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CERTAIN CONSIDERATIONS ABOUT THE EPISTEMOLOGICAL
AND SEMANTIC FOUNDATIONS OF LOGICAL INVESTIGATIONS
AND THEIR APPLICATION

1. I would like to express most briefly certain thoughts and considerations of a general character about the epistemological and semantic foundations of logical investigations and their application. Speaking more concretely what I mean is the necessity of a discussion of the philosophical aspects of two basic questions: 1) the essence and sources of the development of research in the field of the so-called pure logic, and 2) the interrelation and interaction between pure and applied logic.

It seems to me appropriate to indicate the motives which are prompting me to bring to the fore that kind of questions and which make me believe that their discussion would be of a principled theoretical and methodological value. With a certain approximation, several basic types of considerations could be adduced, as follows:

First of all, it should be most definitely noted that owing to the fact of the quite rapidly increasing divergence between contemporary logical investigations, the view is of late more and more clearly taking shape among some philosophers that we are faced with a dangerous tendency towards a pluralization of logic. As a matter of fact, the question comes up of whether there is, or is not, unity in contemporary logical investigations. Of course, pluralism denies the existence of such unity.

Second, it could be said that there is an implicit and generally accepted view of the universal validity of logic. But, if logic really is a universal science, what makes it imperative that the universality of logical relations and laws has to be realized through such a great variety of modi of logical universal-

ty? Because we, as a matter of fact, do speak both of a classical and a nonclassical logic, of an epistemic and a deontic modal logic, and so on. But do we not in that way tolerate a logical contradiction in the treatment of the very question of the universality of logical categories, relations, and laws? At that logic's history itself is always there to remind us that like any other developing scientific discipline logic is an open, i.e. an incomplete theory, which is steadily enriching itself with new systems.

Third, to my mind the question continues to be open of the specific distinctive signs of logical theory in the proper sense of the term, which, it is claimed, differentiate it from its various concretizations. This question emerges, say, with regard to the determination of the specific logical status of quantum logic. As a matter of fact, with what right and on what grounds do we speak of a quantum logic as a logic in the proper meaning of the term? Is not quantum logic simply an instance of a (let us call it so) maximum concretization, of nonclassical (polyvalent) logical systems with regard to a concrete object field? Or, is a three-valued logical system of equal valency with a given system of quantum logic?

Fourth, how should, from an extensional and an intensional standpoint, the interrelationship or the interaction be understood between pure logic and applied logic? In other words, ought not applied logic to be considered as such an extension of a given system of pure logic, in which only, and simply determined particular extralogical operations (relations) and constants are included? Or, is not, on the other hand, applied logic a super-concretized interpretation of the logical constant operations (the logical connectors and functors) through definite particular relations and dependences?

I took the liberty of setting forth these motives and considerations in the hope that I will be able to provoke this way an active participation in the discussion of the two questions of a principled theoretical and methodological importance, with which I began. It is not possible for me here to undertake a detailed analysis of these two questions, and I will therefore limit myself to certain considerations of a more general and programme nature.

2. If we cast a retrospective glance at the history of logic, it will not be difficult to find that there is a certain parallelism in the development of philosophical research, on the one hand, and formal logical investigations, on the other. There is a certain correspondence both between the categories of logic and gnoseology, and the categories of logic and of ontology. Of course, the interrelationship between the logical and the ontological categories is of paramount and determining importance. This correlation manifests itself also on a genetic plane: the extension and perfection of the world's ontological image implies a corresponding development and intensification of the divergence trends in the field of the properly logical investigations, or the investigations on the level of the so-called pure logic. But each epoch of logic's history necessarily has its own questions on the level of applied logic, whose scale and importance are determined by the sociopractical needs of the epoch in the broadest sense of the term, i.e. both under the aspect of the codification of the means and methods of theoretical thinking and the theoretical substantiation of science, and under the aspect of the codification of the most general means and methods of the experimental and empirical sources of scientific knowledge. In our times all this assumes a quite immediate and evident form of manifestation. This undoubtedly bears witness both of the achievement of the necessary progress and of the coming to maturity not only along the lines of the general trends in the development of logic, but also of the unquestionably very broad scale of the applied-and-methodological, and even of the applied-and-practical, importance of the various contemporary logical investigations. If it is proceeded in that way, one will in the end establish an objective ontological determination both of the development and the differentiation of the logical investigations on the level of the so-called pure logic, and of the heuristic role of the logical means and methods under a methodological, and even an applied-and-technological, aspect.

In this instance, however, I would like rather to draw attention to the two following questions: 1) Where should we look for the objective ontological grounds for the transition from classical to nonclassical logic? 2) Where should we look for the specific ontological status of deontic logic precisely as logic?

Classical logic not only assumes, but also hypostatizes the rest in the things that make reality. It is only on these grounds that a thing can be predicated as a thing-in-itself, or as a thing essentially different of it. We believe that classical logic's ontological basis is not simply rest, but rather the stationary, i.e. not only the rest of the objects, but equally the steadiness and resistivity of the form of the change, in other words regularity generally. But modern science has clearly shown that it is not rest, but motion which is the essential and basic characteristic of being. If this is so, however, it means that not only science generally, but logic itself has to fix and codify, with the aid of concepts and in a system of concepts, also the transitions between things. And it is but natural that in that case the category of transition should also be acknowledged a status of a logical category, because the transformation of non-truth into truth and vice-versa, is also a process. A typical logical model of this state of things could be found in three valued logic. Further, motion as change contains possibility as its immanent dimension. Hence the system of modal categories presents to us, in abstraction, the logical model of the possibilities in the realization of the modi of the existence of being in a most general shape... In a definite way the questions of the ontological foundations of the constructivistic conception of infinity and hence of the constructivistic explanation of the question of infinity within the system of a constructive logic, can also be connected with this.

Sure enough, the extension of our ontological image of the world in the final count finds a more general explanation in the logical picture of the ontology of being.

But I would like to at once add that here a different essential dimension of the world's ontological picture from a logical viewpoint could also be noted. What I more concretely mean, is that the ontological picture of the world-in-itself is essentially different from the world's ontological picture with a view to the particular ontological status of man's active and creative essence. And, as a matter of fact, it is with man only that we have such a transformation or re-creation of the world, which is conformed to his will and desire, it is with him only that we have a prognostication (irrespective of the latter's degree of approxi-

mation) of the results and advantages of such a transformation and re-shaping of reality for the benefit of man. But reasoning from this fact, the ontological foundation of deontic logic already becomes apparent. In this case, however, it at once becomes clear that deontic logic requires us to quite substantially extend our notion of logic's ontological foundations generally. It is only then that its fundamental character of logic, i.e. the fact that it has not to be numbered as one of the various applied logics (as some philosophers believe it ought to), can be substantiated.

The above considerations, however, general and schematic they may be, show that the presently existing variety in the field of contemporary logical investigations is in reality deeply pervaded with definite unity, a unity which has, first and foremost, its ontological foundations, and hence, definite specifically gnoseological, but also historical-and-genetic foundations. Therefore any interpretation of the variety in the field of logic as logical pluralism, is unfounded.

Such an approach, however, prompts us to believe that the most general, or universal, characteristics of being, which are logic's objective foundation, have not, and probably can not have only one realization modus. We have grounds to believe that under an intensional aspect and in being's deeper structure there are various ranks of universal characteristics and relations, which in reality determine the various types of logical theories. That rank is more essential, which to a greater extent determines the dynamism of being. In this sense the semantics on nonclassical logic is richer than the semantics of classical logic, and so is the semantics of deontic logic with respect to the semantics of standard modal logic. Strictly speaking, however, every logical system is incomplete as from a general semantic angle, because none is sufficient to realize an adequate description of being in the proper sense of the term. Hence logic will always be in a state of permanent development, i.e. it will always remain an open system.

Applied logic differs from pure logic mainly by the fact that by their type the general characteristics and relations it investigates, are not of the rank of universality of the charac-

teristics and relations investigated by pure logic. That is why applied logic is always a concretization of a given system of pure logic.

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KILKA UWAG
O EPISTEMOLOGICZNYCH I SEMANTYCZNYCH PODSTAWACH BADAŃ LOGICZNYCH
I ICH ZASTOSOWANIE

Celem artykułu jest dyskusja pewnych ogólnych epistemologicznych i semantycznych podstaw badań logicznych. Osią rozważań są pytania o 1) istotę i źródła rozwoju tzw. logiki czystej i 2) związek logiki czystej z logiką stosowaną. Autor stara się przy tym uzasadnić dlaczego taki właśnie dobór kwestii posiada zasadniczą teoretyczną i metodologiczną wartość, by po tym udzielić odpowiedzi na postawione pytania.