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SELLARS AND THE MEASURE OF ALL THINGS

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The general weakening of the distinction between observation and theory challenges the image of rival scientific theories competing over a neutrally expressed body of data. Some philosophers see each theory as standing on its own, defining its own self-enclosed world – which of these worlds we live in seems a matter of arbitrary choice or historical fate. Others see each theory as a complementary way of describing a world which cannot be captured by any one of them. On either view, science approaches no one perfect description of the world.

Even though he accepts many of the premises of such historicist views, Wilfrid Sellars has long argued for the unity, perfectibility and primacy of science. In this essay I will examine how and at what cost his theory of language brings this about.

The historicist trends in the philosophy of science have added force to those who refuse science itself any primacy among our various ways of talking. Religion, science, art, mysticism, myth, common sense – all these are seen as standing on their own, describing their own self-enclosed worlds. These various worlds may sometimes be said to be independent of one another; more often each is spoken of as including aspects of reality which are not combinable into one large unified picture.

> Science's idiom for reflecting, or conventionally representing, experience or factual truths [is] just one of several possible idioms for doing so, and... these idioms might be, though mutually irreducible, complementary.
>
> The claim of the scientific realist that science is, in principle, the measure of all things... is inadequate. The world is not as science says (or will in the indefinite long run say) it is. It is rather as science, the arts, natural languages, etc., say (or in the indefinite long run will say) it is... . Not science, but the totality of our symbol systems, of which science is but one, is the measure of all things.[1]

Reality is knowable only through a variety of perspectival languages all of which are to some degree descriptive, but it cannot be fully captured through

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any one perspective nor through combining them all into a total description.

A more Wittgensteinian approach might hold that the various kinds of talk need not be reconciled because they do not offer competing descriptions at all. None of them really 'describes' in the intended sense. Supposed competing descriptions are in fact moves in different language games, made according to different rules and for different purposes. There is no one game or one purpose that overrides the others; there is no ideal of a pure description of the world hovering above the many ways we use language. Such a view would echo Wittgenstein's move away from the *Tractatus* notion of a perfect language austerely picturing the world.[2]

Wilfred Sellars has been denying the distinction between observation and theory for a long time, yet he draws no such relativistic or anti-scientific conclusions. On the contrary, he claims that

> in the dimension of describing and explaining the world, science is the measure of all things: of what is, that it is, and of what is not that it is not. (EPM, Section 41)[3]

By 'science' here, Sellars means just what many find restrictive: a literal description and explanation of the world in a language containing only laws about and descriptions of spatio-temporal entities (or events) of a very simple sort. Not only does this science measure the world, but it can progress towards an ideal of perfect description. Sellars defends a revised Tractarian view of descriptions as pictures; he claims that this is essential to the function of language. In opposition to the views mentioned earlier Sellars contends that it is essential to our language that it strive for a single mode of description which will approach the ideal of perfect description of the world, and that physical science is the preferred candidate for that final language.

I

Sellars has attempted to erect a systematic philosophy based on these views which still does justice to the aspects of man's life and the humanistic concerns often thought to be threatened by such emphasis on science. I will not be concerned here with the inclusive aspect of his philosophy, but only with the argument for the primacy for science. Sellars does not merely appeal to the success of science. His theory of the nature of meaning and truth forms an *a priori* argument for the primacy of science. It explains why the predictive and technological success of science has ontological importance. One conclusion

that will emerge from our study is that since Sellars' theory of language is based on a presystematic denial of the reality of abstract objects and intentional mental acts, the resulting conclusion about the primacy of science provides no independent support for Sellars' naturalistic views on these matters.

Sellars' arguments about science are most well known from a series of articles directed against positivist and instrumentalist theories.[4] These, however, rest on a theory of language first set forth in the seminal article 'Realism and the New Way of Words' then expanded into a series of essays.[5] I will be dealing with material written prior to Sellars' second landmark essay, 'Empiricism and the Philosophy of Mind'. During this period Sellars expressed his ideas in terminology heavily influenced by Carnap. Later he reworked his insights into a more Kantian idiom in KTE and SM.

In his early essays Sellars argues for the creation of a 'pure pragmatics' to complete the work of pure syntax and pure semantics. This field is to handle many of the traditional problems of epistemology; the rest are to be dismissed as psychologism. Pure pragmatics will study the relation of language to users and to the world by asking what features of a system of symbols make it capable of being used to describe a world which includes speakers using it. Pragmatics also will discuss the way such symbol systems enter our activity so that they come to be actually related to a world. These goals were to be accomplished by examining the formal structure which makes predicates like 'true', 'verified', and 'meaningful' applicable to formulas in a calculus. Sellars' innovation lies in suggesting that the application of these predicates can, in a sense, be decided by studying the structure of the symbol system alone, and not by examining some (psychological or intentional) relation between the symbols and the world.

> If an analystic philosopher wishes to attack psychologism in epistemology, what fundamental concepts should he claim to be mistakenly treated as psychological or, in general, factual concepts?... [W]hich of the concepts traditionally classified as epistemological can be interpreted as concepts of which the function and essence is to serve in rules definitive of a type of object calculus? I shall argue that of the traditional concepts which can be so interpreted, the fundamental ones are *true, false, designates* (or *means*), *verifiable, confirmable, verified, confirmed*, and *meaningful*... . I have... suggested... the assignment of the title 'pure pragmatics' to that branch of the pure theory of language which deals with the above predicates and clarifies their relation to this new dimension of calculus structure... . [T]he concepts of pure semantics themselves can receive adequate treatment only in terms of this new dimension. (PPE, 182–184)

In effect, Sellars hopes to produce a transcendental argument for the necessity

of certain features of language, including the drive towards a unified perfect description of the world. In RNW he remarks "I should not object to the term 'transcendental logic' in place of 'pure pragmatics' "[6]. (RNW, 448 n. 7) Sellars has continued to base his philosophy on this attempt

> to delineate the general features that would be common to the epistemic functioning of any language in any possible world... the general features any conceptual system must have in order to generate knowledge of a world to which it belongs. (KTE, 646)

We will be concerned in this essay only with those results of this enterprise which bear directly on Sellars' doctrine of the primacy of science.

In the sections that follow I will summarize a key conclusion of Sellars' analysis and outline his arguments for that conclusion. Then I will explore its implications for the necessity of a single unified picture of the world and for the primacy of science in forming that picture.

II

For our purposes, the crucial result of Sellars' analysis is the claim that any meaningful language must have its predicates and individual constants linked in a complex set of implicit definitions. This amounts to a coherence theory of meaning. Besides the laws of logic, there must be laws stating relations between possible applications of various predicates, such that if one particular is said to be P and another particular stands in some specified basic relation to the first, it must be said to be Q. For instance, Sellars suggests that the justification for the statement 'It is raining, therefore the streets will be wet' is a 'material rule of inference' relating the predicates 'is raining' and 'is wet' (IM). He offers a similar analysis for dispositional and causal statements (CDCM), and for statements linking observation and theoretical entities (LT). The laws appealed to are all roughly of the form

$$(x)(y)\,Px\ \&\ xRy\ .\supset .\ Qy\,.$$

where 'x' and 'y' range over particulars, 'P' and 'Q' are the two predicates being related, and 'R' is some relation such as spatial distance which meets the requirements for what Sellars calls a 'skeletal relation' (cf. below, Section V). Linkages of this sort Sellars refers to as 'material rules of inference' (IM), 'natural laws' (RNW), and 'synthetic *a priori* truths' (SAP). Lest this seem outright rationalism, he points out that while such rules must be part of the

structure of any meaningful language, there are many possible sets of such rules; it is an empirical question which language fits our world.

Sellars' main argument for these results center around the problem of individuating predicates and individual constants (or names). I will deal with each of these in turn. Some of his discussions stay in the formal mode of speech (the individuation of predicates and constants as linguistic types) while others are carried out in the material mode (the individuation of universals and particulars). I will follow his practice of moving from one to the other, but for him the formal mode is primary.

First, then, predicates and universals:

> It has been dangerously easy to assume a set of universals in terms of which questions relating to possibility, real connections, logical necessity, and so on, are asked without raising the question, 'In virtue of what is each of these universals a different universal from its fellows?' The answer to this question is not so easy as it might seem. (CIL, Section IV)

It will not do to suggest that universals are isolated simples whose differences from each other can only be pointed at. Most of the interesting problems concerning universals are about detailed interrelations which they could not have were they such simples. Nor does our perceiving them confer individuation upon them. There must be something about each universal which distinguishes it from its fellows, and that something must be involved in its interrelations.

These considerations hold for predicate types as well. But in this case there is a ready answer in a relational theory of meaning: predicates differ because they refer to different universals. Sellars rejects this answer for two broad reasons: (a) in order to apply it we must have already individuated our predicates, and (b) relational theories of meaning are wrong. I will discuss each of these briefly. (a) The simplest relation would be between a given symbol and one universal. But the linguistic unit 'predicate' is not just this mark but this mark *as* token of a certain type. Since a mark may belong to no linguistic type, and since tokens can vary their shape and still belong to the same type (and vice versa), to show we have a predicate we have to do more than exhibit a single mark. We have to indicate the role of such marks in combination and contrast with the role of other symbols. Thus we delineate the predicate type which is to be related to a universal. But this answers the question about the individuation of predicates; the relation to the universal is superfluous for this purpose. (b) The relation is entirely superfluous. The set of linguistic types or roles will suffice to ground all talk of 'universals', 'meanings' and 'abstract entities'. The individuation of predicate types *is* the

individuation of universals. Sellars opposes relational theories of meaning by offering pre-systematic arguments against them and by constructing a systematic replacement designed to fulfill all their functions. This attack is directed against mentalistic theories, theories of intentional acts and relations, and theories involving relations between the mind and abstract entities. All are condemned as varieties of psychologism:

> Under the broader heading of *psychologism* as the confusion of epistemology with psychology, we can distinguish two sub-forms according as epistemology or empirical psychology predominate in the confusion. If the former, epistemological content appears in the guise of psychological acts and objects *sui generis* (*Wesenschau*, universals as apprehendible objects, intentional acts, intentional objects, etc.). These are ranged alongside the facts of empirical psychology, which persist in the confusion. This first sub-form can be called *epistemologism* (Plato, Aristotle, Kant). On the other hand, if empirical psychology dominates, we have *psychologism* in the narrower sense attacked by Husserl (who was himself guilty of epistemologism). Here the epistemological tends to be reduced to a descriptive study of *how we think*. (RNW, 430, Note 2)

Sellars' attack on relational theories of meaning also opposes non-mentalistic theories which make some variant of the Tarskian word-world relation of satisfaction basic to meaning.

> My ultimate aim is to argue that extensions are limiting cases of intensions and cannot be understood apart from them. (SM, 77) It must be understood once and for all that talking about the designata of object-language expressions is, and is only, an essential ingredient in the formal devices which specify the decidibility of semantic and pragmatic predicates ('true', 'verified', ect.) with respect to these expressions. (PPE, 198) Semantical statements of the Tarski-Carnap variety do not assert relations between linguistic and extra-linguistic items. (SM, 82)

Semantic statements function as classificatory statements relating various linguistic types. Of course if the types in question belong to a language which is being *used* there will be relations to the world ('picturing'), but these will not constitute the 'meaning' of the words nor help in their individuation as linguistic types. We cannot now trace Sellars' detailed arguments against relational theories of meaning.[7] But it is important for our ultimate conclusion to realize that his theory of language, and ultimately his argument for the primacy of science, rest on this rejection of the mental eye and intentional relations.

Sellars' denial of psychologism deprives symbols of any individuating or meaning-making relations except within the system of symbols itself. We turn, then, to the individuation of predicate types or roles through these interrelations. What other sorts of types must be involved? The minimal suggestion

is to consider only interrelation among predicate types, and individuate them by their places in the scheme of determinable-determinate relations which makes up a hierarchy of genus and species. Different predicates will have different formal relations to other members of the genus. Thus 'red' and 'green' would be related as species of 'color' while 'loud' and 'piercing' would be species of 'noise'; 'noise' and 'color' would be species of 'sensations', and so on. This suggestion begs the question by presupposing already individuated predicates of higher generality. We might try to avoid this by locating all predicates within one huge genus-species tree, but Aristotle blocked the move by showing that there is no one highest genus within which all the categories can be included as species (*Metaphysics*, B1). Thus we cannot be sure that some formal pattern of genus and species connections will not be shared by different predicates in different trees.

Sellars concludes that we are forced to take account of the relation of predicate types to individual constants (CIL, Section IV).[8] The first suggestion is to individuate predicates by their patterns of assignment to constants denoting actual particulars (parallel: individuate universals by their actual instances). But this presupposes that we know what it is for various particulars to belong with *different* predicates. Sellars concludes that predicates must be individuated by their relations to *possible* constants as well (parallel: universals are individuated by their patterns of instantiation among all possible particulars). We have yet to see how Sellars characterizes 'possible constants' but we can know in advance it will involve linguistic roles rather than possible objects or worlds directly.

But if only the laws of logic restricted the application of predicates to possible constants, *all* logically possible combinations of predicates with each other and with constants would be permitted for *each* predicate. On this widest scale, the formal patterns of application for every predicate would be identical. This would make all predicate types identical, which is absurd. Thus the realm of predicate types must have additional structure beyond the laws of logic. This is just the set of 'material rules of inference' spoken of earlier, which restrict the possibilities of combination and establish inference relations relative to possible constants.

> The predicates of a language are differentiated from one another in terms of the formal roles they play in the language... by the rules which specify their combining properties. The concept of the combining properties of predicates... involves (1) the concept of a 'skeletal' relational predicate... which signifies the fundamental type of order in which

the individuals to which the language can refer must stand; and (2) the concept of restrictions on the non-relational predicates which can be associated with given individual constants where the restrictions are a function of (a) the predicates, (b) the (skeletal) relational sentences in which these individual constants are making an appearance. ... We have here a coherence theory of meaning characterized in purely syntactical terms. (RNW, 439; cf. 443, Note 13)

Both the individuation and the coherence of predicate types are assured by such rules which determine their identity in terms of each other. Although Sellars often describes his views as Tractarian, these rules linking predicates bring him closer to the Wittgenstein of the 1929 article on Logical Form than to the *Tractatus* itself, where all atomic propositions are logically independent.[9]

III

Sellars develops an analogous argument concerning the individuation of individual constants or names. For reasons similar to those mentioned earlier he rejects any answer depending on mental acts or intentional relations. "The rejection of psychologism forces us to say that the difference in meaning of individual constants must rest on syntactically characterizable differences in their roles in the language" (ENW, 655). The distinctness of each constant as a linguistic type depends on its role in relation to others. As with predicates, this role is the 'meaning' of the constant; our names are not given meaning by a designation relation to things in the world (SM, Chapter III). As with predicates, we need to specify the linguistic role or type for a name before we apply a designation relation, and once we have specified it we do not need the designation relation to give us the 'meaning' of the name. Of course our names do relate to the world, but they do so by being part of a language which is being used to picture it. Names (in atomic statements) are the basic elements which picture particular entities within the world, but they do so only by virtue of being part of the network of interlocking linguistic types which form a language. Their individuality and meaning are established by their places in that network, not by the picturing relation.

What other linguistic types are involved in the individuation of our constants? A minimal suggestion is that constants are to be individuated by their place in a scheme of spatio-temporal relational statements (parallel: particulars are individuated by their spatio-temporal locations). Sellars rejects this because it

> makes the relation between the individual constants and the primitive one-place predicates of a language a purely external one; it regards the individual constants (given the skeletal relations) as semantically self-sufficient. (ENW, 655)

In the material mode this would be to allow bare particulars, which Sellars finds self-contradictory (cf. P).[10]

He concludes that we must individuate our names by their place in a network which includes monadic descriptive statements as well as spatio-temporal location statements (parallel: particulars are individuated by their spatio-temporal location and intrinsic qualities).[11] But since descriptive predicates are linked with one another by material rules of inference, the entire apparatus of predicates becomes involved in the differentiation of individual constants. This is symmetrical to the case of predicates individuated by their relation to possible constants. To have either names or predicate types you have to have the other, plus the skeletal spatio-temporal relation. The whole inter-connected machinery of language enters into the identity of any of its parts.[12]

There is, however, an important asymmetry between predicates and names. Predicate types are differentiated through their patterns of application to *all* possible constants (parallel: universals are differentiated by their patterns of instantiation across all possible worlds with the same natural laws but different initial conditions – cf. CIL for the proviso 'with the same natural laws'). But names are individuated through their place in an array of statements involving the application of predicates to *one* network of spatio-temporal relational statements (parallel: particulars are individuated by their place in one possible world). This means that the fully determinate individuality and meaning of our names depends on their place in what Sellars calls a 'world-story' which gives information about all the particulars in our world.

Furthermore, this world-story must be complete. If it doesn't tell us everything then it leaves us uncertain *which* linguistic types we are using since the fully determined individuality of each depends on its definite ways of combining with all the others. (In the material mode parallel: without a complete world-story we cannot tell which world we are talking about. Worse yet, without full information on all particulars we cannot be sure which universals we mean, and so we cannot tell which family of possible worlds we are talking about.) The full identification of the right material rules of inference and of the right list of names depend on each other. If either is deficient the other will also be inadequate.

This discussion of world-stories may strengthen the impression that Sellars

holds a variety of possible-world semantics where different predicates have different extensions in possible worlds while names designate objects in one world. But Sellars rejects any theory which makes extension and designation primary in determining the meaning and individuality of our words. When we talk of possible worlds and objects we are talking in the material mode about universals and particulars, not about linguistic types, and there is no semantical relation to relate the two (cf. PPE, 198–199). Our predicates and names are individuated and given meaning within language, not by relations to the world or worlds. For Sellars a language is a system of *closed* sentences, a story, not a set of rules for constructing many stories. This is because the specification of our linguistic types demands that all combining properties of predicates and names be specified. The 'world' of a world-story, then, is only a material mode of speech metaphor for the set of closed atomic sentences and the names they include, taken as linguistic types. The tasks accomplished in other theories by varieties of the satisfaction-relation Sellars fulfills by the purely intra-linguistic relations of types plus the external but non-semantic relation of picturing.

The conditions Sellars establishes for the definiteness of linguistic types make it seem that we need omniscience to be able to speak at all. He seems to be claiming that the formal necessities behind the language we speak belong to a language we could never speak. This is correct; Sellars does argue that the formal structure of any language capable of fully definite roles for its words is that of the language of omniscience. This would be the full world-story, naming all particulars, deploying all predicates, and capable of dispensing with all general and truth-functional propositions except as abbreviations.

We speak a reduced dialect of such a language, reduced by our limitations but not different in formal structure except where we make up for lack of information by careful use of blanks, variables, and controlled vagueness. The distinction between the perfect language and our own.

> is a factual-psychological rather than a formal-epistemological distinction. It relates to the psychology of formal *manipulations*, and can no more be formulated within formal science itself than can the concept of *mistake*. ... our factual inability to construct complete world-stories [does not] entail an inability to give a formal account of a complete world-story. (RNW, 455)

Such a formal account gives us the necessities behind our language. Our incomplete talk does not point to a different kind of language but is our way of achieving what we can of a full-fledged language. Only in virtue of as much

of the structure of a perfect language as we capture do our predicates and names have what individuality and meaning they have. If we did fully what we can only do partially we would have *the* unified world-story, one perfect description of the world expressed in one set of predicates, names and laws. We would not have a motley of languages or a set of perspectival descriptions incommensurable with one another.

We can now see Sellars' answer to the views cited at the beginning of this essay. Any partial language gets its determinate meaning by being part of a possible complete world-story. So, if our present language consists of a number of sub-languages the situation is unstable. Either the various partial languages are fragments of the *same* evolving world-story, so that their differences are temporary, or they are fragments of *different* total stories, with different predicates, names and laws, so that they must rival, not complement each other.

IV

Now that I have outlined Sellars' justification for the necessary ideal of a unified perfect description, I will try to show how his account of language-use turns the formal relevance of that ideal into an active seeking to improve our language. Then I will investigate how Sellars' theory determines *a priori* that physical science is to be the final language.

So far we have a coherence theory of meaning. What distinguishes Sellars' theory from its rationalist and idealist ancestors is that for him the theory describes not the world or the Necessary Structure of Things, but only the formal structure of possible language systems.

> Whereas [the rationalist] speaks of *the* conceptual frame, the system of formal and material rules of inference, we recognize that there are an indefinite number of possible conceptual structures (languages) ... each one of which can be regarded as a candidate for adoption by the animal which recognizes rules, and no one of which has an intuitable hallmark of royalty. They must compete in the marketplace of practice for employment by language users, and be content to be adopted haltingly and schematically. In short we have come out with C. I. Lewis at a "pragmatic conception of the *a priori*". (IM, 337; cf. RNW, 620, CIL *passim*)[13]

There are indefinitely many possible world-stories with varying initial conditions and varying laws. Since each of these is a *complete* story, it includes 'reports' of the 'experiences' of 'knowers' which 'verify' the story. Much of Sellars' care in his earliest articles is devoted to discussing the logic of these

features of world-stories, which provide the formal treatment of the epistemological and semantic predicates promised in the quote from PPE cited earlier. These world-stories have all the structural features needed to be languages describing the experience and world of actual knowers. They threaten, in fact, to bring on a kind of relativism which the whole argument is trying to avoid. The important question thus becomes: what distinguishes the true world-story, the one about the real world?

Sellars answers that there is no *formal* feature distinguishing the true world story. He has no coherence theory of truth. What is distinctive about the true story is that *we use* it, that the reporting sentences in it report *our* experiences and world (cf. SM, Chapters 5 and 6).

This answer seems to avoid the question. How can we be sure that there is only *one* world-story our Peircean descendants will use? Why not several equally good ones? Why, indeed, should we worry about *the* world-story at all? Even if we grant Sellars that the structure of our language is in some sense derived from that of complete stories, why should we finite knowers try to unify our descriptions of the world?

These questions must be answered by studying actual language use. Looked at with the cold eye of naturalism, the possible world-stories, with their varying laws and sets of names, turn out to be possible patterns of linguistic performances we might adopt in our dealings with the world. Thus questions about the adoption of conceptual frameworks or world-stories turn into questions about what form of behavior is advantageous for us. Sellars contends that the function of (descriptive) language is to guide our activities by providing a model or picture of the world. The way in which language provides this picture determines that better pictures will tend to be more unified ones.[14]

Language pictures the world by reproducing its structure. It models the world the way a cam cut to the outline of the walls of an irregular room might guide the placement of the arm on a machine for painting those walls. Language's model is incredibly more complex and involves more sophisticated rules of projection than the isomorphism of the cam and the walls. The model is stored in the information system of the brain rather than in the shape of a cam, but in the end it too functions because of a complex isomorphism between the particulars in the world (and their relations) and the atomic sentences in the world-story (and their relations). Note that the relation between picture and world has no intentionality about it. It is only a structural similarity between two arrays of particulars. What makes the one

a *picture* of the other (and not just a similar structure) is that the linguistic array is used by an organism to guide its behavior.

Picturing the world is not something language users happen to do. Once we give up the notion of an intentional relation between the mind and the world, the isomorphism of picturing forms the link between the world and our brains as organic computers juggling symbols in accordance with formal rules. While any partial or complete world-story would be a system of juggled symbols, the true world-story will be the one whose manipulations end in the pattern of atomic sentences which is isomorphic with our world.

We could no more use an arbitrarily chosen world-story than we could drive from Chicago to San Francisco with an arbitrarily chosen map. If our picture is inadequate we will find out when we bump into unexpected things like Kansas City or the Rocky Mountains. Or it might be a small deviation in the orbit of Mercury, or unexpected behavior on the part of our children. As our needs and capabilities become more subtle we will develop more subtle pictures and encounter more refined shocks. Each shock forces us to revise our picture by changing our concepts and laws in the direction of greater adequacy. Very refined accuracy will demand that we *explain* by the use of microtheories.

> Microtheories not only explain why observational constructs obey inductive generalizations, they explain what, as far as the observational framework is concerned, is a random component in their behavior [Sellars' example is two observationally identical samples of gold which dissolve at different rates in *aqua regia*]... in the last analysis it is by doing the latter that microtheories establish their character as indispensable elements of scientific explanation and ... knowledge about what really exists. (LT, Section 43)

Sellars holds a coherence theory of justification as well as of meaning. But *what* is justified is a picture of the world; the theory of picturing tells us why coherence is useful to us. Sellars believes that the ultimately useful picture will be the most coherent and explanatory, i.e., a picture that unifies everything under one set of laws and names.[15]

V

I want now to examine how Sellars' theory puts constraints on what will be allowed to count as a picture of the world. It might seem that he merely asserts the need for a unified picture but leaves open what shape it will take. Thus, depending on what the world turns out to be like, we might end up

with a story in terms of Aristotle, or physical science, or magic, or maybe a science of the mental joined to a physics. But this is not the case. Sellars is not offering such an open-ended inquiry.

The quote from LT cited above suggests that Sellars views science as in competition with other pictures of the world but destined to win because of its greater explanatory coherence. He elaborates such a view in his programmatic essay, PSIM. In fact the competition is biased. Sellars' theory of language prohibits many potential competitors from consideration as possible world-stories, and the rules for what counts as a description decide *a priori* for physical science.[16] I will single out two such biasing factors; both involve the role of spatio-temporal relations in material rules of inference and in pictures.

Material rules of inference state that if one particular possesses an attribute *P* and a second particular stands in some specified relation to the first, the second will be characterized by an attribute *Q*. Such rules must make use of "a skeletal relational predicate (there may be more than one, provided they are syntactically related) which signifies the fundamental type of order in which the individuals to which the language can refer must stand" (RNW, 439). Since material rules of inference make world-stories possible, there could be no world-story whose individuals do not stand in an appropriate skeletal relation. This rules out, for instance, stories which would refer to two or more disjointed domains of individuals whose respective skeletal relations do not interconnect. This does not seem to be a serious restriction since such stories hardly seem to be about *a* world. It is more important that stories containing interconnecting physical and mental domains, or abstract entities, are ruled out *a priori*.

This stems from the peculiar nature of the particulars talked about in most proposals for a 'science of the mental'. These are not usually single mental events in subjective time but rather 'meanings', 'propositions', 'Wesen', and the like, which can be ingredients in or related to many subjective mental events. Two people may think the same meaning. Such objects stand in no external relation to each other; they are related by internal relations of inclusion, exclusion, similarity, dissimilarity, etc., just as are their older cousins, the Platonic Forms. Such mental objects and/or abstract entities stand in no neutral field of relations similar to space-time. While we speak of their internal relations as constituting a 'logical space', this space has no structure of 'parts outside of parts'. There is *no* skeletal relation to do its share in giving meaning to predicates and names for these objects. They cannot be talked about. No

world-story claiming to include them as individuals would be admissable.[17] (What can be talked about are individual mental events, taken as locatable and describable by future neurophysiology. Sellars reduces all talk of mental objects and abstract entities to normative talk about inner and outer linguistic performances.)

What I have just said seems to conflict with Sellars' frequent admission that we now operate within a broadly Aristotelian world-story that speaks freely of mental acts and meanings (cf. PSIM). Actually, however, Sellars takes great pains to try to show that our seeming talk about meanings is really talk about linguistic roles and norms. What is crucial here is to see that, unlike his treatment of sensations, Sellars' treatment of meanings is not a proposal for reform. Sensations, which we now think of as single mental events attributable to persons, will with the progress of science come to be seen as physical events attributable to aggregates of elementary particles. But Sellars does not suggest that progress in science will lead us to switch from talk of meanings to talk of linguistic roles. According to his theory, talk about meanings as individual entities referred to in our world-story is impossible. We cannot be doing it even now. We are misled by the form of ordinary speech into thinking our normative talk about roles is the description of objects. There can be no science of the mental or of abstract entities as part of any world-story. Thus the form of the material rules of inference rules out what might at first seem plausible candidates for pictures of the world.

The picturing relation plays a similar restrictive role. If picturing forms the relation between language and the world, then we can only talk about objects related in spatio-temporal ways, or in ways which share the externality and neutrality of space-time. The crucial factor is that picturing is not an intentional relation. It is an isomorphism between two sets of objects, like the relation between the shape of the walls and the cam of the painting machine mentioned earlier. Of course the isomorphism between language and the world is not one of physical shape. We do not model objects by shaping or dyeing groups of neurons. But we do encode in our neurons a picture composed of fields of indexed and coordinated atomic propositions which are in a complex way isomorphic with fields of spatio-temporally related objects.

To function as described, picturing must relate two fields of particulars each of which contains externally related items, 'parts outside of parts'. Meanings or propositions, classically described as internally related, could not be used to picture the world, since they have no parts of the required sort (no

morphē to be iso-).[18] Similarly a science of the mental could not be expressed by the picturing relation because the objects to be talked about are not appropriately related to be picturable. Thus the role of picturing restricts the kinds of languages which can be considered possible candidates for describing the world. Only varieties of physicalism need apply.

In addition, since picturing depends ultimately on one-to-one correlations between atomic propositions and individuals in the world, language must be at bottom non-metaphorical. Since better pictures can only be made by improving the accuracy and discrimination of the one-to-one correlations involved, we can know *a priori* that the best picture will be one of spatio-temporal objects whose behavior cannot be more accurately described by a finer-grained set of names and laws. That is, these final objects are not composed of micro-parts whose interactions explain the regularities in their behavior. It is not important whether these final objects are *small* from our point of view; what matters is that they have the definitive characteristics we keep trying to ascribe to our very small particles.

This tendency towards more accurate one-to-one correlations, together with the ideal of explanatory coherence discussed earlier, implies that in improving our pictures we will strive for simpler entities having fewer attributes each. The more attributes an entity has, the more conjunction and variation of attributes there is to render it liable to micro-explanation. Sellars would like to claim that in the ultimate picture every basic particular would have only one non-relational attribute, but it is not clear that this ideal is enforced *a priori* by his theory.

Thus we can deduce from the theory of language and picturing that the best world-stories will be systems of non-metaphorical atomic propositions naming very simple spatio-temporal objects, with laws relating their behavior to their location and to the basic attributes of other simple objects. This is physical science, as described at the beginning of this essay.

VI

Sellars' theory of the structure and application of language gives us not only the ideal of perfect description, but prescribes what sort that description must be. I have called this a bias, built into the theory, which operates against admitting abstract objects, mental or intentional acts and relations, a science of the mental, irreducibly metaphorical descriptions, or laws in other than

spatio-temporal terms. Sellars here differs from a position that argues for an ideal of unified description of the world but leaves it open what form that description would take. We might ascribe such a position to Dewey, to Whitehead in his methodological pronouncements, perhaps to Quine. Such a position might also oppose the fragmentation of language in the relativistic and perspectival trends mentioned in the introduction, but not be as committed to a specific outcome of inquiry.

A defender of Sellars' position might claim that what I have called bias is really *argument* for the exclusion of abstract entities, etc. But Sellars' theory of language furnishes no independent proof of his naturalism and nominalism. As we saw earlier, that theory of language is explicitly constructed upon a denial of abstract objects and mentalist explanations of meaning. If his naturalism is to be supported, it must be by the pre-systematic arguments he offers for rejecting mentalism together with the adequacy of the systematic replacements he offers. His theory of language results from the former and leads to the latter; it does not by itself form an argument. The claim that 'science is the measure of all things' rest on this theory of language which in turn rests on pre-systematic denials of many of the often-claimed exceptions to the primacy of science.

Does this mean that the system is circular? In Sellars' eyes it only means that it is systematic. His philosophy never pretends to be a proof of naturalism from a secure but neutral foundation in the theory of language. His system exemplifies his theory; it is a coherent whole offering a way of thinking about the world and philosophical issues which is destined from the first to express naturalism, nominalism, and materialism. The interdependence of the parts of the system makes brick-by-brick justification impossible. The infamous obscurity of Sellars' writing stems from the resulting need to say everything. Sellars argues for his system by contrasting confusions and incoherencies in rival (usually less systematic) theories about specific issues with the superior illumination offered by his system as a whole. In this essay I have tried to examine the details of a crucial part of the system, what that part rests on, and what it might support.

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NOTES

[1] Laurence Foss, 'Does Don Juan really fly?', Phil. of Science 40 (1973), p. 299, and 'Art as Cognitive; Beyond Scientific Realism', Phil. of Science 38 (1971), p. 239.

[2] Similar issues are raised by continental assertions that science is just one way of constituting a world or of moving from the life-world to a schematic description for some technical purpose. For example, cf. Alfred Schutz, Collected Papers (Nijhoff, The Hague, 1973), Vol I, pp. 207ff. and 340ff.

[3] References to Sellars' writing will be incorporated into the text. The relevant books and articles are cited by the abbreviations given in the bibliography at the end of the essay.

[4] For example, EPM, LT, SRII, SM. Notice that the post-positivist views I cited at the beginning of this essay do not imply instrumentalism. Foss' view is a perspectival realism while the Wittgensteinian view goes beyond instrumentalism by denying that observation involves pure description.

[5] Cf. especially RNW, ENW, PPE, CIL, LCP, IM, SAP, LRB.

[6] For Sellars' views on how transcendental arguments reduce to the analysis of concepts, cf. KTE, 635.

[7] The complexities of Sellars' theory of truth in TC and SM result from this refusal of Tarski's relation. Sellars' differences from Tarski are discussed in SM, Chapters 3 and 4, in Gilbert Harmon's review of SM (Phil. Review 79 (1970), pp. 404–419) and in the resulting correspondence between the two. For the attack on mentalistic theories, cf. RNW, EPM, SM. I discuss this attack in a forthcoming essay.

[8] Lingering Platonic sensibilities may incline us to balk at the parallel move of individuating universals by means of their relation to particulars as well as to each other. Sellars' reply is that "the business of a universal is to be exemplified, just as the business of a particular is to exemplify" (CIL, Section IV). Thus the (second-order) properties which distinguish one universal from another "concern that which is involved in its being exemplified". Perhaps at this point the parallel between the material and formal mode discussion weakens and the appeal to second-level properties of universals may beg the question in favor of nominalism. In any case, from here on the argument is clearer in terms of predicate types than universals.

[9] We might note that if predicates are individuated by their interrelations there can be no purely descriptive 'observation language' whose predicates retain a fixed identity and meaning while they are fitted into varying networks of inference relations to theoretical terms. Any change in their inference relations changes the role and so the 'meaning' of the observation terms. Sellars does leave open the possibility of a language all of whose predicates refer to observable entities with no inferences to unperceived entities. This, however, would be a complete language, not the observation half of a language, and it would stand as a *rival* to languages involving unperceived entities (cf. ENW, 656).

[10] He also develops a complex argument that individuating particulars by spatio-temporal relations alone causes extreme damage to the notion of confirmation. (cf. RNW, 437ff.)

[11] Sellars also considers introducing *monadic* spatio-temporal statements to individuate names, but rejects this citing "all the classical objections" against absolute space and time. He also gives an argument based on a view he later modified "that the primitive individual constants of a logically perfect language can be connected in a true sentence with only one primitive, determinate, oneplace predicate" (ENW, 655; the view is maintained in P, LCP, and modified in SFA, fn. 11). For his views on how relativity affects his reliance on the skeletal spatio-temporal relation (not at all) cf. TWO, Sections 16–21.

[12] Strictly speaking it is only the primitive predicates of the language that are involved. Other predicates which can be fully defined in terms of the primitive predicates enter the network only derivatively.

[13] Sellars of course disagrees with Lewis over the precise nature of the *a priori* and over 'the given'. (cf. SAP, EPM, GEC).

[14] To go into the details of Sellars' theory of picturing would enlarge this essay beyond reasonable length. Besides, the theory has been set forth with unusual clarity by Laurence Bonjour in 'Sellars on truth and picturing', IPQ 13 (1973), pp. 243–265. Sellars' own fullest accounts are in TC and SM. For a Sellarsian reading of the *Tractatus* picture-theory, cf. Jay Rosenberg, 'Wittgenstein's theory of language as a picture', APQ 5 (1968), pp. 18–30. Rosenberg's *Linguistic Representation* develops these themes with care and detail.

[15] I am leaving aside discussion of the role of *laws* in world-stories conceived as pictures. Strictly speaking, for Sellars laws do not picture; only atomic statements can form pictures. Laws resemble recipes for constructing pictures or reports on the form of a picture. While laws reflect regularities in the course of the world, Sellars believes, as far as I can see, that it is purely contingent that these regularities obtain and not others. There is no necessity in things for laws to report on; despite the importance Sellars attaches to taking causal (and other) modalities seriously, he believes that their importance is totally for *intra*-linguistic purposes.

[16] I have several times characterized the argument for science as '*a priori*'. I say this because the primacy of science can be deduced from the general theory of language and its use, which theory Sellars views as the correct analysis of the concept of 'a meaningful language'. (cf. RNW, 448 n. 17; KTE, 635)

[17] This may be obscured because Sellars freely quantifies over entities such as meanings and propositions. But he does not accept Quine's criterion of ontic commitment. For Sellars, to be is to be named in true atomic sentences of the world-story, and this can never happen to mental or abstract objects, or even to linguistic roles. Anytime such 'entities' are named it is a normative metalanguage which does not describe objects in the world. Their object-language counterparts in the world-story would be reports of regularities in utterances and inscriptions. Quantification over abstract entities presents no problem for Sellars because he accepts a substitutional account of quantification and, at the same time, allows 'true' a wider meaning than the 'descriptive truth' which includes the picturing relation (cf. TC).

[18] If the concept 'man' has parts at all they must be something like the *concepts* 'animal' and 'rational' rather than the array of *names* which are the ultimate parts of pictures. Sellars is consistent on the implications of this; he believes in the ultimate eliminability of predicate terms from a perspicuous language composed wholly of differently styled names (cf. NS).

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SM Science and Metaphysics (Humanities Press, New York, 1967).

PP Philosophical Perspectives (Charles Thomas, Springfield, Illinois, 1967).

EPH Essays in Philosophy and Its History (Reidel, Dordrecht-Holland, 1974).

CIL 'Concepts as involving laws and inconceivable without them', Philosophy of Science 15 (1948), pp. 287–315.

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EPM 'Empiricism and the philosophy of mind', in Minnesota Studies in the Philosophy of Science, Vol. I; reprinted in SPR. Page references are to SPR.

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IM 'Inference and meaning', Mind 62 (1953), pp. 313–338.
KTE 'Some remarks on Kant's theory of experience', Journal of Philosophy 64 (1967), pp. 633–647; reprinted in EPH. Page references to the *JP* edition.
LCP 'On the logic of complex particulars', Mind 58 (1949), pp. 306–338.
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NS 'Naming and saying', Philosophy of Science 29 (1962), pp. 7–26; reprinted in SPR.
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