

A MAPPING OF WITTGENSTEIN'S *TRACTATUS* INTO THE VIENNA CIRCLE'S MODELS

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Since its birth the *TLP* has been interpreted within a wide range of opposed standpoints: a strictly logical one, treating philosophico-ethical statements as decorative vignettes, and a "strictly" philosophico-ethical one, treating the logical part of the work as a negative definition of the Philosophico-Ethical. At the time, however, the Viennese, disregarding all other possible interpretations and the author's own misgivings, declared the *TLP* to be almost a manifesto of Logical Positivism. To explain this destiny of the *TLP* one could choose a biographical or cultural approach. But in doing so we should not gain much of an insight into the structured way in which the *TLP* was taken over by or overlapped with the Vienna Circle's models (until the late twenties). Therefore, analysing the *TLP*, Schlick's *General Theory of Knowledge (GTK)*, and Carnap's *The Logical Structure of the World (LSW)*, as referential points of Logical Positivism, I turned to that which is really achieved in the works—the elaboration itself—and thence—a definite structure of mutual overlap. Aiming at doing this, I previously had had to devise a strict model of the *TLP*.

I will expose the model starting with the formal, logical core, simulating, in a way, a biographical approach (as Wittgenstein did in the *NB* and *PI*).

First of all this formal core is not quite a logical system in the usual sense of the word. With it I am alluding to the well known fact that the *TLP* does not admit axioms and laws of inference (5.132) but solely a method of truth-value analysis using Peirce's and Frege's truth-tables.

The second feature is that the theory is defined on a finite dimensional domain. Namely, besides many other implicit and verbal claims, 5.52, explicitly states: $N(\bar{x}) = \neg(Ex) fx$. As $N(\bar{x})$ is the logical product of the negations of the values of the propositional variable (5.501, 5.502, 5.51), the equation is valid only on a finite dimensional domain. For only then does the application of DeMorgan's law yield the equation.

The third characteristic is that bound variables are given an exclusive interpretation in contradistinction to the customary inclusive interpretation. So it is not $(Ex, y) (f(x, y) \& x \neq y)$ but $(Ex, y) f(x, y)$ (5.531), with the word *different* being taken care of by the distinctiveness of the variables. The variables, however, are no longer universal since their ranges are not allowed to coincide. It is true that the standard derivation of paradoxes will not come through, as Wittgenstein immediately perceived (5.535), but later elaborations (e.g. Hintikka's) of the idea turned out to be abortive; for such logic still contains contradiction.

The system uses the following basic symbols: *names*, *elementary propositions*, *operations*, and *propositions*. Names are variables of elementary propositions. Elementary propositions, none of which is false, are that which in usual logics are simply called propositions, and a vast number of which, if they were not to be determined in advance (5.555), would be meaningless (3.321—8). The latter feature concerns the metaphysical habit of employing any statement whatsoever in logic. Operations, some of which are e.g. negation and logical multiplication, represent forms of generating propositions one out of another—expressing relations between them. Propositions are expressions stating the operations applied on the truth-values of the constituent elementary propositions. Out of the basic symbols the framework, i.e. logic of the system is built up.

The logic is in fact a pure truth-table method, and as such completely extensional. Meanings are taken care of by extralogical predetermination (6.124) through the unique definitions in use

in natural sciences, as will be shown below. In a way both semantics and syntax are shifted from theory to praxis. So, formal entities, piled up in customary logic and mathematics, should be dismissed as superfluous, and operations over scientific elementary propositions together with the list of various useful and helpful substitutions (tautologies in logic, and equations in mathematics), accumulated in the course of applications (6.342), employed instead. But with it we are arriving in the realm of the *Tractatus*-world (T-World) which is built up around the outlined formal core and which has determined the structure of the core in reverse.

The T-world is not one we can touch or smell, but a list of all the existing relations between all the possible objects which make up its substance (2.04, 2.01, 2.021—2). Its structure is the determined way in which objects are connected in given states of affairs (2.031). Its subject, however, does not belong to it (5.632), and its sense must lie outside of it (6.41). Or to sum up (poet.), the T-world comprises all those models of our world to which natural sciences are to be applied. The T-world itself, based on things, is a historical raw material, and the correspondent T-logic is a tool for activity in an empirical domain. (5.557) "The application of logic decides what elementary propositions there are." This is the ground for Wittgenstein's rebellion against Frege's and Russell's logic and his charging their tautologies with saying nothing. And we, through our scientific praxis, are that which the subject of the T-world should be and which uniquely defines objects of the T-world and, through one-one correspondence (4.0311, 5.53), also names and gives the exclusive interpretation to variables. Thus, objects are those constituents of formal concepts of natural sciences which obey some definite conditions posed by the particular sciences in question (4.127, 4.1271—2, 3.314, 3.36).

How then can we explain the fact that the *TLP* also contains statements (e.g. ethical) concerning something subjective, i.e. beyond the limits of the T-world, over which we should pass in silence and about which we could not speak at all? First this impossibility of speaking is twofold. On the one hand this is because of the fact that the T-world is based on activity and not on futile speculations, and on the other hand it is simply an agitation against the metaphysical and for the scientific approach. Besides, the *TLP* speaks only about the T-world and T-logic using every-day language. The only problem arises when the *TLP* speaks about things which are capable of being expressed in T-logic, e.g. criticising Russell's system, using two different standpoints: the usual one and that of T-logic. Which one is in question can, however, be seen from the context.

The *TLP*, then, considers that part of our world which could be uniquely grasped as being based on a kind of formal system which endeavours to take into account empirical reality, owing, at least, a great deal to the positivistic climate of the time.

I would now turn to Schlick's *GTK*, revealing some points which correspond to the outlined T-Structure. As Schlick, in writing the book, was completely uninfluenced by Wittgenstein, the similarities to be found could also indicate the predetermination of one's approach to problems in a particular milieu.

The *GTK* clarifies the notion of an object, stating that it is a construction defined through scientific knowledge with absolute constancy and determinateness (§ 5). That it must be uniquely designated through (§ 10) "unambiguous coordination (which) means that the same sign is always to correspond to the *same* object" and moreover that (§ 9) "most important and absolutely basic to the whole edifice of knowledge is the case where an object is given by means of a relation in which it stands to other objects". So (§ 9) "to know is to discover a relation between objects" i.e. to constitute a proposition: (§ 8) "Judgements are signs for facts. A judgement designates the existence of relations amongs objects".

The judgements of the *GTK*, named *fundamental judgement* (the equivalent of elementary propositions of the *TLP*), (§ 10) "by virtue of which the system rests directly on real facts" serve (§10) "as a basis (on which) the whole system is erected . . . by a purely logical, deductive procedure". In such a way (§ 10) "every individual judgement in the entire structure is uniquely coordinated to a set of real facts". And as (§ 10) "the set of facts to which the false judgements could justly be coordinated does not exist at all . . . it must be possible to do logic and science without taking negative judgements into account" and this is the "intuitionistic" consequence

of the postulate that (§ 21) “there is indeed no other way to establish truth except through verification”. So, we are brought to the conclusion:

(§ 31) A knowledge of qualities, whether they are objective or subjective, is always obtained in the same way: the qualities are replaced by the sign system of natural science concepts and thus are eliminated from the world picture of exact science.

In sum, a definite knowledge of qualities is possible only through the quantitative method. The life of consciousness is thus completely knowable to the extent that we succeed in transforming introspective psychology . . .—ultimately into physics of brain processes.

As we can see, Schlick significantly enlarged the Wittgenstein part of our world which could be uniquely and firmly grasped. But, while he patiently waited for mankind to do the rest, Carnap tried to hint at how the finished job would look. Starting from the thesis that (*LSW* § 66) “certain structural properties are analogous for all streams of experience”, presupposing the two afore-mentioned works (*TLP* 3—3.1, *GTK* § 40), the *LSW* states that our world is to be thoroughly constructed in a completely extensional way on the basis of actual individual experiences through atomic sentences about them. Objects proper are, of course, dropped from the discussion (§ 84). The *LSW* employs instead signs which we can assign to empirical objects (§ 15) after the construction of the system, by means of pure structure statements, has been carried out (§ 65). As the exposition of the *LSW* is clear, definite and well-known I would just add that *the speech* (*TLP* 7) corresponds to the *structural language* (*LSW* § 75), and *the proposition* (*TLP* 7) itself to the *factual language* (*LSW* § 75).

The differences, not pointed out so far, could be summed up by two questions concerning the applicability and form of the structural elaboration of the world. The *TLP* states that it is that part of the world already treated by the natural sciences to which the elaboration should apply, while the other two works consider that it should apply to the world as a whole. As regards the form of elaboration, the *TLP* “intuitionistically” considers that historically gained natural laws should be treated by means of the extensional mathematical method avoiding all lofty theories; the *GTK* considers that the concrete form of a system is a matter of individual sciences but that in the final analysis the whole world should be quantitatively and deductively treated that we might gain knowledge of it; the *LSW* considers that the whole world should be treated by extensional logic thus gaining *the unity of science*.

In conclusion I would point out that the failure of the misconceived aims of the works is caused on the one hand by the incorrect assumption of a unique extensional logical structure underlying the whole world (around and within us), and on the other by the fact that their approach to the world was not serious enough, failing to take into account the real social, historical, and economic situation. By this I mean that treating an existing situation by means of imaginary futuristic methods is awkward to say the least, while by simply propagating a futuristic picture of the world, we are merely standing on a soap-box at Speaker’s Corner.

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**WITTGENSTEIN, THE VIENNA CIRCLE
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