, 1959, p. 168; 1974, p. 131 (particularised qualities);
>
> D.C. Williams, 1953, K. Campbell, 1976, chapter 14 (tropes);
>
> P.T. Geach, 1961, pp. 77-80 (individualised forms);
>
> G. Küng, 1967, pp. 166 ff. (concrete properties);
>
> D.C. Long, 1968 (quality-instances);
>
> N. Wolterstorff, 1970, pp. 130 ff. (cases or aspects);
>
> R. Grossman, 1974, pp. 5 ff. (instances);
>
> A. Kenny, 1980, p. 35 f. (accidents).

It is interesting that none of these thinkers has recognised the possibilities of ramification among moments; e.g., that there are moments of moments, moments of parts, parts of moments, etc. Cf. Husserl, LU III, § 18 ff., Smith and Mulligan 1983.

14. The interpretation and defense of Husserl's theory, the history of the concept since Brentano, and its applications in various disciplines, are all topics we have treated elsewhere: cf. The essays in Smith, ed., 1982.

15. *De re* necessity will be understood here as a matter of the necessary structure of objects and object-configurations, not, as in many contemporary writings on essentialism and related notions, as a matter of relations between objects and concepts, or between objects and descriptions under which they fall.

16. These issues are discussed in Smith and Mulligna, 1982, § 6, 1982a, and in Smith, 1981.

17. Husserl's characterisation of foundation and dependence in LU III makes indispensable use of kinds, which we have here tried to avoid: cf. Simons, 1982 and for an exposition more sympathetic to Husserl, Smith, 1981.

18. When Leibniz objects to relational accidents as accidents " in two subjects, with one leg in one, and the other in the other, which is contrary to the notion of accidents" (Alexander, ed., p. 71), he too is misled by the connotations of 'in', which applies at best to those non-relational accidents located within the space occupied by their fundaments. A better all-purpose preposition is the genitive 'of'.

19. See Vendler, 1967, chapter 5, "Facts and Events," who shows very clearly that: "If the correspondence theory requires a relation between empirical statements and observable entities in the world, then facts are not qualified for this latter role" (p. 145 f.). Vendler is one of the few philosophers to have seriously studied nominalisations. Another is Husserl (in the appendix on syntatic forms and stuffs to the *Formal and Transcendental Logic*). Cf. Also Strawson, 1974, especially pp. 130 ff.

20. Ramsey, 1978, p. 44. Cf. Prior, 1971, p. 5. Ramsey's arguments are anticipated by Reinach in his 1911: see especially § 8 f. of the translation.

21. We may call this minimal truth-maker *the* truth-maker for the sentence, thereby making a non-Russellian use of definite descriptions. Thus Sharvy, 1980, has shown how definite descriptions may pick out maxima rather than unique objects. 'The coffee in this room', for example, picks out the total quantity of coffee in the room. That descriptions may pick out also minima is shown not only by the example mooted in the text but also by, e.g., 'the place where the accident happened', which picks out the smallest spatial extent circumcluding the accident.

22. The difference between Russell and Wittgenstein consists principally in the fact that Wittgenstein has stronger criteria for simplicity and independence: cf. Simons, 1981.

23. One attraction, which dies hard, is that of exhibiting all the entailments of a sentence as resulting from the substitution of synonyms and from the application of the inference rules for the logical constants (i.e., of exhibiting all entailments as analytic in the Fregean sense). A sentence *p′ analyses p*, let us say, when *p′* arises from *p* in this manner. The two sentences are then logically equivalent,

and the purely logical consequences of p' (those obtained through the rules for logical constants alone) properly include those of p. So p has some consequences which cannot be derived from it by purely logical means, but can from p'. Since p' more closely resembles the desired ideal, it is common to conceive it as exhibiting a 'hidden' logical form of p. If the ideal is discredited however (cf. the attempt in Smith, 1981), then this conception too loses its attraction. The ideal amounts to the disputed claim, which we reject, that necessity is analytic.

24. To regard a as truth-maker for 'a exists' is of course to cut against the grain of the established Fregean view that all meaningful existential assertions are assertions about concepts (*Grundlagen, § 53*). At the same time however a reading of Kant in the light of our conception must cast doubt upon the common assumption that, with his doctrine that 'existence is not a predicate', he had merely anticipated Frege. If God's existence is rejected, Kant writes, "we reject *the thing itself* with all its predicates; and no question of contradiction can arise" (A595/B623, our italics).

   For Kant singular existence statements are meaningful (since synthetic), where Frege's official line (cf., e.g., his "Über den Begriff der Zahl. Auseinandersetzung mit Kerry") is that they are meaningless. Even where Frege bends over backwards to give them a meaning (in the "Dialog mit Punjer über Existenz") they come out either as necessarily true or a disguised metalinguistic statements.

25. Meinong significantly calls that which makes the difference between an object's existing and its not existing a 'modal moment' (cf. his 1915, pp. 266 ff.; Findlay, 1963, chap. 4). There are other such moments, among them one marking the factuality or subsistence (*Bestehen*) of an objective or state of affairs. The doctrine of modal moments was refined and considerably extended by Ingarden in his 1964/65, especially vol. I.

26. Not all the alternatives canvassed here are compatible with one another; the following is an inconsistent tetrad:

(1) '$a = a$' is true but has no truth-makers.

(2) If 'E!a' is true, then a makes it true.

(3) '$\exists x.\Phi x$' is made true by whatever makes any instance 'Φa' true.

(4) 'E!a' and '$\exists x. x = a$' are logically equivalent.

Various means of resolving this inconsistency suggest themselves. That closest to classical logic would reject (1) and make a the truth-maker for '$a = a$'; it must then regard '$a = a$' as meaningless or false if a does not exist. The solution closest to free logic is to reject 3 and replace it by:

(3*) '$\exists x.\Phi x$' is made true by whatever pairs a, b are such that a makes 'E!a' true and b makes 'Φa' true.

If we introduce a non-standard particular quantifies for which there holds the equivalent of (3) with 'Σ' replacing '$\exists$', then '$\exists x.\Phi x$' and '$\Sigma x. \text{E!}x \wedge \Phi x$' are logically equivalent. Such a quantifier already exists in the work of Lesniewski (cf. Simons, 1981a).

27. Simons, 1982a, b.

28. Like Ramsey, we say that events exist, where it would be more idiomatic to say that they occur or happen. Similarly we use 'exist' for states of affairs, instead of the more usual 'obtain' or 'hold'.

29. *Ad hominem,* Davidson's own psycho-physical identity theory allows one single event to make true two non-synonymous sentences, one in physical, one in mental vocabulary. Davidson, 1980, pp. 214 ff.

30. A reistic ontology, in which there are only independent things standing in relations of total and partial resemblance, will be unable to account satisfactorily for the natural affinities even between these things, let alone between entities such as smiles, gaits, howls, strokes, aches, etc. The friend of moments can however point to the similarities between moments to flesh out the account, whilst however avoiding commitment to universals (cf. Simons, 1983 for a sketch of an ontology of things and moments which remains squarely within the ambit of nominalism). This is one reason for being well disposed toward moments. Other arguments turn on the fact that only a commitment to moments can enable us to render intelligible the constraints on division of material objects into smaller pieces, and that the existence of formal as well as material relations between objects makes sense only on the assumption that there are moments. Cf. Smith and Mulligan, 1982, 1982a.

31. This argument derives from Husserl. See, e.g., LU VI, § § 48-50.

32. Dependence was originally defined by the psychologist Stumpf (1873, chap. 5) in terms of the impossibility of separate perception. That is (roughly) *a* is dependent upon *b* iff *a* cannot be perceived separately from *b*. It was definitions of this sort which served as the starting point for Husserl's work on a more general, ontological theory of dependence relations and Husserl clearly believed that his work represented a natural extrapolation of that of Stumpf. It would thus be surprising if it were possible to find clear-cut examples of moments in Husserl's sense which are perceivable separately from their fundaments. Can we see a shadow or a silhouette in separation from its object, or is it not rather the case that in seeing a shadow we see also the object itself (albeit from a certain perspective)? When we perceive the warmth flowing from a source of radiant heat do we thereby perceive also the source (again, from a certain perspective)?

33. On Locke's theory of perception we *never* perceive substances (substrata) but only their accidents (*Essay,* Book II, chap. XXIII). A less extreme and inherently more plausible position is that whenever we perceive a substance we do so by virtue of perceiving one or more of its moments. Cf. Kenny, 1980, p. 35. If this is right, then the perception of moments, far from being peripheral, is a key issue in cognitive theory.

34. The most likely answer to this problem is that they are (if Rupert smiles) identical. (What if he does not?) But Brentano would seem to regard Rupert as a *proper part* of smiling Rupert. In his terminology, Rupert is a substance, smiling Rupert an accident. Cf. Brentano, 1933, pp. 107 ff., 119 ff., 151 ff.; Chisholm, 1978.

35. Cf. Quine, 1976, chap. 17; Chisholm, 1981, chap. 9.

36. While the Ramsey-Davidson account of event-sentences can in large part be replaced by a logic of predicate-modifiers--cf. Clark, 1970; Parsons, 1972--this does not dispose of events, as Horgan (1978) thinks: no amount of predicate modification can account for our perception of events.

37. Even stronger arguments for the existence of moments may be formulated on the basis of their role as objects of *memory* and other acts. For here, the (normal--cf. N. 32) co-presence in perception of the moment with its fundament is quite commonly confounded by the selectivity of memory. John may for many years remember, for example, the *intonation* of a particular utterance Mary once directed at him, while forgetting both Mary herself and indeed the utterance in question. Mary's smile may remind him (*de re*) of that of his nurse, whose smile captivated him at a tender age, though he has long since forgotten the nurse herself.

38. Stenius, 1964, 1964, e.g., p. 63, and the relevant writings of G. Bergmann and E. Allaire.

39. There are two possible readings of Wittgenstein's talk of 'possible states of affairs' in the *Tractatus*. On the first, Meinongian reading, we can say that there are possible states of affairs in addition to the actual states of affairs; on the second, more sober reading, we say that there are only actual states of affairs, though it is possible that other might have been actual. Here and in what follows we adopt the second reading. Terms apparently denoting possible states of affairs ought therefore to be treated in every case as syncategorematic.

40. More precisely, what we have here is generic foundation in the sense of § 4 of Simons, 1982.

41. For further details cf. Simons, 1981.

42. On absolute and relative simplicity cf. Husserl, LU III§ I and *Experience and Judgment,* § § 28f.

43. To determine which are the simplest kinds of objects constituting the subject-matter of a given material discipline is to determine also the kinds of *Sachverhalte* which make true, as a Wittgensteinian might conceive things, the elementary sentences of that discipline. Wittgenstein himself embraced something like this project with respect to the discipline of psychology in his unjustly neglected "Some Remarks on Logical Form" of 1929. It is one consequence of our arguments that Wittgenstein's idea of a directly depicting language, or of a family of such languages, may prove to be capable of being resurrected. Since, as we stressed above, there is lacking any isomorphism between the logically simple sentences of *natural* languages and their truth-makers, a directly depicting language would need to employ mechanisms which do not closely resemble linguistic devices with which ware familiar; it may perhaps approximate to the picture-languages employed in organic chemistry. Cf. Smith, 1981, Smith and Mulligan, 1982, § 6, 1983.

44. Such an account is attempted in Mulligan, 1983; contrast Simons 1983a.

45. Thus work on the formal properties of the truth-relation such as that of van Fraasen (in Anderson and Belnap, § 20.3), whilst having a number of methodological similarities to the account presented here, falls short of our requirements in being committed to different logical categories of truth-maker for different logical categories of sentence.

46. We spare the details of manifold theory here. It can be compared to a theory of sets truncated at the first type, without a null set and with no type difference between individuals and unit sets. Cf. Simons, 1982b.

47. And we must reject also any definition of the relation of making true in terms of an existence predicate and entailment connective taken as primitive, for example of the form:

$$\mathbf{G} \models p := p \,.\, \mathrm{E}! \mathbf{G} \, p.$$

This principle certainly holds from left to right: it expresses the fact that '$\models$' is in one sense a link between the domain of ontology and the domain of logic. But from right to left the principle fails, as can be seen, for example, by considering disjunctive values of p.

48. On the question whether p has a *minimal* truth-maker see Smith, 1982.

49. (13) may be too strong: it implies that, where pq, we can conclude that any truthmaker for p contains some truth-maker for q. Consider, however, an entailment such as: that there exists a funeral entails that there exists a death. Here a truth-maker of the antecedent, i.e., any complex event which is a funeral, need not (an typically does not) contain a death as one of its parts. Funeral and death are connected, rather precisely by a (lateral) relation of one-sided foundation.

50. Cf. Also 2.062, 2.11, 2.201, 4.1 and compare the discussion in Dietrich, § 2.

51. See n. 28 above.

52. Our thanks go to Roderick Chisholm, Kit Fine, Wolgang Künne, Richard Routley and to other participants in the 1981 Wittgenstein Symposium in Kirchberg, where these ideas were first aired.