Extended Abstract

Constructionism in Logic

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My goal in this talk is to further develop the informational conception of logic proposed in [1] by motivating and exploring a methodology for logical practices (using, developing and thinking about logic) that is inspired by the methodology from the philosophy of information, with particular emphasis on its constructionist metaphilosophy [2]. Against this background, I'm interested in the following phenomenon: If a formalisation-process leads to the refinement of one or more concepts we are interested in (either because we are explicitly formalising them, or because we use them to talk about the concepts we are actually formalising), this often leads to a "splitting of notions". In that case, the uncareful use of the original notions in combination with their refinements often leads to fallacies of equivocation. As suggested in [3], the development of a design-perspective on logic is meant to show that this phenomenon is a reason to abandon the original concepts, and not a reason to cast doubt on the proposed refinement. As a corollary, constructionism is logic contributes to the motivation of a pluralist perspective on logical practices.

The proposed view has affinities with several contemporary and historical perspectives on logic.

1. The emphasis on design is akin to Carnap's own "logic first" approach, which he contrasted with a "philosophy first" approach to logical theorising, as well as to his views about explication and conceptual engineering [4].
2. The proposed view also resembles the suggestion that our logical practice of formulating a logic should be seen as an entirely standard form of theory-building about a given subject- matter (Logic), rather than as the manipulation of Logic itself [5].
3. The application of insights from the method of abstraction (the methodological recommendation and formal tool to make explicit the interface we use to access the system we study) to the use and development of logic is entirely in line with the logic-as-model view proposed by Shapiro and Cook, and especially with its emphasis on the need to negotiate tradeoffs [6].

Even though the main lines of my proposal can be described in terms of the above views, I will develop it from first principles and focus explicitly on *poietic* aspects of actual logical practices.

The basic tenet of constructionism as an epistemological thesis is that we can only know what we make. Our only knowledge is a maker's knowledge; a knowledge of the artefacts we built and thus can examine from within (white box) rather than a user's knowledge we acquire by observing what is given from without (black box). As Floridi puts it: "Knowledge is not about getting the message from the world; it is first and foremost about negotiating the right sort of communication with it. (…) [C]onstructionism is neither realism nor constructivism, because knowledge neither describes nor prescribes how the world is but inscribes it with semantic artefacts." [2]. As a methodological recommendation, constructionism is less radical, and only calls for the complementation of conceptual analysis with conceptual engineering. This is the sense in which I'll employ the term.

When treated as a core ingredient of the philosophy of information, constructionism works hand in hand with the method of abstraction [7]. Whereas constructionism emphasises the need to engineer our access to the world, the method of abstraction provides the concepts that allow us to think about different ways of accessing the world, but also draws attention to the fact that since we can only know our models of the world, we cannot directly compare a model with the world (our only knowledge is by proxy), but only compare different models. This does not only imply that we can only compare levels of abstraction, but also that there is no most general, maximally precise or otherwise epistemically or ontologically fundamental level of abstraction that could play the role of final arbiter (for all means and purposes a direct access).

As I shall argue, we can think about logics as semantic artefacts that allow us to access the world for descriptive as well as for deductive or inferential purposes. This is already a pluralist assumption, for if a logic acts as an interface or a communication-channel, we have no reason to assume that there is a single best all-purpose logic. Indeed, pluralism about levels of abstraction can naturally be associated with two important theoretical virtues of logical pluralism, namely:

1. The freedom to make certain distinctions and/or fudge some other distinctions, and
2. The freedom to outlaw certain expressions.

One of the most visible tasks of the development of a formal logic is the design of a formal language. Since such formal languages are almost by definition artificial languages, the description of the rules that govern that language (formation-rules, truth-conditions, formal inference-patters) is much closer to conceptual engineering than it is to conceptual analysis. Narrowly conceived, language design is an uncontroversial example of process that has to result in an artefact that has to meet certain specifications (a perspicuous notation system or well-behaved language), but what would it mean to consider logical theorising as a whole as a design task? Highly simplified, such a view on logic would mark clear departure from traditional logical analysis, for where successful logical analysis results in a formal account that agrees with the data (something that is given), successful logical construction results in a formal account that meets a set of self-imposed specifications, which includes but is not limited to agreement with the data.

An understanding of logical theorising as a whole in terms of meeting certain specifications gives a more radical pragmatic slant to the question of logic choice. It's the pragmatics behind what Shapiro

calls the negotiation of tradeoffs within his logic-as-model perspective, or what I call the balancing the logical virtues of deductive strength and discriminatory power (the ability to tell formulae apart).

Putting this on the table raises the further question of what a specification for a problem in logical theorising might look like. If we understand a specification as a criterion for correctness and malfunction relative to a given level of abstraction [8], it is clear that in such a context success does not merely depend on general theoretical virtues, but also on context and/or application specific norms. By further developing this suggestion, we should arrive at an account of "logic-specification" that guides our design decisions in the sense that it tells us how to deal with tradeoffs between different desirable formal features. As a corollary, it also further embeds a logical pluralism within the methodology of the philosophy of information, since it is consistent with the view that some logics are more general than others, but also recognises that wider applicability always comes at a cost.

References and Notes

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