

Discourse Constraints on Anaphora

Ling 614 / Phil 615

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Much recent work in linguistics, philosophy of language, cognitive psychology and computer science focuses on questions about anaphora and its interaction with discourse. The course will bring graduate students and researchers in these fields together for intense discussion of both foundational issues and work on the cutting edge. It will culminate in a two day interdisciplinary conference that will foster collaboration between researchers in several departments at University of Michigan and beyond.

Subject matter of the course

One linguistic expression is anaphoric on another, roughly, if its interpretation depends on the interpretation of the other. For example:

1. Jane walked into the room. She sat down.
2. Every man loves the woman he marries.
3. Fred was really stupid yesterday. The idiot locked his keys in the car!

The interpretation of the pronoun 'she' in (1) depends on the interpretation of 'Jane' in the previous sentence (its *antecedent*), and through this dependency 'she' comes to refer to Jane herself. 'Bound anaphora,' as in (2), can easily be rendered in predicate logic. But cases in which the antecedent quantifier cannot take high enough scope to bind the pronoun are harder to treat (Geach 1962):

4. Every man who owns a donkey beats it.

If 'a donkey' in (4) took high enough scope to bind 'it,' the sentence would mean that there is a particular donkey such that every man who owns it beats it. But this meaning is not available for (4). A pronoun such as 'it' in (4) is called a *donkey pronoun* or an *e-type pronoun*. Hans Kamp (1981) and Irene Heim (1982) devised systems that aspire to account for both e-type anaphora and inter-sentential anaphora as in (3). Their theories constituted a "radical departure," in Kamp's words, from standard (and otherwise quite attractive) model theoretic approaches to semantics.

But neither their theories nor the standard theory determine the precise conditions under which a pronoun may refer to an antecedent. For instance, consider the following sentences:

5. a. John hit Bill. Mary told him to leave.
5. b. Bill was hit by John. Mary told him to leave. (Kehler 2002)

6. The city council denied the demonstrators a permit because they (a) feared / (b) advocated violence. (Winograd 1972)

7. I went out for dinner. I first had the soup. Then, I had the lamb. It cost \$29. (Polanyi 1988, Asher and Lascarides 2003)

In (5), the grammatical function of a word (namely, whether it is the sentence's subject or its object) seems to determine whether it may act as an antecedent. In (6), world knowledge (of criteria used to evaluate permit applications) seems to affect whether a word may be the antecedent of a pronoun. In (7), a major discourse topic (dinner) or the most recent possible antecedent (the lamb) may be the referent of 'it,' but the soup—mentioned between the two—may not be. Examples like (5)–(7) suggest that we cannot understand anaphora without studying the structure of discourse.

The details of the interaction between anaphora and discourse structure are hugely important for all the fields in which anaphora is studied. We cannot simply omit anaphoric relations from, e.g., theories and implementations of natural language processing, but even quite complex extant theories of anaphora have glaring problems. But not all of the interest in anaphora is in the details. We have chosen theories to study and speakers to invite with the aim of helping participants in the seminar make progress on three sets of 'high-level' questions. We anticipate that orienting the course around these questions will help unify participants' interests:

1. ANAPHORA, REFERENCE, AND INTENTIONALITY:

What is it for a word to refer to an object? What makes reference possible? The venerable (and fruitful) philosophical project of thinking about intentionality and 'object directed thought' through the special case of referring expressions—expressions that themselves are often anaphors—must be founded on an accurate, detailed understanding of anaphora. The ease with which referring expressions can 'pick up' their referents through anaphoric dependencies suggests that the conditions for linguistic intentionality are easy to meet. What might this tell us about the conditions for intentionality in general? Questions about reference are paradigmatically philosophical, but their relevance for language processing is clear: "Speakers and writers refer, and hearers and readers must work out to whom or to what they are referring . . . [So] a 'theory of language processing' that does not take reference seriously is not a theory of language processing at all" (Garnham 1999).

2. THE INTERPRETATION OF ANAPHORA AND THE PUTATIVE MODULARITY OF MIND:

The interaction between anaphora and discourse suggests that a full characterization of the constraints on anaphora resolution will have to draw on (at least) facts about syntax, semantics, pragmatics, and the interpreter's general background knowledge. Is this conclusion right? If it is, what are the consequences for theorizing about the *interpretation* of anaphora? Is a view according to which linguistic processing is performed by several discrete, encapsulated cognitive 'modules,' in Fodor's sense (1983), compatible with the apparent breadth of the factors that bear on anaphoric relations?

3. REPRESENTATION AND THE INTERPRETATION OF ANAPHORA:

Both standard model-theoretic semantics and common ways of thinking about belief and other propositional attitudes characterize content in terms of propositions. By contrast, 'dynamic' semantics—which is still most compellingly motivated by its ability to explain otherwise puzzling anaphoric relations—associates declarative sentences with operations on context, where context may include (e.g.) 'discourse referents' in addition to propositional information. In cognitive psychology there are parallels to this dynamic turn. Following Johnson-Laird (1983), Alan Garnham (1987, 2001) and others have developed the idea that in interpreting anaphora in discourse we do more than simply manipulate propositional content; we construct *mental models*, with cognitive analogues to discourse referents. What can we learn about belief, memory, attention, and other cognitive relations from these new ways of characterizing linguistic representation and the kinds of representation involved in linguistic processing?

The interactions between anaphora and discourse are fertile ground for questions about the nature of cognition, the structure of the mind, and representation that are relevant to philosophers, linguists, psychologists, and a broad range of other researchers in the fields that constitute cognitive science. This course would give graduate students in all these fields competency with the most important frameworks for theorizing about anaphora, and would provide ample opportunities for them to interact with a range of students and researchers as they develop their own research projects. We hope that the class will be composed of students from a wide enough range of disciplines that group projects will be especially illuminating.

Schedule

1/20	Introduction to Binding Theory Read sections 1.1–1.2, 2.1–2.4.1, 3.1, 3.3, 4.1–4.4 of Büring 2005 (<i>Binding Theory</i>)
1/27	E-Type Pronouns Read chapter 7 of Büring 2005 (<i>Binding Theory</i>), and Elbourne 2001 (“E-type Anaphora as NP-Deletion”).
2/3	Introduction to Discourse Representation Theory Read Gamut’s introduction to DRT (on CTools)
2/17	Introduction to Structured Discourse Representation Theory Read chapters 1 and 2 of Kehler’s book, and section 5 of Kamp’s “Discourse Representation Theory” (on CTools)
2/20	Anaphora within Attitudinal Contexts; Hans Kamp, speaker Read Kamp’s “Temporal Reference Inside and Outside Propositional Attitudes” and, for background, Stalnaker’s “Belief Attribution and Context” (on CTools)
2/24	No class (winter break)
3/3	Segmented Discourse Representation Theory; Nicholas Asher, speaker Read Asher and Lascarides, Chapters 1 and 2, and Asher, “Troubles on the Right Frontier” (on CTools)
3/10	Introduction to Centering Theory Read Grosz, Joshi, and Weinstein, “Centering A Framework for Modeling the Local Coherence of Discourse” (on CTools)
3/17	Anaphora in Discourse Particles; Aravind Joshi, speaker Read Webber, Stone, Joshi, and Knott, “Anaphora and Discourse Structure,” (on CTools) and browse the Penn Discourse TreeBank
3/24	Introduction to the Psycholinguistics of Anaphora Read Kehler, Kertz, Rohde, and Elman, “Coherence and Coreference Revisited”
3/31	More on the Psycholinguistics of Anaphora; Hannah Rohde, speaker
4/6–4/7	Workshop: Barbara Abbott, Alan Garnham, Hans Kamp, Craige Roberts, Hannah Rohde, Jason Stanley, Matthew Stone Read Perner, Rendl, and Garnham “Objects of Desire, Thought, and Reality: Problems of Anchoring Discourse Referents in Development” and Garnham and Cowles, “Looking Both Ways: The JANUS Model of Noun Phrase Anaphor Processing”
4/14	The Representation of Discourse Read Stalnaker, “On the Representation of Context” and Lascarides and Stone, “Discourse Coherence and Gesture Interpretation”
4/21	Gesture and Discourse Structure; Matthew Stone, speaker Reread Webber, Stone, Joshi, and Knott, “Anaphora and Discourse Structure” (on CTools)

Selected References (see also the resources at the CTools website)

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