ABSTRACTS

A4.3 Historical Aspects of Logic

Individual Names and Identification in Late Medieval Epistemic Logic

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In late medieval times, epistemic logic was treated as an extension of modal logic. A widely discussed question pertained to epistemic consequences with demonstrative pronouns or proper names. Some medieval problem sentences and their analyses are of the same kind as those discussed in contemporary epistemic logic. After a brief survey of these matters, I would like to discuss the differences between two influential fourteenth-century approaches.

In his On Knowing and Doubting, William Heytesbury writes: "For in the divided sense a consequence of this sort is perfectly valid: 'This I know to be running, and this is Socrates: therefore Socrates I know to be running'; analogously, 'This I know to be true, and this is A; therefore, A I know to be true' ... for the inference is an expository syllogism." (De scire et dubitare, 3rb).

John Buridan summarizes his analysis of epistemic problem sentences as follows: "The whole difficulty turns on whether this follows: 'I know some star to be above our hemisphere; therefore, some star I know to be above our hemisphere' ... And if it were asked whether of the sun he knows that it is above, I would say yes, if the sun is above, and no, if it is not. Therefore I concede that although of the sun he knows that it is above, still he does not know whether of the sun he knows this." (Summulae de dialectica 901-902)

While agreeing to the de re conclusion of the expository syllogism in Heytesbury’s example, namely $\exists x(x ? s \circ KaFx)$, Buridan argues, as distinct from Heytesbury’s followers, that this follows whenever a knows de dicto about things of which one is s, whether a knows this or not. Why did others not accept this?

John Foxholes’s Tractatus de propositione per se nota. Reconstructing the scotistic debate on the status of axioms.

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John Foxholes’ 15th-century treatise on propositiones per se nota (a priori propositions, axioms) has failed to attract the interest of scholars of the period. However, the treatise is
a privileged object of study in the reconstruction of Duns Scotus’s and other scotistic positions within the debate on the status of axioms. The main theme of the treatise is to see whether a priori propositions can be known without having distinct knowledge of the terms constituting this proposition. Foxholes answers in the affirmative by repeating Franciscus Mayronis’s criticism of Petrus Aureoli’s position. Within the subordinated sciences, axioms are known through comprehension of their constituting terms, the terms in turn referring to objects. However, to know an object is to know its essence or ratio, which is not the case in the subordinated sciences. Only in metaphysics objects are studied according to their essence. Therefore, Petrus Aureoli’s opinion - who held that the subordinated sciences include the knowledge of a priori propositions - is false. This criticism is tied up with another of Mayronis’s theses. The evidence for the truth of an a priori proposition has to be given intrinsically, thereby excluding the possibility that the truth of these propositions can be known through anything else than through the knowledge of the constituting terms. One can therefore conclude that an axiom can be known in two ways: metaphysically through the knowledge of the essence of the things that the terms refer to, or through the knowledge of these terms alone. According to Foxholes, this solution is given by Nicolas Bonetus: propositions can be known either through “opinion” (terms) or “science” (essence). To conclude, Foxholes presents a development within scotistic thought that seems to adopt a distinction between the relative and absolute truth of axioms, tied up with the subordination of the different sciences.

**Descartes' Logic and the Paradox of Deduction**

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Descartes is among the many philosophers who have noticed an apparent conflict between the validity of logical deductions and their usefulness. If the conclusion is not somehow contained in the premises, the deduction is not valid. If, on the other hand, the conclusion is contained in known premises then the conclusion is also known. This means that any deductive steps which help us arrive at that conclusion must be superfluous, for they can only produce something that is already known to be true. We can call this the Paradox of Deduction.

The Paradox of Deduction arises in the context of modern formal logic, but it is also a problem for the syllogistic logic employed by the Scholastics. Descartes in his Rules for the Direction of the Mind used a version of the Paradox to argue that syllogistic logic is useless for helping to expand the scope of our knowledge; it is, at best, a tool for presenting results obtained by other methods. Descartes’ own logic is psychologicist and informal insofar as a good deduction requires that each step in a deduction be perceived as certain as one proceeds from premises to conclusion. And it purports to resolve the Paradox of Deduction by explaining how a previously uncertain conclusion can be made certain by performing a deduction.
This paper extends the existing literature on the subject by providing a new interpretation of how, in Descartes’ logic, the conclusion is contained in the premises. The key is to locate a component of content that is identically present in every step of a successful deduction. An additional benefit of the interpretation is that it explains how the steps in a deduction are necessarily connected to one another.

Kant's Influence on the Herbartian Conception of Logic

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In the early 1830s, there arose a lively discussion concerning the possibility and the justification of logic not only as a philosophical discipline, but also as the formal and fundamental theory of science which might clarify not only the logical, but also the metaphysical foundations of science. The reform of logic was sought from different directions both by philosophers and mathematicians. On the one hand, many participants opposed Hegel’s attempts to unite logic and metaphysics — on the other, reform was sought in order to overcome the old Scholastic-Aristotelian tradition of logic. As the discussion moved on, it became commonplace to accept the idea that the possible reform of logic must go hand in hand with the reform of philosophy. The Kantian appreciation of mathematics against its Hegelian devaluation became rehabilitated even though the question about the relationship between logic and mathematics remained a difficult one.

The 19th century discussion concerning the reform of logic can be properly understood only by first discovering the relations between logic and philosophy at that time. During that time the reform of logic was quite generally regarded as a philosophical issue. Therefore perhaps the best way of approaching these developments is to begin with clarifying Kant’s conception of logic in the overall framework of his critical philosophy. The focus of my presentation is on the early and mid-19th century Herbartian interactions between philosophy and logic. First, I discuss the nature and the place of formal logic in Kant’s philosophy. Kant’s division of logic into its general and transcendental parts had an important influence on the disagreements between the Hegelian metaphysical idealists and the Herbartian empirical realists. This conflict of opinions was the most important source of different early and mid-19th century attempts to find a reform in the field of logic.

I aim to show that the revolutionary development of logic during the 19th century can only be understood properly by relating its emergence to the preceding philosophically-oriented discussion on the reform of logic.