INVESTIGATIONS INTO THE MEANING OF LOGICAL CONNECTIVES

Quine’s famous meaning-variance argument in [8], encapsulated in the provocative slogan “change of logic, change of subject”, implicitly assumes what can be called semantic maximalism for logical connectives (see [9]; ‘semantic maximalism’ for short), that is, the idea that all of the model-theoretic or proof-theoretic elements associated to a connective contribute to its meaning. Semantic minimalism --the idea that only some of the model-theoretic or proof-theoretic elements associated to a connective contribute to its meaning-- has won many advocates during the last two decades after its initial formulation and defense by Putnam [7]. Which of those components do actually make a semantic contribution and why them and only them do so is far more controversial.

In the proof-theoretic side, the distinction between local meaning (embodied in operational rules for connectives) and global meaning (obtained when structural rules are taken into account) is more or less widely accepted and has been the preferred setting to formulate and defend semantic minimalism [3], although there have been model-theoretic attempts [2, 9, 5]. But although it is pretty clear that a natural deduction system does not do the required work and a sequent system is preferable, it is dubious that it is enough [4, 6]. In particular, problems arise when one tries to combine views on the meanings of connectives and stances on issues like that of meaning-variance (difference of logic implies difference in the meaning of their connectives) or logical pluralism (there is more than one true logic, see [2]), so our formal and conceptual toolboxes need to be enriched [1], whether by deploying existing techniques or notions in new ways, or by further refining concepts by letting some of their traditionally equivalent guises come apart.

Finally, there is the recent relativist account in [10] according to which questions of meaning-variance is context-sensitive and interest-relative.

In this symposium we aim at examining the problem of the meaning of logical connectives by dealing with the following questions and some other in the vicinity:

- “(generalized) Putnam’s challenge”: Which components associated to a connective are meaning-contributive and why?

- If logical notions are maximally general, can global meaning, with the particularities introduced by the structural rules, be considered as a genuine kind of meaning of a logical notion?

- Proof-theoretic notions and methods have dominated the debate on semantic minimalism. Is there a reasonable way to at least reproduce in model-theoretic terms the good features of the usual proposals? Are there any prospects to get additional illuminating insights when framing the discussion in model-theoretic terms?

- Can there be a uniform (minimalist) account of the meaning of connectives for object language connectives and structural connectives (like the comma or the sequent indicator), or including even the notion of validity or consequence?

- What is a meaning for a connective after all? In particular, how is meaning to be defined to better assess judgments of meaning-variance, synonymy and the like? How does meaning relate to, for example, content?

Minimal references

Abstracts

Talk 1. Reassessing the Quinean challenge
Patrick Allo, Free University of Brussels

The goal of this contribution is to take a few steps back, and put in perspective our reasons for trying to avoid meaning-variance as a means to, first, save the possibility of genuine rivalry between different logics, and, second, safeguard the very idea of logical revision. One reason for this re-examination is that if we understand better why meaning-*in*variance across logics matters, we will also have a better idea of which kind of answer is satisfactory. Indeed, the hope could be that we can also delineate which types of counter-objections can summarily be dismissed once a good answer to the Quinean challenge has been given.

As part of the proposed inquiry, three complementary perspectives will be adopted. First, we will reconsider the stances of Carnap and Kreisel with respect to formal and informal rigour; second, we will take some lessons from the distinction between data and phenomena (as used in the context of conceptual modelling by Löwe and Müller); finally, we shall revisit the problem of meaning (in-)variance in informational conceptions of logic, and particularly in view of the inverse relationship between logical discrimination and deductive strength.

References

Talk 2. Displaying model theory
Luis Estrada-González, National Autonomous University of Mexico

Most attempts at showing a meaning-invariance between logical connectives of different logics have been carried out in rule-based theories and methods. In this talk I will advance a model-theoretic approach to meaning-invariance with two specific components. The first of them is what I call “the displaying of the model theory”, that is, a presentation of truth-conditions in which one could display any element of a specific truth-condition, just as display calculi in proof-theoretic semantics are intended to display any part of a sequent. The second component is the identification of those elements of specific truth-conditions that are meaning determining (roughly, the type of truth-condition it is) and those that are not (roughly, anything else that makes a type of truth-condition into a specific truth-condition). If there is time, I will advance an argument against the idea that global meaning should count as a meaning for a logical notion and one against the relativist approach of Shapiro.

References


Talk 3. Structuralism vs intra-theoretic pluralism
Francesco Paoli, University of Cagliari

In two recent papers ([2], [3]), Ole Hjortland has defended two different, though related, versions of logical pluralism: structuralism and intra-theoretic pluralism. Structuralism is the view according to which, not unlike what happens in other domains of science, the transition from an old to a new
logic is a process in which “the mathematical structure of the preceding theory survives as a special, limiting case of the new theory” [3]. Intra-theoretic pluralism “is a pluralism not of logical theories but of logical consequence relations within one and the same theory” [2, p. 11]. I will compare these two viewpoints and discuss the extent to which they can salvage the current revisionary debates in logic, guaranteeing that there can be genuine rivalry between different (propositional) logics. A substantial part of this inquiry will involve the attempt to move beyond the individual examples of logical competition offered by Hjortland to instantiate his two concepts, and to formulate a general and purely abstract sufficient condition for genuine rivalry between logics – along the lines of what was done in [4] in the context of a minimalistic account of the meaning of logical constants. In this process, I repeatedly resort to the toolbox of abstract algebraic logic, in particular matrix semantics. The difficulties encountered along the way shed some light, in my view, on the limits and prospects of both approaches. In passing, I also comment on Allo’s rejoinder to [2] (his [1]), centered on the role of synonymy.

References


