

The foundation of an Institute of Formal Ontology in Warsaw

Evaluated and Recommended by Prof. Dr. Dr. Hans Burkhardt, University of Munich

Characterization and content of Formal Ontology

Nino B. Cocchiarella has characterized Formal Ontology in his article in the Handbook of Metaphysics and Ontology from 1991 in the following way:

Formal ontology is the result of combining the intuitive, informal method of classical ontology with the formal, mathematical method of symbolic logic, and ultimately identifying them as different aspects of one and the same science.

This is a valid and appropriate description of this new philosophical discipline, introduced by Edmund Husserl (1859-1938) in his *Logical Investigations*. It shows that the well known traditional ontological systems both in their informal and their formal logic-mathematical Gestalt are part of the formal ontology

If we look at two aspects of ontology, namely on the one side on the problem of universals and on the other on the three relations which are fundamental for ontology, namely substance-accident, the four different causes, and part whole, we get different ontologies as objects of research.

1. Nominalism in the sense of individual ontology. In this case we have no universals, but only individuals and names for these individuals. This ontology is in near acquaintance to the ontologies of Suárez and Leibniz and in modern times to the ontologies of Wilfrid van Orman Quine (1908-2000) and Nelson Goodman (1906-1998). Because these individuals can also be interpreted as parts, this ontology comes near to mereology, especially in the philosophy of Nelson Goodman.

2. Strong Realism is the realism in the sense of Plato. In this ontology, characterized as *universale ante rem*, the realm of Ideas is the only real ontological domain, and the phenomena, i.e. the domain of the entities of our world, has the relation of *metexis* to the ideas, i.e. the relation of certain ontological dependence.

3. Moderate Realism is the ontology which was held by Aristotle and the Aristotelians. This ontology, also called as *universale in re*, is ontologically founded on the relations of the inherence of accidents in a substance and of the extensional or intensional containment between natural kinds. These two kinds of relations lead to the ontology of categories on the

one hand and the ontology of natural kinds on the other. The logics of this ontology are first order predicate logic and modal logic.

4. The ontology of concepts in the form of epistemic or post rem ontologies is the ontology of conceptualism, in the history held for example by Abelard and William Ockam. In this case we understand the psychological aspect of the concept, the *conceptus subiectivus*, as a mental act and establish thereby the ontology of these acts.

The purely epistemic conception of philosophy also is characteristic for Kants approach and his system, and was acquainted in a special version by the late Husserl in the form of a transcendental logic. If these forms also can be called ontologies, is dubitable, but their ontological status is at any case discussed.

There are also philosophers in the history of philosophy such as Avicenna and influenced by him Thomas Aquinas who used these three kinds of universals and worked with them. Thus Thomas spoke of a *triplex status essentiae* or a threefold state of universals: in the Ideas, in the things and in our mind. And this triplex status is both the precondition of our perception and the foundation of a correspondence theory of truth.

All these different forms of ontology have relations to special logical forms and systems, and the historical fact is that logic first was developed by mathematicians like Frege, Russell, Brouwer and Gentzen. Although ontology is the basic discipline of philosophy it is dependent on logic, and this means on logical structures such as axiomatization and the formal theory of consequence.

Mereology

A special case is the part to whole relation or mereology as an integral part of ontology. Term and concept were introduced by the Polish philosopher Stanislaw Lesniewski (1886-1939), who, following the tradition of Husserl, has invented the first calculi of mereology. These systems were conceived as ontological systems.

Therefore mereology was the object of research especially in Poland, and was also exported by Polish philosophers and logicians to England (Lejewski) and USA (Sobocinski). Today we observe a Renaissance of mereology, especially represented by young analytic philosophers in the United States. Hand in hand with this systematic use of mereology and mereological methods, we observe also investigations in the history of mereology and in the form of applied ontology. In this sense mereology is an actual branch of contemporary ontology.

Besides that we find in the Investigations a theory of extensive and intensive magnitudes, i.e. a measurement theory, and a theory of continuants and of the existence of the latter in space and time.

Polish Tradition in philosophy, logic and ontology

The grandfather of Polish philosophy is Franz Brentano. One of his pupils, Kazimierz Twardowski (1866-1938), was the founder of the Polish School of Logic. His most important pupils were Stanislaw Lesniewski, Jan Lukasiewicz (1878-1956), Kazimierz Ajdukiewicz (1890-1963) and Tadeusz Kotarbinski (1866-1961). The eminent logicians and mathematicians of this school were Alfred Tarski (1901-1983) and Adolf Lindenbaum (1904-1944). Jan Lukasiewicz and Joseph M. Bochenski (1902-1994), together with the German philosopher Heinrich Scholz (1884-1956), were the founders of the history of formal logic.

Father Bochenski told me that in 1939, when the German army invaded Poland, there were more than hundred Polish logicians, Jews, Christians and Catholic monks. Many of them emigrated to the United States and England; some were killed by the Nazis and some survived even in Poland.

The most famous philosopher after the Second World War in Poland was Roman Ingarden (1893-1970), a pupil of Husserl. Ingarden was a phenomenologist and ontologist and not an analytic philosopher. But his contact with the Polish analytic philosophers strongly influenced his thinking and his method. The differentia specifica between Polish philosophy and the philosophy of other communist countries of this period was the fact that Polish philosophy was not dominated or even exhausted by Marxism-Leninism.

After the decline of communism Polish philosophy could immediately continue this tradition. Thus we find analytic philosophers, logicians and mereologues. The solid training in logic marks the difference between the Polish philosophical milieu and the milieu in other European countries, for example in Germany.

The place of an Institute of Formal Ontology in Warsaw

From these observations and characterizations of both traditional and contemporary Polish philosophy it follows that the Polish Academy of Science in Warsaw is an ideal place for the foundation and further organisation of an Institute for Formal Ontology. Positive preconditions are the solid Polish logical milieu, the high estimation of the Polish logic and

philosophy by the foreign philosophers to be invited for scientific collaboration and the intensive contact which already consists with some of these philosophers.

Arguments for a foundation of an Institute of Formal Logic

Important criteria for the foundation of a new scientific Institute are the actuality of the themes of research and the potentiality of further research. In this case the situation is quite clear. Ontology and especially formal ontology in contemporary philosophy are a generally accepted domain of research. There are many themes which are candidates for further research, because ontology is on the one hand an old science, which in our culture starts with Plato and Aristotle, but on the other there are new problems in context with a further formalization and the origin and emergence of new branches such as regional ontologies and special ontologies such as medical ontology or the ontology of other social fields.

Given these different kinds of formal ontologies comparative formal ontology is the proper domain of many issues and disputes in metaphysics and the methodology of deductive sciences.

The consequence of my argumentation is that I recommend the involved persons and institutions to establish an Institute of Formal Ontology in Warsaw.

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