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Section 6

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A MATRIX MODEL OF SCIENTIFIC EXPLANATION

Logic does not solve the problem of explanatory reason or of "rationality of explanation" in the empirical science. In the frameworks of the Logical theory of explanation, the big premise (law) and its connection with little premise (bringing the circumstances under the law) are not problematised. These relations are synthetic. Their construction solves the problem of-explanations. Logic hides the fact that explanance grounds itself through successful explanation. Validity in explanation - that is a functional conceptual synthesis, but not a logical analysis.

The standard explanatory reason in experimental science - that is the scientific law. The main problems in the logical tradition of understanding the law are: the problem of logical form and the problem of empirical validity. It turns out (Ayer, Carnap, Brightwite) that logical universality of law makes impossible its empirical validisation.

The solving of these problems is possible outside the frameworks of formal logic. Empirical knowledge can be understood as a processual organization of concepts about the world. *In the context of this organization law appears to be neither a logical nor an empirical structure.* It is a component unit of a synthesized strong structure with independent empirical definitions of its notions. Its purpose and function is the organization of types of data, entering the horizon of the expansion of the theory in experience. The law is theoretically autonomous, not appearing as logically universal. Its "universality" is conditional – this is the universality in the frameworks of the theoretical subject. Its validity is conditional too. It is a result of an interpretation, not of a direct

drawing of facts. The scientific law does not found, it is founded (justified) by the successful explanation through its explanatory function.

In the nomological model of explanation of Hempel-Oppenheim explanandum is drawn logically from the explanance. But if explanation is a logical conclusion, it is analytical and does not give new knowledge. But in fact it's evident that explanations give new knowledge about some facts. Explanation, therefore, is not a question of logics. In the nomological model explanatory synthesis is indirectly performed in the structure of the very law and in the bringing the conditions under the law. It is necessary to perform these decisive steps manifestly. And that means the construction of a new – alternative pattern of scientific explanation. It is especially important for the interpretation of biological, sociological and psychological explanations, as much as for the understanding of the relations between explanation and understanding.

The *matrix model of explanation* is an alternative of the nomological beyond logics. It realizes the idea of explanation as a *conceptual synthesis*, amplifying descriptonal structure. It does not model a logical following, but *projection and synthesis*. Law is a synthetical identity of theoretical concepts and it acts like a matrix, organizing the structure of facts in the process of projection, amplifying it from descriptonal into explanatory one.

Such a model manifests, that explanation synthesizes new knowledge. It allows typologisation of different types of explanation in physics and outside it. In the frameworks of this model is seen that functional explanations in biology and sociology are scientific and mature enough, that there is not a gap between the structure of understanding in cultural knowledge, and the structure of explanations in natural sciences.