Philosophy 208
The Language Revolution
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Hamilton College, Fall 2011

Class 28 - Linguistic Nominalism

Chomsky - Katz - Devitt

Conceptualism - Platonism - Nominalism

- In our last class we saw that there are three positions regarding linguistic ontology, roughly parallel to three positions regarding mathematical ontology.
- These are three general classes of views.
- They trace at least as far back as medieval views concerning universals.
- Devitt's nominalism is an attempt to marry the Bloomfieldian ontology with Chomsky's innovative methods.
  - UG
  - competence/performance
- In our previous class, we were still working out Katz's argument for platonism.
- We were discussing the diagonal argument which concludes that there are different sizes of infinity.

The Diagonal Argument

- Our interest in the diagonal argument is in its application to linguistic ontology.
- Katz invokes an argument from Langendoen and Postal to show that linguistic ontology must be platonistic.
- Since Langendoen and Postal use the diagonal argument, we will look a bit more closely at transfinite arithmetic and the set theory which underlies mathematics.
- Cantor's diagonal argument applies both to numbers (as we saw) and to sets.
- Langendoen and Postal need the argument as it applies to sets.
- But the number-theoretic version is easier to understand.

Properties of Numbers, Finite and Transfinite

- Transfinite numbers share some properties of finite numbers, but they have some properties of their own.
- For all cardinal numbers a, b, and c, whether finite or transfinite, the following hold:
  - A1. $a+b=b+a$
  - A2. $ab=ba$
  - A3. $a + (b + c) = (a + b) + c$
  - A4. $a \bullet (b \bullet c) = (a \bullet b) \bullet c$
  - A5. $a \bullet (b + c) = ab + ac$
  - A6. $a^{(b+c)} = a^b \bullet a^c$
  - A7. $(ab)^c = a^c \bullet b^c$
  - A8. $(a^b)^c = a^{bc}$
  - A9. $2^a > a$
- The following properties hold of transfinite numbers, but do not hold of finite numbers:
  - T1. $a+1=a$
  - T2. $2a=a$
  - T3. $a \cdot a=a$
- We demonstrated T1-T3 in considering the infinite hotel.

The Set-Theoretic Diagonal Argument

- In set-theoretic terms, A9 says that $\wp(a) > a$.
  - If A = {2, 4, 6}, $\wp(A)$ = {{2}, {4}, {6}, {2, 4}, {2, 6}, {4, 6}, {2, 4, 6}, ∅}
- In general the power set of a set with n elements will have 2^n elements.
- $\wp(a)>a$ is called Cantor's theorem.
- The proof of the theorem is a set-theoretic version of the diagonalization argument.
- It shows that the cardinal number C of the power set of a set is strictly larger than the cardinal number of the set itself (i.e. $C(\wp(A)) > C(A)$).
- That's enough infinite mathematics; there's a detailed version of the set-theoretic argument in the notes.

The Finitude of Chomsky's Grammar

- Chomsky's generative grammars have two key features that leave them open to Katz's criticisms.
- First, they are constructed like systems of logical inference.
  - From a finite stock of lexical items, we can derive or generate new sentences.
  - We can derive in this fashion a denumerable number of new sentences.
  - But, there is no way to get to a second-level of infinity.
- Second, the generative grammar is a facet of the brain.
  - Any attempt by the Chomsky to expand the tools available to the language user is limited by the finite mind.
- If Langendoen and Postal are correct that there are non-denumerably many sentences of English, then the possibility of a mentalistic linguistic ontology, a theory of language which is native to the physical brain, seems doomed.

Langendoen and Postal Against Generative Grammar

- Langendoen and Postal construct a version of Cantor's diagonal argument.
- Consider the sequence of sentences that Katz calls E:
  - I know that I like cheese.
  - I know that I know that I like cheese.
  - I know that I know that I know that I like cheese.
  - I know that I know that I know that I know that I like cheese.
  - …
- Any conjunction of any pair of sentences in E will be a grammatical sentence, by principles of compositionality.
  - Even an infinite conjunction will be grammatical.
  - Generative grammars will be able to construct the infinite sequence E.
- But, consider the power set of E, ℘(E).
  - Each element of ℘(E) can be turned into a grammatical sentence, by conjoining its elements.
  - But, since ℘(E)>E, there will be non-denumerably grammatical sentences of English.
- There will be non-denumerably sentences of English which discuss only my knowledge of my taste for cheese!

Formal Linguistics and Conceptualism

- The conceptualist worries about the existence of ℘(E), and rightly so.
- There is no way that the generative grammar of the brain could support so many sentences.
  - It generates only denumerably many sentences.
- The linguistic platonist can construct non-denumerably many sentences.
- "On linguistic realism, the existence condition for a string type is the consistency of its specification. If a string type is consistently specifiable, it's a possibility, and if it's a possibility, it exists as a string type. In the case of abstract objects, there is no extensional difference between the possible and the actual" (288).

Katz on Chomsky: Two Errors

- Chomsky seeks an explanation of human competence with language.
  - Language, being a natural part of human cognition, is essentially psychological.
  - Conceptualism: to study competence, we have, at root, to study human psychology, especially human neurology.
  - Linguistics is a sub-field of neuroscience.
- Katz argues that Chomsky makes two errors.
  - The first is the claim that languages are essentially mental/biological.
  - The second is the claim that the best account of our knowledge of language relies on a native theory of generative grammar.
- Katz argues that languages are abstract objects, and that our best account of our knowledge of language relies on the intuitions about grammaticality, and Katz's autonomous theory of sense.

Devitt's Nominalism

- Devitt distinguishes the study of competence from the study of language.
  - "On my view, a language is composed of the *outputs* of a linguistic competence, symbols that are governed by a system of linguistic structure-rules. That is the reality of language. And the task we have been contemplating, and that I wish to promote, is the study of the nature of this reality. This is not Chomsky's task..." (11, emphasis added).
- Devitt agrees with Chomsky's methodological criticisms of Bloomfieldian linguistics, defending generative grammars.
- He agrees with Katz that linguistic reality is independent from psychology.
- But he recoils from Katz's platonism.
- Thus, Devitt returns to nominalism, while accepting Chomsky's methodology within linguistics.

Linguistic Ontology and Methodology

	Linguistic Ontology	Linguistic Methodology
Bloomfield	Nominalist	Taxonomic
Chomsky	Conceptualist	Generative Grammar
Katz	Platonist	Rationalism: Linguistic Intuitions
Devitt	Nominalist	Generative Grammar

Devitt's Challenge

- Devitt's program faces one central task: he must show that the nominalist has sufficient resources for linguistics, that nominalism is compatible with a generative grammar.
- We saw, in both the Chomsky and Katz articles, some arguments against Bloomfieldian nominalism.
- Devitt will have to avoid those arguments, while accommodating generative grammar.
- He will have to argue both for the ontology and his methodology of his proposed task.

The New Nominalism

- The old nominalism (Bloomfield's) relied on a project to catalog and classify the utterances of various speakers in order to produce translation manuals.
- The ontology of this project was nominalist because it referred mainly to speakers' utterances and not to any abstract languages or mental states.
- Chomsky argued that Bloomfield's ontology, which admitted only sentence tokens, could not accommodate the indefinite number of sentence types that speakers could produce.
  - The best account of our knowledge of language focuses on competence, rather than performance.
  - Speakers are competent with a much larger set of possible utterances than they actually produce or understand.
- Katz extended Chomsky's argument, alleging that our language includes non-denumerably many sentences.
- The old nominalism could not account for our competence with non-denumerably many sentences.

Katz and Devitt on Chomsky Against Bloomfield

- According to Katz, Chomsky concludes from the limitations of Bloomfield's austere ontology that linguistics must not be the study of utterances.
  - Instead, Chomsky takes linguistics to be a psychological study.
  - UG is native to the brain, which develops its competence.
  - The shift from utterances to brains is motivated mainly by ontological concerns.
- Devitt thinks that Chomsky's worries about Bloomfield were methodological.
  - [Katz] takes nominalism to have been refuted by Chomsky's criticisms of Bloomfieldian structuralism. Yet, so far as I can see, these criticisms are not of the *nominalism* of the structuralists but rather of their *taxonomic methodology*, a methodology in the spirit of positivism. According to Chomsky, this methodology imposed "arbitrary and unwarranted" limitations on linguistics... (11).
- Devitt wants to save nominalism by showing that Chomsky's methodological criticisms need not entail the falsity of nominalism.
- If Devitt can develop a nominalism which lacks the limitations of the earlier brand, he may be able to avoid Chomsky's original criticisms.

The Ontological Problem for Nominalism

- Katz's criticisms of Bloomfield applied to Chomsky's ontology as well.
  - Even psychological reality is insufficient for linguistics.
- If Katz's criticisms of Chomsky's ontology are correct, then Devitt's task will be even more difficult.
- Devitt will have to stretch nominalism to cover our ability to produce and understand transfinitely many, transfinitely long sentences.
- Devitt claims that one can be a nominalist without restricting one's theory to sentence tokens.
- We can take linguistics to be the study neither of tokens nor abstract objects, but of a linguistic reality independent of both.
- "I claim that there is something other than psychological reality for a grammar to be true of: it can be true of a *linguistic* reality" (4).

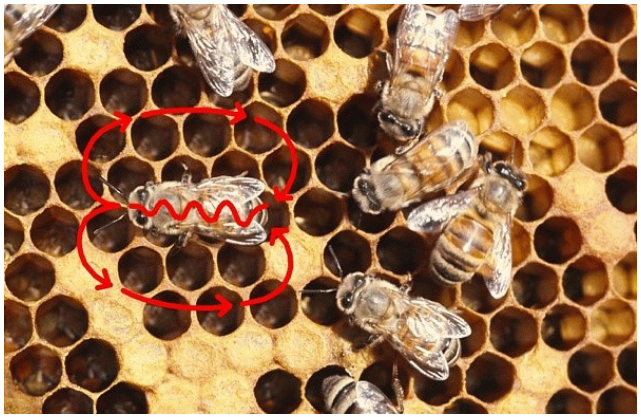
Linguistic Reality

- Devitt's expansion to linguistic reality comes in two steps.
- First, we admit possible tokens as elements of our ontology.
- Then, we characterize those possible tokens as merely a manner of speaking.
- We can also allow abstract objects, like sentence types, as long as we also consider those to be also just a manner of speaking.
- When the chips are down, when we want to be most serious about our ontological commitments, our theory will still be a theory of sentence tokens.
- But, Devitt claims, we can construct and use a more profligate theory, including possible and abstract objects, as long as we are confident that an austere theory which eschews third-realm entities is available.
- Devitt expands his working ontology, but not his austere actual ontology.

Linguistic Reality and Distinctions

- Devitt argues for the existence of a linguistic reality on the basis of some core distinctions.
- DD1. Distinguish the theory of a competence from the theory of its outputs/products or inputs (5).
- DD2. Distinguish the structure-rules governing the outputs of a competence from the processing-rules governing the exercise of the competence (6).
- DD3. Distinguish the respecting of structure-rules by processing-rules from the inclusion of structure-rules among processing-rules (8).

The Waggle Dance



- Devitt's distinctions distinguish between the rules that we can describe governing the dance (the structure rules) and the way in which the bees produce the dance (process rules).
- The structure rules need not be represented by the bees, internally.
- They are describable from the outside.
- The process rules may not be representational at all.
- "We should not rush to the judgment that the structure-rule itself must govern this unknown process. It may be the *wrong sort* of rule to play this rule. Nature faced the design problem of adapting the pre-existing structures of an insect to produce (and respond to) the message of the bee's dance. We have no reason to suppose a priori that nature solved this problem by making the bee go through the structure-rule "calculation." Indeed, it is not at all clear that the bee could plausibly be seen as performing this calculation: Can the bee even manage the necessary representations of the food source, of the spot on the horizon, and of the angles?" (7)

The Respect Constraint

- Our account of linguistic process rules must be compatible with our views of human beings.
- The theory of the structure rules must respect the theory of the process rules, and vice-versa.
- But, the theory that explains our process rules will be psychological, whereas the theory that explains the structure rules can be abstract.
  - We have to ascribe process rules to the bees that we can explain in terms of the physiology of the bees.
  - But, the theory that explains the waggle dance may appeal to structure rules that need have no physiological connection to the bees.
- The theory which governs our competence (process rules) will be psychological, while the theory which governs the language itself (structure rules) will be purely linguistic.
- Linguistics is not psychology.
  - Psychology will explain our competence with language, the process rules.
  - Linguistics is the science of that language, the structure rules.

The Old Nominalism, the New Nominalism, and Ways of Speaking

- Devitt's linguistic reality differs from Bloomfield's nominalism in that he admits possible tokens or abstract objects, but explains them away as merely a manner of speaking.
- "It is often convenient to talk of the objects posited by these theories as if they were *types* not tokens, abstract Platonic objects, but this need be nothing more than a manner of speaker (sic): when the chips are down the objects are parts of the spatio-temporal world."
- It may seem like cheating to use abstract objects and possibilia, and then to deny commitments to them.
- The double-talk criticism

Double-Talk

- The double-talk criticism is popular in other ontological disputes.
  - Quine, Putnam, and Field, among others
  - Philosophy of mathematics, concerning numbers and geometric objects
  - Metaphysics, concerning properties, or universals
- Many nominalists believe that they can avoid sincere commitments to mathematical objects, properties, and sentence types, while still using those objects in their theories.
- Two kinds of nominalists
  - The dispensabilist demonstrates precisely how to remove the contentious objects from the given theory, how to dispense with them.
  - The ostrich nominalist (or weasel) uses the entities and pretends that they do not exist.
- The dispensabilist avoids the double-talk criticism.
- The weasel does not.

Devitt and Double-Talk

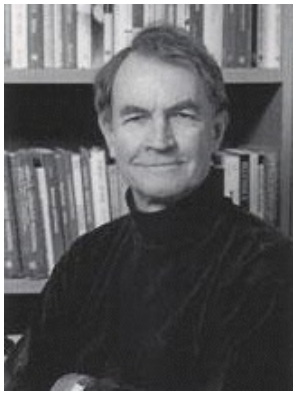
- Devitt's argument, relying on manners of speaking, is liable to a double-talk criticism.
- He wants to help himself to the data arising from appeals to intuition without committing to the existence of any non-empirical belief-forming processes.
- He wants to accommodate the intuitions of competent speakers within a nominalist framework, even though the nominalist is generally opposed to reliance on intuition.
- Devitt has to explain how both appeals to intuition and appeals to abstracta or possibilia are mere manners of speaking.

Dispensabilist Constructions

- Devitt does not provide a dispensabilist construction, but we can imagine how one would look.
- There are two standard types.
- The first type shows how to construct contentious entities out of objects that are not in question.
  - Rewrite physical theories in terms of space-time points or physical objects themselves
  - Construct a theory of linguistic types in terms of linguistic tokens or neurological states
  - Such a task seems impossible, which is a central reason why Chomsky rejects Bloomfieldian linguistics.
- The second type appeals to modal concepts, like possible states of affairs, the way things could have been.
  - "Strictly speaking, the theories quantify only over actual entities but the theories are, in some sense, necessary. So the talk captures the modal fact that if something *were* a horseshoe, a chess move, a *wff*, a bee's dance, or whatever, then it *would have* the properties specified by the appropriate theory of outputs" (fn 15).
- The second type is easier to construct, but less convincing.

Possibilia

- It is preferable to rewrite a theory in terms of objects to which the theory is already committed than to rewrite it by appealing to possibilia.
- Possible states of affairs are just as ontologically contentious as abstract objects.
- For example, one account of possible states of affairs, promoted by David Lewis, is called modal realism.
- The modal realist claims that possible worlds are just as real, just as concrete, as actual states of affairs.
- Modal realists thus have ontological commitments to a vast universe of possible objects.
- "How are we to explain modal facts? I don't know, but, *pace* David Lewis, surely not in terms of unactualized possibilia" (ibid).
- Without a serious attempt to provide either a nominalist account of modal facts or an instance of the first kind of dispensabilist construction, Devitt looks a lot like a weasel.



Is Linguistic Reality Compatible with Nominalism?

- Devitt argues that whatever nominalizing strategy we need in linguistics will be no more difficult or contentious than other nominalizing strategies.
- Other fields rely on mathematical objects, properties, or possibilities.
- The nominalist is committed to removing all references to such non-concrete objects.
  - "My contemplated task for linguistics is likely to be as nominalistic as tasks in physics, biology, or economics" (15).
- Serious nominalizing strategies of the first type are difficult to develop.
  - The ones that work for the flat space-time of Newtonian gravitational theory do not work for the curved space-time of general relativity.
  - The ones required for quantum mechanics are elusive in a different way.
- Devitt's claim places a burden on the nominalist.
- It may be the case that Katz overstates the need for abstract objects in linguistics.
- It may be the case that we can avoid abstract objects by reference to possibilia.
- But, these cases must be established.

Final Exam

- Wednesday, December 14
- 9am
- Review Session?