Methodological Issues for the Logic of Questions and Commands

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ABSTRACT
There has been much recent interest in logics for questions and commands. The authors approve, but they argue that methodological issues must be addressed, before it is possible to understand what such logics are for and what they should be like. In particular, the authors deny that the formulas in such logics correspond directly to sentences in ordinary language. Logic is not linguistics. What then are the semantics for the formulas of logics of questions and commands? The focus here is mostly on questions. The authors argue that logics designed to capture the conditions for correct reasoning involving questions require a semantics that treats question-answer pairs as values. They also argue that formal dialogue approaches to the logic of questions should be interpreted in the light of the denial that logic is about language.

Keywords: Commands, Dialogue Logic, First-Order Logic, Formulas, Questions, Speech Acts

1. INTRODUCTION
The logic that philosophers and mathematicians are most likely to know is classical first-order logic. Many theorists are also familiar with higher-order, modal or other extensions of it that are taken to shed light on inferences involving numbers, properties, time, the evolution of belief, obligation and much more. Also widely studied are intuitionistic, relevant, para-consistent, non-monotonic and other logics that formalise restrictions of, or deviations from, classical inference patterns.

A simple fact about all such logics is that while they may tell us much about inference patterns that hold among the declarative sentences of natural language, they say virtually nothing about inferential patterns involving other speech act types, and especially interrogatives and imperatives. Our focus in what follows is on interrogatives and imperatives, and we hope that the morals we draw for these generalise to other constructions, insofar as they are relevant to inferences.

DOI: 10.4018/jcini.2012070101
Associated with each of the standard logics mentioned above are semantic accounts that are candidates for elucidating the propositional content of declarative sentences. But “standard” research into logic has largely ignored interrogatives and imperatives. Or so it is alleged. In response, to rectify matters, various logics for questions or erotetic logics (see Wisniewski, 1995), and logics for imperatives or imperatival logics (see Girle, 1996; Segerberg, 1990) have been proposed. We applaud these developments and hold that they shed light on the roles of questions and commands in inferences.

However, we deny the foregoing allegation that the need for these logics is due to some special connection between more “standard” logics and declarative sentences. Rather, we argue, it arises because these standard logics can be interpreted as attempts to reveal the inferential properties of propositions, rather than of any linguistic expressions or speech acts. These logics are not fit for analysing aspects of language or communication at all, not even when the language is restricted to declarative sentences, or the communication is restricted to assertions. In order to study sentences or illocutionary acts, we need logics that look more like the erotetic and imperatival ones currently on offer. These might, in some good sense, be built up from classical, or another “standard” logic, but this does not mean that logics for questions and commands are “extensions of” standard logics. Rather, they are formal systems that track the relationships among illocutionary acts, in order to illuminate reasoning and argumentation.

Once we see this, we are in a good position to consider what features ought to be had by formalisations of arguments involving questions and commands. We will suggest, in particular, that question-answer pairs, rather than questions themselves, ought to be the primary units of semantic evaluation, in inferential moves involving questions. We will have less to say about commands, but we think our treatment of questions extends to them fairly naturally.

2. ANALYSING INFERENCES WITH QUESTIONS AND COMMANDS

Consider an arbitrary declarative sentence.

(1) *The figure drawn on the board is obviously a square.*

Much can be said, some of it confidently, about what that sentence entails. We can agree that (1) entails the sentence:

(2) *Something is obviously a square.*

and logic has much to say about the formal features of (1) and (2) that make this the case. (1) also entails the sentence:

(3) *The figure drawn on the board is a quadrilateral.*

though theorists disagree about how to explain this entailment. By contrast, given an interrogative sentence like:

(4) *Is George Washington a capital city?*
Making Meaning in Computers: Synthetic Ethology Revisited
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