

Two Conceptions of Logical Form

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1. The Picture Theory of Language

In this paper a brief presentation of Wittgenstein's picture theory of language is provided, as it is put forth in the *Tractatus Logico-Philosophicus*. Then some conclusions are drawn with reference to the notion of logical form; in particular, two different conceptions of logical form are expounded, and one of them is shown to be untenable.

Two are the features of the picture theory which interest us here. The first is the automatism of sense, i.e. the idea that, once the referents of the names occurring in a proposition are fixed, then the sense of the proposition is automatically determined. That also means that when we know what the names occurring in a proposition refer to, we automatically grasp the sense of the proposition itself: no other piece of information is required.

The other central tenet of Wittgenstein's picture theory is the idea that a picture and the fact which is pictured must share the same pictorial form. Let us consider the case of an elementary proposition and the fact that is pictured by it. In both the proposition and the fact we can distinguish a matter and a form. The matter of the proposition may be said to consist of the names occurring in it; the matter of the pictured fact consists of its objects. The form is the pictorial form, which in this case is the logical form. According to what Wittgenstein says, we must regard the two forms as being identical, i.e. literally the same form. As to matter, it is obvious that the matter of the proposition is not the same as the matter of the pictured fact (names *stand* for objects, but they are not the objects themselves): names and objects are correlated by the projective relation. We could say that according to the picture theory the form is common to propositions and pictured facts, while the matter, as it is different, must be correlated through a process of projection. All that does not concern only logical pictures. In every picture we can distinguish a matter (which is projected) and a form (which is identical). In the case of pictures whose pictorial form is not the logical one, the process of abstraction has been stopped before reaching its highest level, that is to say, some of the aspects which could be treated as matter (i.e. projected) are – on the contrary – included in form (which must be identical). That means taking advantage of some of the features of the picture which are identical to some of the features of the pictured fact. In spatial pictures, for instance, some of the spatial relations holding between the picture's elements are identical with the spatial relations holding between the objects of the spatial pictured fact.

The two features are closely connected. Since the matter of the proposition and that of the pictured fact are distinct, in order to understand the proposition we must know what the names occurring in the proposition refer to. But there is only one form, shared by the proposition and the pictured fact, so that we do not need any further piece of information concerning an analogous correlation between two distinct forms. The identity of the form guarantees the automatism of sense.

2. Poor and Rich Conception of Logical Form

Coming to the notion of logical form, two main conceptions are available, which I will call the "poor" conception and the "rich" conception. In the *Tractatus* an elementary fact consists of the combining of (simple) objects. According to the poor conception of logical form, only one mode of combination among objects is admitted: objects can only be combined or not combined; the logical form reduces to the possibility of being combined or not being combined of the objects. In fact the notion of logical form – or the form of reality – is introduced by Wittgenstein as the most abstract pictorial form of all, i.e. as the pictorial form which every picture must have in common with all facts. And since pictures themselves are facts, the logical form is what all facts have in common, i.e. their consisting in the being combined of some objects. A brief digression is necessary here with reference to the question of order. Given the objects a , R and b – where R is a non-symmetric relation –, they can give rise to two different facts: aRb and bRa . There is no explicit dealing with the question of order in the extremely abstract views of the *Tractatus*, and the whole issue will be left aside here. In what follows it will be assumed that no question of order arises, so that – if there is only one mode of combination –, given a list of objects, only one fact can be constructed.

According to the rich conception of logical form, given a list of simple objects, apart from questions of order, several modes of combination are available, so that different (elementary) facts can be constructed. Such modes of combination do not belong to the matter – they are something "additional" with respect to objects –, nor can they be resolved by further analysis into more complex structures of simpler objects, since by definition we are already at the level of simple objects. Thus the different modes of combination must somehow be absorbed into the form, and that is the reason why I speak of a "rich" conception of logical form. Those who hold such a "rich" conception usually admit that the form of reality is the mere possibility of being combined; yet they countenance different modes of combination. It seems to me that there are no alternatives: either the different modes of combination belong to the "matter" of reality, or they belong to its form. In the former case we have a "poor" conception of the form itself, in the latter we have a "rich" conception.

A good illustration of the whole question can be set forth by making reference to Sellars [1962], in which a comparison is made with Bergmann [1960] (cf. also Bergmann [1963]). In his paper Sellars compares two languages, which we will call "Sellars-language" and "Bergmann-language". Let us assume that the proposition " a is larger than b " is elementary, i.e. that the relation *larger than* does not arise out of complex configurations of objects, but it belongs to the form of reality – if a (rich) nominalistic view is adopted –, or it is an object – if a realistic view is adopted. In Sellars-language the proposition in question will be written, say, as " $a b$ ". The relation *larger than*, which belongs to the form of reality, is symbolized by the relative spatial positions of the names " a " and " b ". In the Bergmann-language the same proposition will be written as " aLb " or " $L(a, b)$ ".

Now we have to compare the kinds of behaviour of the two languages with respect to the picture theory. The proposition “a is larger than b” is written in Bergmann-language as “aLb”. If we know what the names “a”, “b” and “L” stand for, we do not need to know anything else in order to understand the proposition. In fact the objects for which the names stand can be combined in only one way (they can be combined or not combined). The simple juxtaposition of the names in the proposition has enough expressive power to reproduce such a one-mode combination. The proposition and the pictured fact literally share the same form, which is the form of reality (the possibility of being combined or not). Let us now consider the case in which universals are not included among objects and the form of reality (which is also the logical form) is conceived of as being “rich”. That is the case illustrated by Sellars-language. The proposition “a is larger than b” is written in Sellars-language as “a b”. Here the only names are “a” and “b”. According to the thesis of the automatism of sense, once we know what the two names refer to, we must automatically grasp the sense of the proposition. That should happen thanks to the identity of logical form: the relative spatial positions of “a” and “b” should somehow indicate that the objects referred to by “a” and “b” stands in the relation *larger than* to one another. Because of the richness of the form, simple juxtaposition is not enough: we must consider in what relations the symbols “a” and “b” stand to one another. In fact the propositions “a is redder than b” should be written in Sellars-language, say, as “b a”, where the different spatial relation holding between “a” and “b” indicates that the objects referred to by these names are combined in a different way from that in which the objects of the previous proposition are combined. But now it does not seem that merely knowing what objects the names stand for is enough to grasp the sense of the proposition. Another piece of information is required, concerning the correlation between the modes of combination of the names in the propositions and the modes of combination of the objects to which they refer. In the case of Sellars-language many correlations are possible, and that makes it difficult to understand in what sense the relations between symbols could be regarded as identical with those between objects: a stipulation seems to be necessary, and we must know such a stipulation in order to grasp the sense of the proposition. Thus it seems that the automatism of sense cannot be preserved if we admit a rich form of reality.

3. Reasons Underlying the Two Interpretations

The difficulties met with by the rich conception of form may be regarded as deriving from a wrong delimitation between matter and form. If in order to grasp the sense of a proposition we must know what the correlation between the modes of combination of names and those of objects is, that means that these modes of combination do not really belong to the form, but to the matter, and that their correlation must be seen as a projection. Coming back to Sellars-language, if we draw a new delimitation between matter and form according to what has been said so far, the spatial relations holding between “a” and “b” in “a b” and “b a” should be regarded as being themselves names. At first sight that could seem rather odd, since it is difficult to imagine that a name may consist not of a linguistic expression, but of a relation between linguistic expressions (cf. Frasca [2000]). Yet, if one considers what has just been said about the picture theory, there does not seem to be any reason not to regard these relations as names: since a correlation is required between them and what

they stand for, they are on a par with “a” and “b” with regard to the need for a projection. Once the necessity of a projection is recognized, no piece of information is missing any more in order to grasp automatically the sense of the proposition. The new interpretation of Sellars-language makes it wholly equivalent to Bergmann-language: both in “aLb” and in “a b” we can discern three names (for similar considerations on Sellars-language cf. Hochberg [2001]).

It must be noticed that this interpretation is not necessarily realistic. It is true that names are assumed which stand for relations. Yet it must be considered that projection has directly to do only with what distinguishes the relation *larger than* from the relation *redder than*; their common formal aspects are still contained in the form. What has been said does not really concern the opposition between nominalism and realism, but rather that between poor and rich conception of logical form. The error lies in thinking that there may be a correlation of forms alongside the correlation of names to objects, so that what really depends on a projection between names and objects is relocated in forms. But thus forms are loaded with different modes of combination, and since the necessity of a projection between these modes and those of the objects belonging to the pictured fact is not explicitly recognized, a lack of information occurs, and the automatism of sense is not secured any more. All that is associated with a confusion between the functional notion of (pictorial) form, as opposed to matter, and the absolute notion of logical form (which is the form of reality). The existence of an ultimate level of analysis, where only absolutely simple objects and logical form are envisaged, is required – according to Wittgenstein – by the determinateness of sense. Now, thinking that the different modes of combination (what differentiates the different spatial relations between “a” and “b” in Sellars-language and the relations *larger than* and *redder than*) belong to the logical form seems to depend on the idea that, since they may belong to a pictorial form (which, however, is not the logical one!), they can never belong to the matter of representation; and if they can never belong to matter, at any level of representation, then they must belong to logical form. The same confusion may occur in the case of pictures whose pictorial form is not the logical one. Let us take the example of musical notation and music. Instead of identifying the pictorial form with the logical one (thus considering what differentiates the spatial structure of the picture and the pitch-structure of the pictured fact as belonging to the matter of representation), one could regard both structures as belonging to the form of representation. In that case a correspondence is substituted for the identity of form, and the automatism of sense breaks down. In this way, something which in certain cases of representation could belong to the pictorial form (functional notion) is regarded as always belonging to form, as if that did not depend on the particular circumstances.

It seems to me that one of the reasons underlying this approach is a nominalistic bias. Since in Wittgenstein’s examples pictorial forms take advantage of identity between relations, or more generally between universals, then it is concluded that relations naturally belong to form, independently of the choice of the pictorial form. Thus universals are included in forms, and only particulars are regarded as being capable of occurring in matter. Of course what distinguishes universals from each other could be analyzed as emerging from configurations of objects, but this analysis demands a preliminary step, i.e. placing universals into matter. Since this step is not made, we are left with rich forms. But rich forms have some problems with the automatism of sense. The arbitrariness

of this approach may be shown by the fact that it is possible to imagine a "language" in which the form is made up by particulars, whereas the matter is made up by universals. In a picture of this "language", the fact that a certain particular *a* stands in a certain relation to the particular *b* would represent the fact that the very same object *a* stands in a different relation to the very same object *b*. Presumably such a language would not be very handy, but it is possible to imagine some examples: the fact that Smith makes a certain characteristic gesture with his hand near Jones' throat may mean that Smith cuts Jones' throat. Of course nothing like that is envisaged in the *Tractatus*. The example only shows that particulars and universals seem to be on a par with respect to the matter/form distinction of the picture theory.

Literature

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