Handout for Week 12

Cutting Even Finer than Substitution:
Token-Recurrence Structures

<u>Outline</u>:

I.   **<u>Token recurrence structure and cotypicality</u>**.

1.   Pa and a=b, so Pb.

What is the connection between the two tokens of type <a> in (1)?

Schröder's Axiom: All tokens of the same type are coreferential throughout.

Belnap: Are the other axioms *independent* of that one?

Along with using '<a>' to refer to the type of the bracketed expression, can use '$/a/_1$' and '$/a/_2$' to refer to the two tokens in (1), and might indicate their relation by

2. $/a/_1 \approx /a/_2$.

But now what is the relation between the two 'a's in *this* sentence?

Token-recurrence is a relation among token(ing)s that is

    i)   Presupposed by substitutional reason relations, and
    ii)   Stronger than coreference.

(ii) holds because you cannot deny token-recurrence by denying any sort of identity, since every attempt to do so presupposes some recurrence structure. So

    iii)   Token-recurrence is an *implicit* structure that cannot be replaced by *explicit* identities.

3.   The paradigmatic token-recurrence structure is that exhibited by what Russell called "logically proper names": expression-*types* all the *token*(ing)s of which are logically or grammatically guaranteed to be *coreferential* (hence intersubstitutable *salva veritate*).

Q: Are there any?

A: Only by explicit stipulation (presupposing implicit practice).

II.   **Anaphoric token-recurrence structures**.

1.   There are also (what Reichenbach called) *token-reflexive* expressions, such as 'I', 'here', 'this', and 'it'. Cotypical tokenings of these types are not even guaranteed to corefer, never mind to stand in the even tighter relations that tokenings of logically proper names stand in to one another.

2.   Indexicals:
Tokenings have *indices* associated with them, specifiable in advance: speaker, place of utterance, time of utterance, perhaps actual world (Lewis). Compute their referents (class of expressions intersubstitutable saving some semantic invariant) from their indices. Note that in addition to simple indexicals like 'I' there are complex ones, such as "my mother's favorite color."

3.   Demonstratives and pronouns:
   a) Demonstratives such as 'this' or 'that dog' are not indexicals. If they were, the relevant index would be a 'demonstration' accompanying the demonstrative tokening. But there is no class of features of demonstrative tokenings, specifiable in advance of figuring out their referents, that determine those referents. For *any* feature, there are some circumstances in which that is just what is needed to settle the reference. Settling the referent and specifying the 'demonstration' that secured it are two ways of describing the same task.

   b) Where there is a literal pointing (LW: "Did you point at the plate? Its shape? Its color?..."), one need not be in a position to repeat it coreferentially: "Look at that rabbit run into the burrow!" If the *unrepeatable tokening* /that rabbit/$_1$ is to be semantically significant, it must possible to take it up somehow as determining something that *is* repeatable as something that can serve as a reason from which to draw conclusions, and that can itself be challenged. "I don't think *it* was a rabbit, *it* ran more like a cat." We do that by using *pronouns*, whose antecedents are the original unrepeatable demonstrative tokenings. The first <it>, /it/$_1$, is anaphorically dependent on /that rabbit/$_1$, as its anaphoric antecedent. The original demonstrative tokening intiates an indefinitely continuable *anaphoric chain*, that can include not only the second pronoun-tokening /it/$_2$, but further continuations.

   c) Here is the skeleton of a transcendental deduction of the necessity of a *different* sort of token-recurrence structure: anaphora:
   - Deixis presupposes anaphora.
   - Empirical discourse, so any autonomous discursive practice (ADP), must include deictic (demonstrative) expression-uses.

III.   **<u>Two kinds of token-recurrence structure compared</u>**.

How fundamental is the type/token distinction? Could there be a language without it?
Asymmetric token-recurrence structures (anaphoric chains) are necessary in any ADP.
As testified both by the philosophical history and by regimentation practices, symmetric,
cotypicality equivalence classes of tokenings are more basic along an important dimension.
Is there also a dimension along which anaphoric links among tokenings are more basic than
sorting them by lexical types? Yes.
1.   Anaphora and the social division of ignorance:
S: "…and at that point, the guy totally lost it and took a swing at the cop."
S':   "I'll bet *he* spent the night in jail."
Anaphora as giving us the crucial expressive power to make determinately contentful claims
without knowing what we are talking about.

2.   Modal rigidity:
Kripke identifies proper names (and demonstratives) as *modally rigid*: picking out the same thing
in all possible worlds. After all, while it *could* have been the case that
    a) Benjamin Franklin is not the inventor of bifocals,
it could *not* have been the case that
    b) Benjamin Franklin is not Benjamin Franklin.
But it is also *not* possible that
    c) Benjamin Franklin is not the inventor of bifocals, and *he* is not Benjamin Franklin.
The in-effect *stipulated* coreference of anaphoric dependents with their antecedents is
expressively essential to the capacity to reason subjunctively.
    d) This very teapot might not have been here for me to point to, but *it* would still have been
        a teapot.
Kripke's discovery paraphrased:
In these modal contexts, proper names act anaphorically, like pronouns: "modal rigidity."
That is the basis of the "causal-historical theory of proper-name usage."
We have seen that propositional contents can be understood in terms of the ranges of subjunctive
robustness of implications.
We must express (and so understand) the links between sentences in such reasoning as exhibiting
an *anaphoric* token-recurrence structure, even when that structure is *marked* by cotypicality.
<u>Claim</u>: The anaphoric account of modal rigidity, which understands the rigidity of proper names
on the model of the behavior of anaphoric pronouns in subjunctive contexts, which is in turn
understood in terms of the functional idea of (asymmetric) token-recurrence structures, can be
understood methodologically as belonging on the "*subject* naturalism" side of Huw Price's
distinction between subject and object naturalism—when we divide through by the naturalism.
"Dividing through by the naturalism" is ignoring this restriction of vocabulary, leaving the
opposition between an account in a *pragmatic* metavocabulary specifying what practitioners *do*,

and an account in a representational semantic metavocabulary that explains features of practice by appeal to the metaphysics of what practitioners are talking *about*.

3.   The arc of our story has been from understanding symmetric, cotypicality equivalence-classes of tokenings, to seeing this as one species of the genus *token-recurrence structure*. Asymmetric anaphoric chains and trees of tokenings are another. We next observed the ubiquity of anaphoric token-recurrence structures: The modally rigid use of expressions like proper names turns out to be governed by and explicable in terms of anaphoric token-recurrence structures. Does this mean that cotypicality is a ladder that can be discarded once ascended? Can we dispense *entirely* with cotypicality? Is marking ultimately anaphoric structures of tokenings by making them share a type a mere heuristic or psychological convenience?

    IV.   **<u>Logical Explicitation of Anaphoric Relations</u>**:

1.   Q: If we introduced *logical* locutions, to make *anaphoric* relations explicit—as identity locutions and quantifiers make substitutional relations explicit and conditionals and negation make reason relations of implication and incompatibility explicit, what would they look like?
A: Anaphorically indirect definite descriptions. (Cf. *MIE*, second half of Chapter 5.)
      We have suggested ways of making anaphoric relations explicit in a *meta*vocabulary. I can say something like **/a/$_i$, /a/$_j$∈<a> and /a/$_i$ < /a/**$_j$, where '<' is marking anaphoric dependence. But *logical* locutions are to provide this metalinguistic expressive power *in an extension of the object language*.
So we are looking for locutions that give us the expressive power to *say that* one tokening is anaphorically dependent on another *in* (an extension of) *the object language*.
Q: How can one tokening explicitly acknowledge its anaphoric dependence on another?
A: It must include
    i)   some specification of the antecedent tokening, as well as
    ii)   some conventional method for producing a *type all* the tokenings of which are anaphorically dependent on that antecedent tokening.
In "Reference Explained Away" I deduce the functional constraints on such a locution.
In particular, it must be that if the locution is <T(/a/$_i$)>, a type all the tokenings of which are guaranteed to be coreferential with, because anaphorically dependent on, the antecedent tokening /a/$_i$, then so must all the tokenings of type <T(T(/a/$_i$))>, and also for further iterations. The T-locution must be *idempotent*.
I then look for locutions in ordinary language that perform this anaphor-forming operation, subject to that idempotence constraint.
      To see what these locutions are, consider this dialogue:
S: "Don't rely on Binkley as an auto mechanic. That airhead misadjusted the valves on my car."
A: "I disagree. <u>The one S referred to as 'that airhead'</u> is actually a pretty good mechanic."

A has secured that he, like S, is talking about Binkley. He has done that by picking out an utterance of S's, a tokening of type <that airhead>, and used a device that ensures he is coreferring with that tokening, and so referring to Binkley.

And this device iterates (is idempotent):

A': <u>The one A refers to as "the one S refers to as 'that airhead'"</u> only pretends to know about cars.

The underlined phrase still refers to Binkley, even if A and A' only heard the second sentence of S, and so don't *know* that they are talking about Binkley.

Conclusion: the principle expressive role characteristic of 'refers' (and its cognates) **in natural languages is as a pronoun-forming operator.**

What one is *doing* in *using* 'refers' is forming anaphoric pronouns.

V.   **Conclusion of Part I. Weeks 1-7**:

The first segment of the course was devoted to *declarative sentences*: their pragmatics, representational semantics, logic, and implicational semantics. See *RLLR* Ch. 6.

Ulf's diagram:
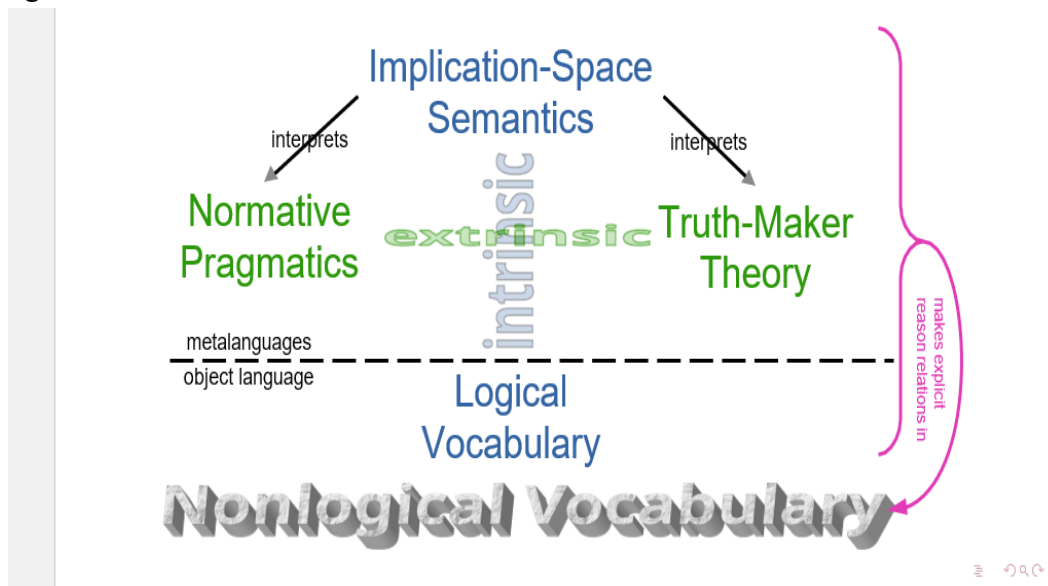
VI.   **Conclusion of Part II. Weeks 8-12**:

Weeks 8-12 have been delving below this sentential-inferential-propositional structure, to look at further pragmatic dimensions of sentence-use, as well as at semantically significant subsentential structure.

We have considered the following dimensions:

 a) Social,
 b) Historical,
 c) Empirical (noninferential)

d) Term/predicate I. Presupposing substitution.
e) Term/predicate II. Functionally defining substitution.
f) Incorporating unrepeatable events in conceptual, repeatable form: anaphora and token-recurrence structures.

Note: These last include all three of the principal (in fact orthogonal) dimensions that Kant runs together (with methodological malice aforethought) in the *concept/intuition* distinction:

i)   *General/particular*, identified with predicate/singular term, (cf. (d) and (e))

ii)   *Active/passive*, identified as inferential/noninferential, which we discussed as (c), empirical, with normative governance and subjunctive tracking.

iii)   *Repeatable/unrepeatable* (cf. (f)).

The (a) and (b) dimensions of representational content Kant does not discuss (Hegel does).

VII.   **Concluding Observation and Question**:

Observation:

We have followed *MIE* in discerning three progressively more refined levels of semantically significant structure: *inference*, *substitution*, and *anaphora* (ISA). These articulate the use of *sentences*, *terms* and complex *predicates*, and unrepeatable, *token-reflexive* uses, paradigmatically demonstratives along with the *anaphoric* uptake of those uses.

Each level of structure turns out to exhibit a fundamental complementarity of a *symmetric* component and a *non*symmetric component:

a) **Reason relations** governing the use of sentences: *symmetric* incompatibility relations and *non*symmetric implication relations.

b) **Substitution-inferential significances** of semantically significant subsentential structures: *symmetric* for singular terms (codified logically by identity claims, creating equivalence classes) and *non*symmetric for complex predicates (codified logically by quantified conditionals).

c) **Token recurrence structures**: *symmetric* cotypicality equivalence classes and *non*symmetric anaphoric chains (trees) of dependent tokenings.

Question: Why, whence, and wherefore this common discursive metastructure at all three levels of the ISA dissection of dimensions of semantic structure?

Some options (in descending order of suggestiveness and significance):

Is it specific to and distinctive of *discursive* structures?

Is it a superficial *mathematical* consequence of the tasks being undertaken?

Is it a merely *psychological* result of only having available an impoverished formal toolkit? ("To one who only has a hammer, the whole world looks like a nail.")

Is it wholly *trivial* and on the surface, since the distinctions in each case turn out to be quite different and unrelated?