Donaldson's "Reading the Book of the World"

Handout, Metaphysics Seminar 2/3/15

Preview: Donaldson denies Sider's claim that there are joint-carving quantifiers. (In general, Donaldson does not like Sider's distinction between "elite" words and "plebeian" words, but his discussion will be localized to Sider's discussion of quantifiers.) Donaldson's plan in his own words: "I'll describe a method for excising the first-order quantifiers from a theory, using 'predicate functors' in their place... I'll respond to an objection to the proposal, based on a paper by Jason Turner. In Sects.5 and 6 I'll argue that we're not in a position to know whether it's the theories which use quantifiers or the theories which use predicate functors that are more epistemically virtuous. In Sect.7 I'll reject a position according to which both quantifiers and predicate functors are elite." We'll follow Donaldson on this journey.

1 Why think $\exists$ is elite in the first place?

We need an epistemic principle here. Donaldson takes the following principle to be one Sider wants:

The indispensability criterion: We are justified in believing that a term is elite just in case we are justified in believing that either it or a synonym occurs in all of the most virtuous total theories...we are justified in thinking that an expression is elite just in case we are justified in thinking that the expression is indispensable.

Sider thinks that the existential quantifier (let's focus on this quantifier throughout) is indispensable.

2 Excising the Quantifiers

We have sentences like "There is an electron" which Sider will have us write as "$\exists x$[x is an electron]". Replace such sentences with "Electron!" or "Electronhood instantiated here!"

But as you may expect, this ultra-sophisticated method won't work for replacing every sentence of FOPL containing quantifiers. So instead we should appeal to predicate functors. Quine devised a language using predicate functors instead of quantifiers. It works like this:

(I couldn't find all the predicate functor symbols in Tex; so, we're going to do this the old school way: on the board!)

Since we can use Quinese to capture all the sentences of FOPL (that don't feature names) without using quantifiers, Donaldson thinks this shows that quantifiers are dispensable after all. So we should not believe that any quantifiers of FOPL are joint-carving. A bummer for Sider (or *is it*?)

3 Turner's argument

Jason Turner (2009) thinks, "not so fast!". He has an argument that first order quantifiers are synonymous with the deltas of Quinese. So the quantifiers are indispensable after all!

Argument:

P1. The quantifiers of FOPL play two roles: the "number of pegs" role and the "variable binding" role. We can rewrite sentences of FOPL, distinguishing these two roles by using lambda abstraction. For instance $\exists x \exists y$[(x is a rabbit $\wedge$ y is brown) $\wedge$ $\neg$ x =y] turns into $\exists\exists$ $\lambda x \lambda y$[(Rabbit (x) $\wedge$ Brown (x))$\wedge$ $\neg$ x =y]. Call the language that results from separating the roles, Lambda FOPL.

P2. The point of functorese is to do away with quantifiers proper, the things that play the "number of pegs" role.

P3. From 2, we can construct a version of Quinese with lambda expressions, Lambda Quinese. This is a fine variant of Quinese because it still does away with quantifiers proper. A sentence of Lambda Quinese is as follows $\Delta\Delta\lambda x\lambda y$[(Rabbit (x) $\wedge$ Brown (x)) $\wedge$ $\neg$ x =y].

P4. We can get a sentence of Lambda FOPL from a sentence of Lambda Quinese just by substituting the quantifiers for deltas.

P5. Turner's Translation Principle. Suppose L1 and L2 are languages that are exactly alike except that, where L1 has an expression α; L2 has a different expression, β. If ϕ is a sentence in L1 that uses α, we write it as '$\phi\alpha$', and '$\phi\beta$' will be the expression of L2 that is just like '$\phi\alpha$' except that β is replaced everywhere for α... If every term (other than α and β) is interpreted the same way in L1 as it is in L2, and if the speakers of L1 utter '$\phi\alpha$' in all and only the circumstances in which speakers of L2 utter'$\phi\beta$' then α and β have the same interpretation also.

Conclusion: The deltas of the Lambda Quinese are synonymous with the quantifiers of Lambda FOPL.

The quantifiers are joint-carving after all! Let's discuss:

- Premise 1
- Does the argument establish that the quantifiers of FOPL are joint-carving?
- What about Turner's Translation Principle?
- Donaldson's response. He introduces "New Quinese"

4 Is either theory more epistemically virtuous?

What are the virtues? Donaldson helpfully makes us a list:
(1) Consistency with the empirical data. *same for FOPL/New Quinese*
(2) Predictive power. *same for FOPL/New Quinese*
(3) Other aesthetic virtues: elegance, beauty and so on. *who cares*
(4) Simplicity. *Sentences of FOPL tend to be shorter but FOPL has an infinite lexicon. New Quinese yields long, unwieldy sentences, but it has a finite lexicon.*
(5) Ontological parsimony *Donaldson thinks that questions of ontological parsimony make sense only if you take quantifiers to be joint-carving. He's following Sider here, p.1066 .*

4.1 Dasgupta's Considerations

Perhaps there are other reasons to favor one language over the other as involving joint-carving notions. Dasgupta maintains that we should deny the existence of individuals. This could lend us good reason to think functors are joint-carving while quantifiers are not.

- Why does Dasgupta deny that individuals exist?
- What does Dasgupta's denial have to do with quantifiers?
- Donaldson's Response.

5 Can we just take both predicate functors and quantifiers to be joint-carving?

No, because such a theory will not be the most "ideologically simple" theory. Sider has a response here: Sometimes we should avoid endorsing the most ideologically simple theory if doing so involves "ideologically arbitrariness" (Let's recall our old friends, the truth-functional connectives). Sometimes we must adopt the less simple theory in order to avoid arbitrariness.

Donaldson has two responses:

- First, Donaldson asks, at what point should we stop giving more weight to arbitrariness than complexity? A combined theory may just be too complex!

- Second, ideological arbitrariness is not a theoretical vice! Donaldson's argument:

> "My argument is this: in claiming that ideological arbitrariness is a theoretical vice, Sider is at odds with the received methodological standards in mathematics and the physical sciences. For example, in set theory the symbol $\in$ for is an element of is ubiquitous, but very few writers use any symbol for the converse of this relation: sometimes $\ni$ is used, but this is rare. It is never suggested that this is objectionable because it is arbitrary that $\in$ has been used but not $\ni$. Now it may be that mathematicians are just in error here: it is possible that they are simply failing to acknowledge that their theories have the vice of ideological arbitrariness. But we philosophers should criticise the methods of mathematicians and scientists only when we can back up our criticisms with some very powerful argument. Sider has no such argument." 1072