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INDEXICAL EXPRESSIONS: SYNTAX AND CONTEXT

by

BARBARA BEVINGTON

A dissertation submitted to the Graduate Faculty in Linguistics in partial fulfillment of the requirements for the degree of Doctor of Philosophy, the City University of New York.

1998

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Abstract

INDEXICAL EXPRESSIONS: SYNTAX AND CONTEXT

by

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Indexicals are those expressions in natural language—such as *I*, *you*, *here*, and *now*—whose reference varies with occasion of use, picking out individuals in virtue of their contextual roles. Although analyses of the semantics of indexicals have been advanced—most notably by Kaplan—their syntax has heretofore been largely ignored. This dissertation puts forth a theory of the syntax of indexical expressions, within the framework of generative grammar, and proposes a new model of the formal context for natural language.

The central argument against prior accounts of indexicals is that such theories draw the distinction between the first and second person pronouns versus third person incorrectly. Evidence for syntactic "uniformity"—that first, second and third person expressions are individuated in the same way—is presented in chapter 2. It is concluded that Kaplan's notion of "character" as a semantic function from context to individual is theoretically inadequate. Hypothesized instead is syntactic "orientation," a function that operates at the syntactic level of logical form, the output of which is not individuals but syntactic indices. The resulting proposed structure of the formal context is thus two-tiered; the syntactic input to the semantic component is uniform across first, second and third person expressions.

Analysis of the "switch" phenomenon in chapters 3 and 4 lends support to the syntactic orientation hypothesis. A natural account of switch is advanced within Fiengo and

May's dependency theory, through the assumption that dependencies may occur among syntactic orientations. The existence of two derivational levels at logical form—as proposed in the new model—is revealed to be crucial to the explanation of more complicated switch data. Additionally, evidence is presented that oriented sentences are the structure of choice in the making of expressive utterances such as "speech acts."

In chapter 5, syntactic orientation is shown to provide a natural way of describing the pronominal systems across languages. Furthermore, the new model is generalized to include non-pronominals, yielding a general theory of indexical expressions. Finally, "demonstrative" expressions are defined with respect to indexicals, with which they are argued to be in complementary distribution.

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Chapter 1: Indexical expressions

1.0 What are indexicals?

Human language is primarily a tool used for communication between people in particular settings, unfolding in time. Whatever knowledge of language is, it allows a speaker (or signer) to encode information in a structured string of verbal noises (or physical movements). If all goes well, this structured string is correctly heard (or seen) by the intended recipient, whose knowledge of language in turn allows him to decode it. This knowledge includes the ability to appropriately incorporate facts from the speech context itself—information as to who is talking where and when—an inclusion that is vitally necessary due to the fact that a large part of human language is "indexical." Indexicality can be defined functionally as the device within language that operates from expressions of the language—that is, what is said—to contextual objects and individuals, in virtue of their participatory roles at the occasion of use. It is through indexicality that a language not only occurs in, but also can be anchored to, the context delimited by the people who are using it to communicate.

The content of a "pure" indexical expression can only be known through the context—such expressions include the first and second person pronouns *I* and *you*, and place and time words such as *here* and *now*. A sentence that contains these four indexicals, such as (1), has the content that it has in virtue of being said by—say—Alice to Bob from her office at four o'clock. Said by—say—Chuck to Dianne from his kitchen at noon, it would have an almost entirely different content.

(1) I think you should come here now

Simply put, indexical expressions are *shifters*—that is, their content shifts from one thing to another, dependent on the context: if the context changes as indicated above, the content of *I*

for an utterance of (1) shifts from Alice to Chuck, the content of *you* shifts from Bob to Dianne, and so on. Furthermore, indexicality is not limited to free expressions, but can also occur in bound morphemes—for example, as with the verbal tense system in English.

Assuming the functional definition of indexicality above, tenses are more often than not indexical: because the verb *think* in (1) is in the simple present tense, native speakers of English know that the "thinking" said to be occurring is contemporaneous with the context of utterance, and not in some time prior to it, which would be conveyed by substituting the past tensed *thought*. Note that not all uses of tense are indexical, such as the "timeless" use of the simple present in a sentence like *two is an even prime*, and in academic writing in general.

I have followed here in essence the modern usage of the term "indexical" established by Bar-Hillel (1954), drawing from C.S. Peirce's classification of signs.¹ In this important paper, Bar-Hillel took his colleagues to task for ignoring indexicality in their semantic models. Indexicality is essential to include in semantic theory, he argued, for two reasons: first, because indexical expressions comprise a large part of human language, and importantly, because it turns out that there are things that *cannot* be said non-indexically, without assuming other knowledge on the part of the addressee.

The first point is fairly intuitive. As far as I know, no one has attempted to actually count them and calculate, but estimates as to the percentage of utterances that contain indexicals go very high. Bar-Hillel himself guessed "more than 90%"; intuitively, the percentage of indexicals would be much higher in everyday conversation than it would be in—say—a science textbook. I take it as uncontroversial and obvious that indexicality is pervasive. It is Bar-Hillel's second point that was more important, for no matter how ubiquitous they may be, if all indexical sentences can be completely translated into non-

¹ For discussion of Peirce's classification system, see Burks (1949).

indexical sentences, it could be argued that a semantic model need account only for the latter.

However, the second point may seem counterintuitive. Isn't it the case that anything that anyone would want to say can be said without indexicals? After all, a speaker can, and often does, refer to himself or to his listener in the third person, and any place or time picked out by a particular use of *here* or *now* can be referred to by some unique non-shifting expression, such as *New York City* or *Tuesday, January 27th, 1998, 2:30 pm*. To make his argument, Bar-Hillel invented the entertaining example of Tom Brown, who having decided to speak without indexicals, and wanting breakfast in bed, could not manage to express to his wife what he could have expressed by the indexical sentence (2a). Assuming that Tom could somehow manage to use verbs tenselessly, a possibility such as (2b) will not do the job.

- (2) a. I am hungry now
 b. Tom Brown is hungry at eight o'clock

Why is this so? Even if it is supposed that his wife must know his name, she would require—say—a clock and the ability to tell time to know what time is being referred to by the expression *eight o'clock*—two requirements not necessary to knowing the reference of the expression *now*. In fact, for every non-indexical possibility that Tom might try to use, additional knowledge of some kind on the part of his wife is required, knowledge that she would not have to have to understand (2a). To understand (2a), all she needs to know is English. A similar case is given more recently by John Perry (1997), who finding himself standing next to W.V.O. Quine at a party, cannot say non-indexically what he could otherwise express to Quine by the indexical sentence *I'd like to shake your hand*. Among other problems, he cannot refer to himself as *John Perry* because unlike Tom Brown and his wife, Perry assumes that Quine does not know his name.

Bar-Hillel's and Perry's examples both turn on the knowledge that may or may not be

assumed between speaker and addressee: there *are* non-indexical expressions which uniquely pick out the same contextual elements as the indexicals in these examples do, if only everybody had perfect, comprehensive knowledge of everything. However, no amount of knowledge will help in the making of a "speech act," which *cannot* be done non-indexically. When Austin (1962) first identified them, he observed that such utterances always contain a first person singular pronoun. It may be possible to perform a promising act without words, by establishing a convention that—say, to clap hands behind one's back counts as a promise. But it does not seem possible to perform the *speech* act of promising by *saying* something in the third person: when I say *Barbara promises* I may have referred to myself and be reporting on a promise I have made, but clearly in so saying I have not promised. In order to *do* something with words—classically, to promise, to bet, to marry, to christen, to order—the indexical first or second person pronouns seem to be required. When Jack says *I love you* to Susan, he can be declaring love—something he cannot do with an utterance of *Jack loves Susan*.

Is indexicality then essential to—a necessary property of—human language? *Could* there be a human language that did not have indexicality? Such questions remain mysteries. Is indexicality universal? To answer positively would be to say that the function of anchoring expressions of the language to the context of use is universally realized—and for what it's worth, I know of no evidence to the contrary. This is not to say that there are words or morphemes in every language that have the identical "meanings" of—say—English *I* and *you*, for even a cursory look across the pronominal systems of different languages shows that this is false. Such systems vary in the way they "cut up" the context and in the manner of lexical realization. Even within the history of English there were once two forms for the second person where now there is one, once a three-way distinction singular, dual and plural where now dual forms do not exist. What would it mean to say that two languages had identical

indexical systems? It would be to say that their systems were *functionally* isomorphic: that each indexical anchor in language A has a functional correlate in B, and vice versa.²

In this dissertation I seek an explanatory account of the grammar of indexical expressions in English, working within the general framework of generative grammar. It is my view that a proper theory of indexicality presupposes a treatment of syntactic identity of the sort required by syntactic binding theory (Chomsky 1981). Some of the most revealing perspectives on indexicality involve the relative positions of indexicals in structures and the interpretations they receive. Although I discuss other approaches where I feel it is appropriate, I generally assume binding theory and dependency theory as developed by Fiengo and May (1994) in *Indices and Identity*, as well as their rendering of the syntactic level of logical form. The core of my analysis centers on the syntax of first and second person pronouns, and in that light can be seen as further evidence for, as well as an extension of, the Fiengo and May account. But although the center of the thesis involves pronouns and their syntax, I do not plan to ignore other indexical expressions nor other components of the

² How many different indexical systems are there? Looking just at the pronouns of 71 languages, ignoring case and gender features, Ingram (1978) counts 21 distinct "person systems" for pronouns—all of which, however, make at least a three-way person (first-second-third) distinction. Given that many languages are extinct and that many others do not yet exist, as well as the *possible* human languages that may never be manifest in the fullness of time, questions of universality are, of course, impossible to answer using brute force methods, but theorists do still make the claim. In an extensive summary of language typology research, Anderson and Keenan (1985) report that mechanisms that express person, spatial and temporal indexicality are "universally" manifest, although the distinctions that the systems they describe make vary greatly. For two extreme examples compared to English, consider Thai and Malagasy. Thai is claimed to have 25 first person forms, most of which "could be used, depending on context, as translations of the English first person singular pronoun." Spatially, where English has the two-way distinction *here* and *there*, Malagasy has seven forms *ery*, *eto*, *eo*, *etsy*, *eny*, *eroa*, *ery*, along the dimension closer-to-the-speaker to further-away-from-the-speaker. "Universal" claims can also lead to some odd conclusions: finding lexical instantiation of the "concepts" I, YOU, HERE, and NOW "universally" is evidence for Wierzbicka (1996) that these four indexicals are "semantic primitives" upon which other meanings are built. It is not clear which "I-concept" in Thai, and which "HERE-concept" in Malagasy she would claim are the "semantically primitive" ones corresponding to English *I* and *here*.

grammar. I intend to construct a general theory of the knowledge and use of indexical expressions.

1.01 Acquiring indexicals

In the Chomskyan framework I assume, a grammatical account of a particular subpart of language should be consistent with what is known about how it is acquired (cf., Chomsky 1975). Language acquisition research along these lines is still a fairly young field. The acquisition of indexicals as a class has been surveyed in a few early studies of deixis; more recently, the indexical pronouns have been investigated both in isolation and also with respect to pronoun acquisition in general. Although the results are inconclusive and at times contradictory, these studies are nevertheless highly suggestive.

In one early study, Clark (1978) hypothesized that there is a continuity in acquisition from "deictic gestures" such as pointing, to "deictic words," a category in which she includes indexicals. Pointing gestures begin to be used by infants "communicatively" well before they acquire their first words, at around nine months to a year old. A demonstrative based on *there* or *that*, used along with a pointing gesture, is usually one of a child's first ten words, and always one of the first fifty. While the first pronoun to appear is a first person pronoun like *I* or *me*, the *I/you* contrast is often not worked out until well after the second birthday. Clark found the order of acquisition of the indexical pairs that contrast deictically to be first *I/you*, followed by *here/there*, then *this/that*, while command of verbs that contain a deictic contrast such as *come/go* and *bring/take* comes much later, often as late as eight years old. A similar acquisition order was found by Tanz (1980), who also noted that in each pair, the "proximal" member seems to be mastered first.

Although pronouns are abundant in the adult speech around them, language learners initially avoid using pronouns, relying on names alone to refer to themselves and others.

When pronominal forms arrive, they are not necessarily being used as an adult uses them. Many researchers of pronoun acquisition have observed that there is a stage between two and two and a half years at which children systematically confuse *I* and *you*, intermittently using first person for their addressees and second for themselves—for example, see Charney 1980, Chiat 1981. This claim has been disputed by Girouard et al. (1997), who in a longitudinal study of children acquiring French or English, found no first and second person "reversals." Across both languages, they found that correct comprehension of all of the first, second and third person pronouns occurs *simultaneously* at around two years old, and subsequently, in production, first person appears in speech prior to second and third person forms. The failure of Girouard et al. to observe reversals may be due to the artificial nature of their comprehension and production tasks; in contrast, Dale and Crain-Thoreson (1993) videotaped "precocious talkers" less than two years old in unstructured play, and found that 57% made at least one reversal error between first and second person forms.

Confusion between first and second person has also been shown by Petitto (1986) to occur in the acquisition of the indexical pronouns in deaf children learning American Sign Language (ASL) as a first language. One might think that the early command of pointing gestures exhibited by all normal babies would give these deaf children a leg up in learning the first and second person pronouns, since the *words* for "I" and "you" in ASL are the index finger pointing at the speaker and addressee, respectively, within the signing space. But analogously to hearing children learning spoken language, while the deaf children can effectively point as a gesture, they avoid the words that mean "I" or "you" in favor of names. Furthermore, when the indexical pronouns appear in their signing, they confuse first and second person, often pointing at themselves to mean "you" and away from themselves to mean "I." Mastery of the *I/you* contrast occurs as late as for the hearing children.

In looking across these studies, the conclusion seems to be that indexicals are

surprisingly difficult to learn. There is agreement that the child's first indexical "word" is usually a first person pronoun. It seems clear, however, that it cannot be claimed that the child has fully mastered the first person until the first person/second person contrast for the indexical pronouns is evident—which in many children may be from six months to a year after the first forms appear. Furthermore, it seems to be the case that it is not until the *I/you* contrast is made that other indexicals can be acquired; *I/you* is prior to *here/there*, which in turn is prior to *this/that*.

1.02 How to use indexicals: some not-so-simple ways

There are those who would respond to the question: what do we know when we know how to use indexicals? with the answer "pragmatic rules." Their idea is that all there is to know about a particular indexical expression is a matter of its appropriate use. This is clearly a mistake.

The confusion comes from wrongly assuming that, because indexicals evaluate to individuals in context, their treatment must be exclusively in terms of use. The result is descriptions like: *I* is used by a speaker to refer to himself, *you* is used to refer to the hearer, third person forms are used to refer to someone else; *here* is used to indicate the location of the speaker, *now* is used for the time of the utterance. Such descriptions are said to be the pragmatic rules of indexicality. Various hedges may be appended: the time span covered by *now* and the physical space delimited by *here* may vary. "Speaker" may be improved to "sender" or "source," and "hearer" to "intended recipient" or "addressee"—terms that include sign language and written language. Aside from refining such rules of use to cover all the cases, on this view, that is all there is to it: these terms are indexicals because they are used in the way that they are. But the right way to think about it is the reverse: these terms are used as they are because they are indexicals.

To be sure, indexicals are used. Language is used. Indexical expressions are used by speakers in the way described above because they are the tools within language that can do that. Language is a big toolbox, and faced with a task, a speaker selects a tool to do the job. Knowledge of language involves not only knowing which tools are in the box and what each can do, but also knowing structuring rules that allow the combination of given tools to create complex tools to tackle novel tasks. So the question is, what is it about indexicals that makes it possible to use them indexically?

The first point is that indexicals are syntactically more complex than non-indexical expressions—a claim that I will argue for in specific detail throughout this dissertation. The added complexity of indexicals explains why they are more difficult to learn, and also explains why certain things can be done with indexicals—such as making a speech act or telling your wife you're hungry—that cannot be done non-indexically. It is their additional structure that make indexicals appropriate tools for anchoring the language to the context. To say *I am hungry* is to say something syntactically more complex than *Tom Brown is hungry*.

This is not to say that there are no pragmatic rules about using indexical expressions. Plenty of rules govern the use of expressions in general, and as expressions indexicals are subject to them. The claim is that pragmatic rules are not *defining of* indexicals. For example, there is no rule that tells a speaker: "Use the first person to refer to yourself." For one thing, notice that unlike well-known pragmatic rules, this one is seemingly impossible to *flout*, and so does not have the property of being defeasible. A speaker simply cannot up and decide to use the first person to refer to someone else. Kaplan (1978) gives the example of a deluded man, believing himself to be de Gaulle, saying *I am a general*. Despite his beliefs, the deluded man has referred to himself and not de Gaulle with *I*.

On the other hand, there seem to be general pragmatic rules determining which expression, given a choice among expressions that pick out the same individual, a speaker will

opt for in a particular circumstance. Such rules apply to *all* expressions with equal force, whether they are indexical or not. One of these rules I will call the Precision principle, which is something like, "Select the most precise tool for the task," and can be argued to be a corollary of the maxim of quantity, one of Grice's cooperative principles (see Grice 1989). One chooses sentences under syntactic descriptions, with respect to given tasks. If a speaker is following this rule, most typically the more precise tool for the task of referring to himself will be the syntactically complex indexical pronoun *I*. But there are other circumstances in which to follow the rule, the more precise tool for referring to oneself might *not* be first person, such as in a recorded or written message where there is reason to doubt the recipient's knowledge of the appropriate context. In these cases, the additional syntactic complexity of the indexical subtracts from its precision because there is a question whether it can be reliably anchored to context.³

The familiar defeasibility of a pragmatic rule can also be illustrated here, for there are also circumstances where the speaker violates or deliberately flouts the Precision principle and in so doing raises conversational implicatures. For example, imagine the circumstance under which I might ask a conference participant (3a) instead of (3b).

³ Note that a general cooperation principle like Precision has more explanatory power than a pragmatic rule that is particular to a single word or to an individual feature like "first person." From the Precision principle it follows that indexicals, being more complex expressions structurally, will more often have priority over non-indexicals. This phenomenon—only one of the things that follows from Precision—is described by Fillmore (1997) for the specific case of time words under a notion of indexical "preemption." In his specific example, if it is Wednesday, the indexical *tomorrow* "preempts" a third person day name like *Thursday*; that is why, he says, a sentence like *I will arrive this Thursday* cannot appropriately be uttered on Wednesday, rather one must say *I will arrive tomorrow*. But contrary to what Fillmore seems to suggest, this "preemption" is not a particular property of time indexicals or even of indexicals generally, but rather follows from Precision—which, furthermore, can also explain the reverse case: why in a written message, the indexical *tomorrow* may be avoided in favor of *I will arrive Thursday*, even though the message is both sent and received on Wednesday. Fillmore's description gives reasons why *tomorrow* is favored over *Thursday* in the former case, but does not explain why *Thursday* is favored over *tomorrow* in the latter case; both choices follow from the general Precision principle.

- (3) a. What do you think of Bevington's theory?
 b. What do you think of my theory?

While I haven't said that I am not Bevington, by the violation of choosing the *less* precise tool, I may have misled her into thinking so, or into thinking that there is another linguist named Bevington. Why would I want to mislead her? Perhaps I believe that she will not reveal her true opinion of a theory to its author. Perhaps I don't want to admit that the theory is mine until I know that she believes it to have merit.

Notice that if my addressee at the conference finds out later that I am Bevington that she couldn't say I had *lied* to her about who I was, which is also why flouting Precision can be effective even if she knows very well that I am Bevington, and even if I know that she knows this. Still she will not be confused by the question (3a), but make some other assumption concerning my decision to not use the more precise tool: perhaps I want to suggest that I am interested in discussing the theory objectively, with no personal feelings involved; perhaps I want to distance myself from it, implying that I have since changed my views. These are familiar kinds of implicatures that come from following, violating or flouting a pragmatic rule, outlined in the work of Grice.

Indeed it is common to find cases of speakers using the third person instead of first or second to refer to themselves or their hearers. For example, on the campaign trail, the challenger in the recent U.S. presidential election often used his full name to refer to himself, rather than the first person form *I*, as in (4).

- (4) Bob Dole is an honest man

The implicatures of this particular flouting are not entirely obvious—indeed, during the campaign I heard commentators puzzling over Dole's use of the third person—but any listener

will have some kind of idea: perhaps he did not want to appear to be a braggart. I doubt that anyone assumed that he was talking about some other person named "Bob Dole." On the other hand, there seems to be no plausible reason Tom Brown might have to flout the cooperative principle when he wants breakfast in bed and is talking to his wife, which is why *Tom Brown is hungry* said in this circumstance seems much odder than Dole's utterance of (4).

1.03 Indexical transplants

In the cases above, non-indexical expressions can be used to refer to individuals in the context for which an indexical is available. Are there opposite cases, of indexicals being used to pick out individuals who are not in the context? Yes, but they are quite different from those above. While examples of indexicals evaluating to something other than the expected contextual individuals do exist, I would claim that they are nonetheless picking out the expected individuals in a *different* context. In such cases, the "picking out" proceeds normally, but it seems as if the indexical expression has been "transplanted" into another context where evaluation occurs. The most common case of this is direct quotation. Although it occurs more often in written than spoken English, indexicals under the verb *say*, as in (5a), evaluate not to the context of utterance but to the context of the "saying" that is being reported. In my dialect of spoken English I would rather use present tense *go* or colloquial *like*, as in (5b-c), which have many similarities to *say*, to the same effect: in (5a), (5b) and (5c), the content of *I* is Jack, not the speaker.⁴

⁴ The use of English *like* as a context shifting device was first brought to my attention by Lillo-Martin (1992), analogous to "point-of-view shift" in American Sign Language. Lillo-Martin identifies a particular movement of the body as the ASL shifting device. Once this body movement has occurred, the sign for "I"—which recall is the index finger pointing at the signer—refers to the individual who has been shifted to. More than one shift can occur in a single "utterance," exemplified below (preserving Lillo-Martin's notation). In (i), the two "I" signs refer to Bill and Al respectively, neither of whom is the signer; note that the same
(continued...)

- (5) a. Jack said, "I'm tired"
 b. Jack goes, I'm tired
 c. Jack was like, I'm tired

It might be thought that such examples show that the indexicality of *I* does in fact involve only a pragmatic rule, and that the examples in (5) show a flouting of that rule. But on the contrary, cases of direct quotation are perfectly sound, and intuitively do not seem to violate anything. Rather, these cases seem to be evidence that indexicality can survive a forced "transplanting" to a context different from the context of utterance. In the case of direct quotation, the context of evaluation is explicitly indicated by the verbs of saying.

The ability to transplant indexicals to evaluation in alternate contexts—which themselves seem to continue to follow their internal indexicality—is not limited to direct quotation, but seems to be something speakers can readily do in other kinds of cases. For example, in the context for (6a), there has been a shift to another "speaker," and in (6b) to a future time.

- (6) a. *Ventriloquist's dummy*: I am made of wood
 b. *Answering machine*: I am not here right now

Without transplantation, (6a) and (6b) would have to both be false: beings that can talk are generally not made of wood, and how could it be possible that *I am not here right now* is true, whenever that sentence is used? Indeed that sentences like these *must* both be false has

⁴(...continued)

observation holds for the two occurrences of *I* in the English gloss.

- (i) _aBILL (SHIFT) ₁INFORM_b _bAL; (SHIFT) ₁INFORM_a
 Bill_i, (I_i) informed Al_j; and (I_j) informed (him_i)
 Bill's like, I told Al, and Al's like, I told him

been claimed. But clearly it could be argued that both (6a) and (6b) might be true, as follows. In (6a), the first person pronoun *I* does not refer to the actual speaker, the ventriloquist, but to the apparent speaker, the dummy, who may well be made of wood. When the ventriloquist "throws" his voice to create the illusion that the dummy is speaking, the indexical expression is "thrown" into a different context of evaluation that is thus created, in much the same way as the explicit *Jack said* in (5a) "throws" the following indexical into Jack's mouth. In (6b), while *I* refers to the actual speaker who recorded the message and not the machine playing the message, *now* refers to the time of message playback, and *here* means the location in which it would be possible to answer the telephone at the moment of the call, which may be *neither* the place the message was recorded nor the location of the message playback; taken altogether, it is certainly possible that that person is not at that place at that time. In this case, the telephone answering technology "throws" the message not into another speaker but into a future time and possibly different place—whenever it may be that someone might call.

Native speakers of English watching the ventriloquist's act or hearing the answering machine easily interpret the indexicals in (6). Similarly, when Olivier, on stage as Hamlet, says *I*, when the automated teller machine says *How may I help you?*, the native speaker is not confused as to who "I" is. But like direct quotation, these examples are clearly not examples of *flouting* rules but rather using the normal function of the indexical expressions to achieve the particular ends of the speakers in each situation. If the ventriloquist or Olivier did not use indexicals, would the disbelief of the audience be suspended? Could a non-indexical sentence on the answering machine or ATM give the sense of immediacy or personal response as effectively as the indexical message? But although speakers can readily understand transplanted indexicals in cases like those given, this ability is not without limits. Recall Kaplan's example of the man who believes himself to be de Gaulle. Even in conversation

between him and—say—a physician fully aware of his mental state, a transplanting to the context of his delusions cannot occur: when he says *I*, he refers to himself and not de Gaulle. That is, despite his delusions, he cannot change the fact that he and not de Gaulle is speaking. But the ventriloquist can. As another example, consider the interpretation of (7), which asserts that the situation in the consequent would arise in the circumstances where Jack is the speaker of the sentence. But who would be angry? Not Jack, which would be the case if the indexical *I* were interpreted in these same circumstances. Unlike in (5), *I* evaluates to the actual speaker of (7). Here, the attempt to overtly set up a context transplant has failed.

(7) If Jack were speaking this sentence, I would be angry

On the other hand, in the counterfactual (8), the indexical *I* in the consequent seems to have undergone a transplanting away from the actual context of utterance in virtue of the content of the hypothetical.

(8) If I were Jack, I'd marry Susan

How and when transplantation to alternate contexts can occur demands explanation in a proper theory of indexicals, and I will return to the discussion of such cases throughout this chapter and the next.⁵ In the case where the indexical *I* is "thrown" from one to another

⁵ It is interesting to speculate that the notion of transplantation may account for an even wider range of phenomena: for example, the generic or "impersonal" uses of the first or second person pronouns that occurs in many languages. In an analysis of, among others, "moral or truism" examples like (i), Kitagawa and Lehrer (1990) hypothesize that the speaker can... "abstract the 2nd person pronoun away from...the immediate speech act domain to the sphere of a universally applicable life drama script.... A sense of informal camaraderie is often present with the use of impersonal *you* precisely because the speaker assigns a major 'actor' role to the addressee." (p. 752)

(i) You kill yourself to raise your kids properly, and guess what happens

(continued...)

mouth—literally or figuratively, when *now* is "thrown" from one to another time, when *here* is "thrown" from one to another place—for these transplants, as well as the cases discussed in the previous section, an exclusively pragmatic account of indexicality is inadequate. Of course if a sentence that contains indexicals is separated from its context—such as the slip of paper in a bottle that reads only *I am here*—its referential content is obscure: who is "I" and where is "here"? But a treatment of indexicals that describes *only* their pragmatics is no account at all. So we're back to the question: what is it that we know when we use and understand indexicals?

1.1 Kaplan's theory of indexicals⁶

The scope of "Demonstratives," Kaplan's (1977) comprehensive theory of indexicals, is accurately described by its subtitle: "an essay on the semantics, logic, metaphysics, and epistemology of demonstratives and other indexicals." I will be concerned primarily with Kaplan's treatment of the first two of these, semantics and logic. Note that his interests do not include the syntax of indexicals, which is mentioned neither in this subtitle nor anywhere within his theory. This omission is one I attempt to remedy in this dissertation.

Kaplan observes that any utterance of (9a) is "deeply, and in some sense...universally, true," while an utterance of a non-indexical counterpart such as (9b) is empirical, and develops a formal semantic analysis for indexicals and demonstrative expressions that accounts

⁵(...continued)

Because the context of "a universally applicable life drama script" is not as clear to me as the circumstances of a ventriloquist's act, I will leave the transplantation account of such generic uses as a suggestion, and not attempt to develop it further.

⁶ What I call "Kaplan's theory" is actually spread over three papers—in the discussion here I rely primarily on "Demonstratives" (1977), noting in the text points specifically taken from "Dthat" (1978) or "Afterthoughts" (1989).

for, among other things, this observation.⁷

- (9) a. I am here now
 b. David Kaplan is in Portland on 26 March 1977

Central to Kaplan's analysis is his notion of "character." Briefly explained, the character of the indexicals such as *I* and *here* is functionally different from that of the expressions *David Kaplan* and *Portland*. From how the character function is formally defined it will follow that the indexicals *I* and *here* will evaluate to the agent and location of a context, from which it follows that the former will always be in the latter, but there is no comparable function for expressions like *David Kaplan* and *Portland* from which this will always follow in any context. This notion of character will be discussed in more detail below.

But first a note concerning terminology. Kaplan calls his analysis a theory of "indexicals," using "indexical" as a general term to include two "subtypes": "pure indexicals" and "true demonstratives." The former are expressions I have called simply indexicals; the latter are certain uses of expressions, such as *he* or *that man*, perhaps accompanied by some kind of pointing at a man. This usage of terms has elsewhere been reversed by Kaplan and others, where the term "demonstrative" is used as the general term including both "subtypes." While Kaplan's decision to group demonstratives along with indexicals under one theory has been widely accepted and adopted, for reasons that will become clear I do not accept this unification, and so will use "indexical" and "demonstrative"

⁷ In fact, it is not very difficult to find circumstances in which *I am here now* is false. For example, if the sentence is uttered slowly while moving quickly, the individual picked out by *I* will no longer be in the location referred to by *here* at the moment indicated with *now*. Another example, due to Richard Kayne, involves a ventriloquist who has "thrown his voice" so that the location referred to by *here* in *I am here now* is in fact not his current location.

for the "subtypes," intending neither term as a general category including the other.

On the view I will advance here, Kaplan's claim that there is a definable semantic property that demonstratives share with indexicals cannot be upheld. I will argue that his notion of demonstrative character is fundamentally different from indexical character, and that not only do the two properties not belong in the same class, but their explanation lies in different components of the grammar. I will claim that *neither* of these properties is, in fact, a semantic property: on my view, demonstrative character is pragmatic, and indexical character is syntactic. Even though what Kaplan identifies as demonstrative character has shifted in his writing over time, on any identification it is better explained in a theory of use than in semantics. Furthermore, returning to the analysis of indexicals in chapter 2, I will argue that the proper explanation of what Kaplan identifies as the character of indexicals lies in syntax and not, as he has it, in semantics. But before deconstructing the notion of character into other notions along these lines, Kaplan's claims need to be understood in a little more detail.

1.11 Direct reference, character and content

Why does Kaplan group demonstratives along with indexicals under the same formal treatment? First, he observes that, like names, they are both "directly referential," expressions whose content simply is the individual—that is, there is no mediation such as a Fregean "sense" between the expression and the individual. But unlike names, demonstratives and indexicals both are "unstable," in that the content of a demonstrative expression such as *that one* or *he*, like the content of *I* or *here*, varies from occasion to occasion. Names can be thought of as directly referential expressions that are "stable." Important to Kaplan is that his notion of direct reference underlies the philosophical concept of rigid designation, but this issue is not critical here.

Kaplan begins by separating the "meaning" of an indexical into two components. One part of an indexical's "meaning" is the linguistic rule or procedure, known by every competent speaker, that determines its content—for example, the rule for *I* can be paraphrased roughly as being "the speaker of the utterance"—or, as Kaplan prefers "agent of the context." Such phrases are not intended to be synonymous to or substitutable for occurrences of *I*, but rather a characterization of what the linguistic rule for the indexical *does*. According to Kaplan, while something like this rule is, intuitively, what a speaker who knows the "meaning" of *I* knows, such a rule is not part of the "meaning" of a sentence containing the indexical. For example, the "*I*-rule" is not any part of the propositional content of *I am hungry*, which rather contains the individual that was picked out by the rule. These two different kinds of identifiable "meaning" Kaplan calls, respectively, "character" and "content." The content is "what is said," and the character is "that which determines content." While the character is not part of the content, it determines the content, and so may be given formal definition as a *function* "from context to content." Although their reference is mediated by a linguistic rule, indexicals are directly referential in the sense that the content of, for example, *I* simply is the individual who happens to be the "agent of the context."

Separating character and content as two components of indexical "meaning" as Kaplan does results in a two-stage semantic theory. The first stage, which is called "pre-semantic" in Kaplan 1989, is where the function of character operates "from context to content." The second stage is where more familiar semantic analysis occurs, such as the calculation of quantifiers and modal operators like possibility and necessity, as well as questions of truth or falsity. Kaplan is careful to distinguish between "context" and "circumstance of utterance"; the latter being what is used in the second stage of the semantical system for such evaluation. That contents of indexicals should be determined prior to the second stage is supported by Kaplan's example given as (10) below. The content of "actually," "here" and "now" is

actuality at the place and time of the utterance, and this is so even though the indexicals are in the scope of "possible," "in Pakistan," and "in five years."

- (10) It is possible that in Pakistan, in five years, only those who are actually here now will be envied

Kaplan's two-stage model will also account for the fact that while an utterance of *I am here now* will always be true, it will not be necessary. Although the characters of the expressions in (9a) are different from those in (9b), the content of (9a) is the same as the content of (9b), and it is the content that is evaluated in the scope of a necessity operator at the second stage.

So far, I have discussed only how Kaplan's theory works for indexicals—how does it fare with other expression types? For indexicals, character is identified with their associated linguistic rule, but once Kaplan defines character *functionally* as whatever it is that operates "from context to content," every expression will have something that serves this function, though it may not look like a rule or procedure. For each expression type, he can ask what serves this function "from context to content," and the answer will be the expression's character, by definition. Some expressions, like names, have the same content in every context; each name thus has a "stable" character that would be represented formally in his system as a *constant* function.

What about Kaplan's claims for demonstrative expressions? Like an indexical, a demonstrative is "unstable," its content changing from context to context. What serves the function to the content for a demonstrative? The candidates for character are none of them entirely satisfactory, and on this matter Kaplan himself has changed his views. In Kaplan 1977, it simply is the demonstration—the extra-linguistic pointing or physical gesture, whatever it may be that accompanies the expression. As with indexicals, while the character (physical pointing) determines the content, it is not part of the content: demonstratives are

directly referential in that their content simply is the individual thus picked out. The analogy with indexicals is furthered by Kaplan's claim that the demonstrative's referent is determined by the demonstration as absolutely and rigidly as an indexical's is by rule: if a speaker says *that* while pointing at object X, even though he meant to point at Y, the content of the demonstrative is X. In Kaplan 1978, this is illustrated by the case of the speaker who, without looking, points to the place on the wall where Rudolf Carnap's picture has previously hung and says something like *that is a great philosopher*, unaware that a picture of Spiro Agnew now hangs there. Because the gesture demonstrates a picture not of Carnap but of Agnew, Kaplan argues that the demonstrative expression refers to Agnew. No matter what the speaker *meant*, what he has just *said* is that Agnew is a great philosopher. He concludes that the function that operates "from context to content" for a demonstrative is the pointing gesture itself.

That there are problems with identifying physical pointing as demonstrative character Kaplan himself was aware of in the earlier papers. There's the "mischievous fellow who switched pictures" who would, after all, know that the speaker did not intend to refer to Agnew, and probably would not take him to be doing so. There's the fact that pointing or other physical gestures can be vague, imprecise, or simply indeterminate of which object is picked out. By "Afterthoughts" (1989), Kaplan abandons physical demonstration, and instead favors the idea that the character of a demonstrative is the speaker's intention. On this later idea, it is through the hearer's recognition of the speaker's intention to demonstrate object X that X is the content of the demonstrative. Clearly this view is incompatible with the intuitions for Carnap-Agnew, which Kaplan retroactively decides is an exceptional case.

Whichever is decided upon—either a physical pointing or the speaker's intention to point—the character of a demonstrative is *external* to language, as compared to the character of an indexical, which is *internal* to language. In the next two sections I will argue that the


differences between the two are fundamental; only the latter should be treated in grammatical theory.



1.12 On pointing


In this section I digress from Kaplan's theory in order to discuss some simple observations about pointing, and the role that pointing has in language and the use of demonstrative expressions. I will argue that it is not a physical pointing at an object, nor a speaker's intention to point at an object, that determines its referent. I will put forth the argument that pointing is not a tool that can refer; linguistic expressions are such tools. A particular expression refers to an object, although its lexical content may underdetermine what that is. In certain circumstances—including those in which pointing gestures are employed in a particular way—such underspecified expressions are felicitous. As a result, those pointings—or indeed the recognition of the speaker's intentions to point, however such recognition is achieved—are helpful pragmatic clues to a hearer in figuring out what has been said. My claim is not that pointing, or the intention to point, is unimportant, but that the proper explanation of demonstration lies in the theory of language use, and not, as Kaplan has it, under the notion of semantic character.

Pointing at an object draws attention to it. There is nothing else, on this view, that pointing does. "Drawing attention" to something is not the same as "referring" to it. While the prototype point is the index finger extended from an otherwise closed fist, let's include in the category any gesture that can be similarly interpreted: one can point with a shift of one's eyes, with a toss of the head, or a vague wave of the hand, and so on. Whatever the gesture, the function of pointing is to cause a particular object in the environment to stand out from the others. In this it may succeed or fail. It can be effective without language, although a certain level of intelligence is required: any visitor to the zoo knows that chimpanzees and

some other primates use pointing communicatively, both in turning their attention to something that has been pointed at, and in pointing to draw someone's attention to something (usually food—see Leavens et al. 1996), but my cats can neither point nor do they understand pointing. A prelinguistic baby points at her juice bottle, clearly hoping that the caregiver will hand it over, but in so doing she has not *referred* to the bottle.

By itself, a physical pointing is not, and cannot be used as, a referring expression; it cannot, for example, take the place of a word as part of a sentence. That the examples in (11) are both ungrammatical shows that a demonstration alone, represented here by the iconic picture , cannot by itself fill the subject position of a sentence or the object position of a verb.

- (11) a. *  is beautiful
 b. * Jack likes 

Physical pointing, however, often does *accompany* expressions that occur in these kind of positions—grammatically speaking, noun phrase positions. A point can accompany an expression whose referent is fully determinable linguistically: as when saying *I*, I point to myself, or when calling on a student, the teacher says their name while pointing at them. It is not these superfluous pointings, but the *underspecified* noun phrase expressions often accompanied by a point, that are called "demonstrative," paradigmatic cases being the third person pronouns *he*, *she*, and *that*, and noun phrases of the form [*that* N]. Two examples are given in (12), where the parenthesized icon () indicates that a physical demonstration (of whatever kind) has occurred along with the preceding expression. In such uses, pointing has the same function—drawing attention to some object in the environment—as when it occurs without language.

- (12) a. She (☞) is beautiful
 b. Jack likes that (☞)

However, such expressions do not *require* a pointing gesture on the part of the speaker. If an object already is standing out in the environment in some obvious way, no pointing is necessary: of the egg that has just exploded in the carton, a speaker can say *look at that!*, where *that* is a "demonstrative" expression that can only mean the egg that has drawn attention to itself, as it were, by exploding, and not any of the eleven well-behaved eggs. Similarly, when the bakeshop lady picks up a cookie to put in my bag and I say *I don't want that one* I do not bother to point, because her picking-up action has done the "demonstrating" already. Indeed the object need not be standing out in any physical way, but may simply be top-of-mind for the conversational participants; when my girlfriend telephones to say *he called me!* who else could it be but the new boyfriend whom she cannot stop thinking and talking about. The reasons that a particular object might be standing out in a circumstance are so various that the task of describing what does the "demonstrating" for the demonstrative becomes hopeless.

Are noun phrases and locative adverbials such as *there* the only linguistic expressions with which physical pointing is felicitous? Clearly not—below are two that come to mind.

- (13) a. Look! (☞)
 b. Wow! (☞)

It might be argued, though, that these examples are actually shortened or elided forms of sentences that do contain a demonstrative phrase—in full these might be analyzed as *Look [at that/over there]!* and *[That is] wow!* But a "hidden NP" analysis is unlikely for the case of a speaker pointing at a dark cloud and saying (14).

(14) It's going to rain (☁)

Clearly there is no noun phrase in (14) that refers to the cloud. *It* is not a candidate, since (14) does not say that the cloud is going to rain—and there is no other NP candidate in the sentence that the pointing gesture could be accompanying. Indeed, the cloud is intuitively not any part of the content of (14). But pointing at it clearly may be felicitous and meaningful to the participants in this conversation: by drawing attention to the cloud, the speaker is in all likelihood offering the cloud's appearance as relevant to the weather prediction being made. The speaker has drawn attention to the cloud, but did not refer to the cloud.

These examples show that demonstrative expressions can be used felicitously without pointing, and that pointing can occur meaningfully without demonstrative expressions. On this view the name "demonstrative" for these expressions is unfortunate, and may itself have led to the mistaken idea that the "demonstration" must be part of a demonstrative's "meaning." But if the claim that demonstration is no part of their "meaning" can be upheld, how do such expressions manage to refer? After all, the expressions that are used as "demonstratives" are those whose lexical content seriously underdetermines their reference. That is, they can "mean" almost anything in some large range. In what circumstances would a speaker nonetheless choose to use such a defective expression as the *most precise tool* to refer to a particular object? When could such use be felicitous? The answer, I believe, lies once again with Grice's maxim of quantity. It is often forgotten that in addition to "be as informative as required," the maxim continues, "don't be more informative than required." Say enough, but do not say too much. A speaker following this maxim will choose expressions that convey enough information to determine the referent, *but no more*. One example where the use of such an underspecified expression would be felicitous is the case where there is something standing out in the environment that very obviously must be the

referent. Such cases have already been discussed. Compare two possible utterances in the circumstance where the egg has just exploded, neither of which is accompanied by a demonstration, shown in (15). To refer to the egg, (15a) uses the lexically underspecified *that*, while (15b) uses a fully specified descriptive phrase. Now it seems to me that to say (15a) is to be as informative as required, while to choose (15b) instead would be to be more informative than required, and thus pragmatically odd by the maxim of quantity.

- (15) a. Look at that!
 b. Look at the egg that just exploded!

Or suppose our car has broken down in a snowstorm and a large dark spot appears in the distance. *That's a truck!* I yell. Of course I do not point, for the referent for *that* could be nothing other than the one object in the otherwise blank visual field. By the maxim of quantity, I have been as informative as I need to be; to say *The large dark spot (that has appeared in the distance in the white nothingness) is a truck* would be far *too* informative.

So underspecified expressions such as *that* or *he* felicitously refer just in case they are *enough* to secure reference—and to say more would be *too much*—according to the maxim of quantity. But now we can generalize the point of pointing. Because pointing has the effect of drawing attention to an object, it can be used by speakers to alter the circumstances in such a way that these lexically underspecified tools are *enough* to handle the task of referring to the desired object. That is, pointing creates conditions similar to the natural situations of the egg exploding, or the truck in the snowstorm, where to say more would be too much. By pointing at the orange cat and saying *he knocked over the wine glass*, I have used the pronoun *he* to refer to the cat. I need choose an expression no more specified than *he*, for having created a circumstance in which attention is drawn to the orange cat with my pointing, to say more—by using his name, or a description that uniquely specifies him and not some other

male in the household—would be to be more informative than is pragmatically required. A further welcome result of this account is that no special explanation is required for the so-called "deferred uses" of demonstratives, discussed by Nunberg (1993), as when a speaker points to a book and says *he's a great writer*, referring to the author. Note that pointing at pictures of individuals, such as in the Carnap-Agnew example, is also such a "deferred use" of demonstration, since the intended referent is the man, not the picture. The speaker has not referred to a book, or a picture, by pointing, but the gesture did bring to prominence the individual who is referred to with the linguistic expression *he*—the author, in the case of the book, or the person portrayed in the picture. On the other hand, if while pointing at the orange cat I say *I must remember to buy some Friskies*, I have not referred to him, because the only tool that can refer is a linguistic expression, and no expression in the sentence I uttered did so.

A witness evaluates the suspects in a police line-up. Pointing at suspect #3, she says *he's the one who did it*. Without the accompanying point, this would be an ambiguous utterance, for *he*, by itself, can refer to anyone in the line-up, or any other male individual. From the point of view of a listener trying to figure out what has been said, a physical gesture thus can function as a disambiguator. But in linguistic analysis, that point of view is the wrong way around. The witness's utterance is felicitous because she is pointing; *he* succeeds in referring because she has created the circumstance in which *he*—although linguistically speaking *could* be referring to any of the several men in the room or indeed any male at all—in fact refers to #3. Because the pointing has drawn attention to suspect #3, to say more than *he* would be to say *too much* by the maxim of quantity, and thus *he* succeeds in referring to #3. To refer to someone else while pointing at #3, a great deal more would have to be said. But to refer to #3 while pointing at #3, *he* is enough, and not too much. This is not to say that the pointing *determines* the referent, or is part of the "meaning" of the expression.

The same utterance, without a pointing, would have been felicitous in referring to #3, said following suspect #3's collapse into a seizure.

Such pragmatic conventions may fail. In pointing, the witness might have a visual disorder whereby the apparent position of an object is to the right of its actual position, so she believed herself to be pointing at suspect #2. But this can be corrected: as #3 is handcuffed, she can protest that she intended to point at #2, and the police will release #3. Similarly, she might say *he's the one who did it* without pointing, believing #3 to be standing out already in an obvious way, but again fail, it not being at all obvious to her audience who will probably say *who/which one do you mean?* That demonstration can fail, and be corrected; that speakers can believe in error that "demonstration" has already occurred—these are reasons to place the explanation for it within in the theory of use, and not, as Kaplan does, in semantics.

Some care needs to be taken: the claim is not that there are no "demonstratives," but rather that being accompanied by a demonstration is not *defining of* this class of expressions. An expression that co-occurs with a demonstration is not necessarily being used "demonstratively," nor is it necessarily a "demonstrative." Intuitively, however, there are "demonstratives"—a subset of "underspecified" expressions that can co-occur with a demonstration, that are used in cases where the intended referent has prominence—whether this prominence is achieved through the act of a demonstration or not. When they are used in this way, they are being used "demonstratively," whether they co-occur with a demonstration or not. As a class, such expressions are distinct from another subset that can be used for "familiar" referents: [*the N*] and the neuter pronoun *it* in English fall into the latter group but not the former. To repeat the general claim being made here: linguistic expressions—that is to say, pieces of syntax containing words—are the only tools that can refer. The so-called "demonstratives" succeed in referring, despite their underspecificity, because they are used in circumstances where to say more would be to say more than is necessary to secure reference.

When a particular object is prominent, or when attention has been drawn to an object through pointing, a subsequent or co-occurring linguistic expression need have very little lexical substance in order to succeed in referring. But without the linguistic expression, there can be no referring; until the child learning English accompanies her pointing with a *word*, she—like the chimp—is only pointing.

1.13 Internal versus external pointing

To account for indexicals and demonstratives under the same theory, as Kaplan does, is to claim that the character—linguistic rule or procedure—does the same thing for an indexical as the character—physical pointing or an intention—does for a demonstrative. In the previous section I argued that reference is not determined for a demonstrative through the demonstration, but rather that the demonstration creates a circumstance in which the use of a demonstrative is felicitous, and in many circumstances, a demonstration is not required to make such use felicitous. Given this understanding of a demonstration, let's ask whether what Kaplan identifies as indexical character—the "linguistic rule or procedure" that picks out the appropriate contextual individual—can be thought of as the correlate to the demonstration, as simply a pointing, or intention to point, that happens to be internal to language.

In comparing this "internal pointing" to the external kind, the first clear difference between them is that they are learned at quite different times in the language acquisition process, as discussed in section 1.01. Recall that external pointing is mastered by children before their first birthday, and that demonstrative expressions accompanied by pointing are among their first words, while they do not have command of their first expressions that contain internal pointing—the indexical pronouns—until well after two years old. This is true even for deaf children acquiring ASL, in which the "internal" pointing is in fact physically external. But the two kinds of pointing are nevertheless sharply distinguished for them:

although the deaf children point at things quite early to draw attention to them, the pointing gestures that are *words*—the indexical pronouns—are mastered much later, contemporaneously with hearing children’s mastery of *I* and *you*.

A second difference is the availability of charity: with external pointing there is a leeway that is not evident with the internal pointing. As seen in the witness example above, the identification of the culprit with external pointing can be in error and subsequently corrected. Even in Kaplan’s Carnap-Agnew case, the speaker can explain about the pictures and correct the error. When the pointing gesture fails for whatever reason—by not exactly aligning with the target, by picking out more than one object, or no object—in all of these cases the hearer may understand anyway through charity. Indeed it is reflections such as these that led Kaplan to revise his idea that the character of a demonstrative was the speaker’s intention. But there is no analogous charity with an indexical: if the witness says *I did it*, she cannot subsequently recant her confession by claiming that an error was made in the indexical’s internal pointing, as she did when she had pointed at the wrong man. Recall also the case of the delusional man who believes himself to be de Gaulle. Though having full knowledge of his mental state, his hearer cannot through charity take him to be referring to de Gaulle when he says *I*. Furthermore, appeal to speaker intention does not change matters, as illustrated by Wettstein’s (1984) extension of the de Gaulle example. Suppose the delusional man is a history professor, and in the course of showing a film about de Gaulle to his students, he says *...and then I marched triumphantly into Paris*. Not only does he believe himself to be de Gaulle, but also he clearly has every intention of referring to de Gaulle with his use of *I*. Still there can be no charity: *I* refers not to de Gaulle but to himself.

When external and internal pointing are consistent there is no issue, such as when a speaker points to himself while saying *I*. In general, if an expression refers unproblematically to some object, drawing attention to that object is superfluous. When there is a discrepancy

between the different kinds of pointing, however, an internal pointing always overrides an external pointing or an intention. If the witness says *I did it* and points at suspect #2, she has confessed to the crime, not implicated the man. If the police wonder why she was pointing they may come up with an explanation—perhaps she is mad, perhaps the man is her confessor—but impossible as an explanation would be that she meant to identify him instead of herself. An internal pointing that is inconsistent with an intention—the speaker said *I* but really meant someone else—is madness, as with the de Gaulle delusion; nevertheless the internal pointing “wins.” On the other hand, in the cases where an external pointing is inconsistent with speaker intentions, as with the Carnap-Agnew pictures, which overrides the other does not seem to have a clear answer, varying with what the knowledge of the participants is assumed to be.

Finally, intuitions concerning when same or different things have been said are not comparable with internal and external pointing. To see this, consider first the two utterances in (16), where the intuition is that in (16a) versus (16b), different things have been said. In (17), however, although the contents of the utterances are respectively the same as in (16), the intuition is that Jack and Teddy have said the same thing.

- (16) a. Jack is hungry
 b. Teddy is hungry
- (17) a. *Jack speaking:* I am hungry
 b. *Teddy speaking:* I am hungry

Note that this “same-saying” is not due merely to the fact that Jack and Teddy have used the same words—for if Susan says *Jack is hungry*, speaking of the cat, and the sports announcer says *Jack is hungry*, speaking of the first baseman, no one would argue that they had said the

same thing, although they did use the same words. The intuition of having said the same thing while the content—that is, the individuals referred to—are different occurs only with sentences containing indexicals. Kaplan accounts for this intuition by noting that (17a) and (17b) contain expressions that have identical character, although they have different contents. It is because the contained expressions have identical character that when Jack says (17a) he has "said the same thing" as when Teddy says (17b).

Here once again the analogy between indexicals and demonstratives breaks down. In (18), the character of the demonstrative *he*, the pointing gesture, is identical in both sentences, and yet the intuition in this case is that Susan and Alice have said different things.

(18) a. *Susan, pointing at Jack:* he (☞) is hungry

b. *Alice, pointing at Teddy:* he (☞) is hungry

Although they have used the same words, and both used the same external pointing gesture while doing so, Susan and Alice have not said the same thing in (18). They have pointed at different objects. If the intuition of "same-saying" is to be explained through appeal to character, then the external pointing gesture must not be character. In line with comments in "Dthat" (1978), Kaplan would probably argue that the pointings in (18) are different demonstrations and that therefore (18a) and (18b) have different characters, but if two demonstrations can never be of the same "character," then their difference from indexicals is emphasized: Jack and Teddy in (17), who have used the same internal pointing, have used identical "characters" and said the same thing, even though they too have "pointed" at different objects.

To the original question, what is it that we know when we know indexicals, Kaplan would say: we know the character of each indexical, the linguistic rule or procedure that determines its referent in a context. It is clear that whatever this is, it is part of our

knowledge of language. But to the question, what is it that we know when we know the character of a demonstrative, Kaplan would have to say either that we know how pointing works, or that we know how to recognize a speaker's intention. What I have argued here is that the first is knowledge of language use, while the latter can only be interpersonal psychology.

1.14 Metacharacter

Before moving on, let's examine the notion of "metacharacter" put forth by Smith (1989), who attempts to extend Kaplan's theory of indexicals to account for cases in which indexicals do not evaluate to what Kaplan's formal "character" determines alone. I will argue that there is no need for metacharacter, and that Smith's cases all fall out of a proper description of context and how context is determined; in fact, to the general process I called "transplantation" in the previous section.

To illustrate Smith's proposal, let's consider two of his temporal examples. In the first, the speaker is at the ballet, and becoming confused during a "flashback episode," asks (19a) of his companion, who correctly answers "No." The reference of *now* in (19a) is not the time at which he utters the question, but the present "imaginary time" established by the play. In the second example, in the case where (19b) appears within a scholarly article, *now* refers not to the time of writing nor of reading, but to a "nontemporal time" that Smith roughly paraphrases as "at this place in my argument."

- (19) a. Is this happening now?
 b. Now I am going to prove the bundle theory of objects is false

Smith's idea is that different metarules apply that determine how character is determined on the particular occasion of use. His metacharacter rule for the "theatrical

audience context" is shown in (20a), while (20b) is for the "theoretical context" of the article. The metacharacter for an occurrence of *now* in the answering machine example *I'm not here right now*, which I discussed in the previous section, is shown in (20c).

- (20)
- a. "Now" refers to the imaginary time that is treated as the present time in the story. [= Smith's R_3]
 - b. "Now" refers to the point in the argument at which it is tokened. [= R_4]
 - c. "Now" refers to the time(s) later than the time of tokening that the context indicates the speaker/writer intends the communication to be heard or read. [= R_2]

The first problem with rules such as these is that they are simply listed on a case by case basis—no generalizations are captured. There would have to be a very large number of such rules, one for every circumstance for every indexical, and nothing in Smith's theory limits how many there might be. Furthermore, in Smith's system, nothing would prevent a "metarule" like (21), which would give the wrong result in the de Gaulle case. So Smith's rules neither cover all the cases, nor can they predict the cases that do not occur.

- (21) "I" refers to de Gaulle in the context of a delusional man speaking who believes himself to be de Gaulle.

Secondly, although as descriptions for what is picked out in each circumstance Smith's rules are accurate, they are inconsistent with his notion of metacharacter as those higher order rules that determine which first-order rule applies. There is nothing "meta" about the rules as written in (20); they determine the referent directly, without the mitigation of a lower-order rule, and so fail to capture the commonality that all three have in virtue of the character of *now*. What he describes in the text would more accurately be reflected in "metarules" of the form shown in (22) that I have constructed parallel to (20), in which the commonality has been removed. A "first-order" rule—the normal character of *now*—could

then be applied across the cases.

- (22) a. The temporal context when watching a ballet is the imaginary time in the story.
 b. The temporal context for an argument is the sequence of steps within it.
 c. The temporal context for a prerecorded message is the time of playback.

But stripped down in this way, it becomes clear that Smith's notion of metacharacter is nothing more than a description of the "transplanted" context in each circumstance.

Individual "metarules" are not necessary; all that is needed is a general notion of what is a proper context shift. Once this is generally established, the meaning of *now* (as well as other indexicals) will follow normally, whether on the answering machine, at the ballet, during a scholarly argument, or indeed in novel circumstances.

Smith also discusses a case that is interesting in light of the earlier discussion of how "demonstrative" should be defined. The case is an instance of the expression *here* to indicate a location other than the speaker's, as when in my New York apartment, I point at Düsseldorf on a map, and say (23). *Here* refers not to New York, but to Düsseldorf.

- (23) Susan lives here (☞)

Kaplan calls such examples the "demonstrative use" of *here*, opposing it to the "pure indexical use" of *here* which picks out the location of the speaker. But *contra* Kaplan, there is good reason to believe that *here* has no "demonstrative use," as is shown by the fact that I cannot point to my neighbor's window and say (24), to mean that Jack likes being in her apartment.

- (24) * Jack likes it here (☞)

It is perhaps easy to see why Kaplan (and others) have mistaken *here* in (23) to be a "demonstrative," because like an occurrence of *that* (☞), *here* is both accompanied by a

pointing gesture and evaluates to what is being pointed at. But as noted above, pointing gestures can occur without language, and when they occur with language they are not necessarily accompanying a "demonstrative" expression, as discussed with example (14). And unlike *that* (👉), which can be used to indicate just about any object, the use of *here* (👉) is severely restricted, in fact limited to indicating locations on *maps*.

The correct analysis of (23) is that, like Smith's earlier examples, it is a transplantation. By pointing at the map, a speaker "throws" the utterance into the symbolic space of the map. The indexical *here* is now evaluated with respect to that context, and not the physical space the speaker actually inhabits. To understand (23), the interlocutors must, of course, understand the conventional use of maps, which makes such a context shift possible. Perhaps because of such conventions, a shift to the map space seems to be one of the few transplantations that can be effected through pointing, as pointing at a photo of de Gaulle in Paris cannot change the referent of *I* nor of *here*. Understood this way, it is clear why (24) fails. Pointing at different locations or objects, such as my neighbor's window, does not establish a different contextual space, but rather draws attention to the locations or objects in the actual contextual space. This example shows yet another use of a pointing gesture, in this case to effect a transplantation, underlining the fact that we did well to reject the definition "accompanied by a demonstration" for a demonstrative.

1.2 Next steps

I have argued from a few perspectives that demonstratives are different in kind from indexicals, and therefore do not expect them to be accounted for under the same theory. For this reason, in the upcoming analysis of indexicals, I will be putting demonstratives aside, returning to discuss the proper relationship between indexicals and demonstratives within the theory in chapter 5.

In the next chapter, I will be asking whether Kaplan's theory is adequate to explain indexical expressions. Does what Kaplan calls the character of indexicals properly belong in grammatical theory? Beginning with an analysis of the syntax of first and second person pronouns, and evaluating arguments for and against syntactic indexing, I will conclude that the indexicals require the same syntactic description as third person expressions. In light of this, I will argue that "character" is not a useful description, but that a property having a function similar to character is appropriate to hypothesize at a syntactic level of description for the indexical expressions. Because this property not only exists at a different level of description but is also more limited in scope than Kaplan's notion of "character," I differentiate it with the name "orientation," and propose a new model for the description of indexical expressions in which orientation plays an important role.

Chapter 2: A new model for indexicals

2.0 Why a new model?

In this chapter I argue that an account of indexicals that centers on semantic "character" along the lines of Kaplan's theory is inaccurate, and propose a new model for the description of indexical expressions. My argument rests on observations of the syntactic behavior of the indexical pronouns, which will be put forth in the first half of this chapter. The central thesis of my position is that in terms of syntactic individuation in natural language, indexical expressions are no different from their non-indexical counterparts. This position is in direct conflict with the received wisdom that posits a fundamental split between first and second person expressions on the one hand, and third person expressions on the other. Under a Kaplanian treatment, the individuation of indexical expressions is based on "character." Two indexical expressions will be considered to be occurrences of the same expression if they have the same character in a context, while if two expressions have different characters, they will be occurrences of different expressions. The individuation of non-indexical expressions, however, is not character-based. Since the formal syntactic mechanism through which third person expressions are individuated is, in the framework I assume, numeric indexing, I will call the extreme version of a Kaplanian approach to indexicals the "anti-indexing" position, understanding this to mean that from such a viewpoint, indexical expressions do not require whatever it is in the particular theory that functionally individuates expressions in the syntax.

A compromise form of the anti-indexing position, which I will call the "dualist" position, has been proposed by Larson and Segal (1995, section 6.5), who believe that the distinctions needed for third person expressions are insufficient to accommodate indexical expressions. Their proposal is "dualist" in that it assimilates semantic "character" into a

system that is similar to one that assumes syntactic indexing. They invent a new kind of index, based on Kaplan's character, to make the fuller distinctions that they think are necessary. On their account, while third person pronouns are individuated by numeric indices, indexicals are *alphabetically* indexed, each alphabetic index associated with a "fixed utterance role." Thus while third person pronouns may bear different numeric indices, all first person pronouns will have the same alphabetic index, since they all have the same character. The irony of Larson and Segal's proposal is that the indices they invent for first and second person pronouns are not sufficient to make the distinctions that are empirically required for indexicals. I will show, to the contrary, that the syntactic distinctions independently motivated for third person expressions, if used for first and second person, *are* sufficient.

My claim is that in terms of syntactic individuation, expressions in all persons are individuated in the same way, and that there should be no disjunction in the theory in this regard between first and second person versus third. The correct account, I argue, is one that posits a uniformity across all persons: it is necessary to have numeric indices—or an equivalent syntactic mechanism—for first and second person expressions as well as third. I will defend this "uniformity thesis" throughout this chapter, providing evidence that in terms of individuation of expressions in the syntax, first and second person pronouns are no different from third. The problem faced by a Kaplanian anti-indexing position, as well as a dualist position such as Larson and Segal's, is that their theory makes distinctions that are not needed, while not allowing them to make all the distinctions that are needed. For example, I will present evidence that two expressions having different Kaplanian "characters," or different alphabetic indices, may be, syntactically speaking, occurrences of the same expression. Other evidence indicates that two expressions that are held to have the same "character," or the same alphabetic index—such as two first person pronouns—might *not* be

occurrences of the same expression. The uniformity thesis, in saying that there is *one* kind of numeric indexing—or equivalent syntactic function—for all expressions, allows all the distinctions that are needed to be made.

In light of the evidence for the uniformity thesis, I will in the second half of this chapter propose a new model for the description of indexicals. In terms of the individuation of expressions, noun phrases containing first and second person pronouns will be no different from those containing third person pronouns or names. However, indexicals will be differentiated from non-indexicals in the new model in terms of a hypothetical syntactic property that I call "orientation," a new function that will operate in the proposed model at the syntactic level of logical form.

2.1 The syntactic indexing of indexical pronouns

In this section I undertake a linguistic analysis of indexicals, concentrating in particular on syntax, an area that has long been ignored with respect to these expressions. What is the proper grammatical description of sentences that contain indexical expressions? Does the notion of character fit into this description? As there is a rich existing literature on the syntax of non-indexical pronominal expressions, my analysis begins with the indexical pronouns. No one disputes that the syntax of natural language is capable of individuating third person expressions. Syntactic theory has to have some mechanism through which it can be determined whether two third person noun phrases are occurrences of the same expression or not. The question I will be concerned with is whether expressions containing indexical pronouns are individuated in the syntax in the same way as third person expressions. In the theoretical framework I assume, in which numeric indices fulfill this function, the question becomes: should indexical pronouns be syntactically indexed? But the conclusions I reach here would be valid assuming any functionally equivalent syntactic mechanism.

2.11 What are numeric indices and what is their function?

First, let me be as precise as possible as to the role numeric indices play in the syntactic description of noun phrases, in general, in the theoretical framework I assume here. It is often the case, in both the linguistic and philosophical literature, that numeric subscripts are appended to words or phrases without much discussion of what the numbers are supposed to mean or what, if any, theoretical claims are intended with their use. The theory developed by Fiengo and May (1994) is an exception to this. In their system, which presupposes autonomy, a noun phrase index is claimed to be part of the structural description of a sentence, and as such is not only constrained by purely syntactic rules but also interacts with (and can be referred to by) other syntactic operations. The familiar binding principles determine the distribution of these theoretical entities—the indices—on different kinds of noun phrases—that is, those containing pronouns, reflexives and names. In addition, since they are part of the structure, the indices also are part of the input to the semantic component, where they feed interpretation. Thus numeric indices play a role in the syntax, contained in the structure of noun phrases, and also in the interpretive component.

Before considering first and second person pronouns, let's review how the theory of indices works for third person pronominal expressions. Under binding theory, syntactic constraints specify the possible distribution of indices in (1a-d).

- (1)
- a. She₁ likes herself₁
 - b. She₁ likes her₂
 - c. She₁ likes her_{1/2} mother
 - d. She₁ walked in and then she_{1/2} sat down

By binding condition A, *she* and *herself* must have the same index in (1a), else *herself* will not be bound, while by condition B, *she* and *her* must have different indices in (1b), else *her*

will not be free. In either (1c) or (1d), the two pronouns may be coindexed or conjoined, as far as binding theory is concerned, as each pronoun will be structurally free regardless: in (1c), *her* is not c-commanded by *she*; in (1d), the two pronouns are in different local domains.

What the index does is to indicate whether a particular expression is syntactically an occurrence of the same expression as, or a different expression from, another occurrence. Note that sameness or difference of morphology does not necessarily correlate with sameness or difference of syntactic expression: two occurrences of *Jack*, like two occurrences of *he*, may be occurrences of different expressions or the same; while the expressions *Jack* and *he* might well be, as far as the syntax is concerned, occurrences of the same expression. To indicate the syntactic sameness or difference of expression in this theory numbers are conventionally used: thus *Jack*₃ is an occurrence of the same expression as *he*₃, and neither of these is an occurrence of the same expression as *Jack*₄ or *he*₄. Numbers are convenient to use because there are a lot of them, and because their everyday familiarity makes it easy for theorists (and their readers) to see when two indices are the same or different, but the fact that numbers are used to individuate expressions and not some other marks such as ♥, ♦, ♣, or ♠ has no theoretical consequence.

To this point in the explanation of (1a-d), the only role played by the indices is to have marked the pronominal expressions in such a way that the syntactic rules can "see" whether they are occurrences of the same expression. Importantly, syntactic rules such as the binding conditions refer only to the sameness or difference of the indices themselves, and not to, say, the individuals in the world that these expressions refer to. At the level of their application, the binding conditions are "blind" to what the expressions refer to, or indeed whether the expressions refer or not. Furthermore, sameness of referent does not necessarily correlate with sameness of syntactic expression: for example, the two different expressions

John and *Jack* may well name the same individual. If condition B were not blind, if it were to say something like "a pronoun must (eventually?) refer to some individual in the world different from that which a noun phrase that c-commands it refers to," such a rule would not only flout autonomy, but it would also make the wrong predictions in a number of cases. These include examples such as the "masked ball," "John's coat," and "amnesia" sentences. (For discussion, see chapter 1 in Fiengo and May 1994.)

What role do the indices play when structures such as (1a-d) are interpreted?

Abstracting away for the moment away from the interaction of dependency theory, in Fiengo and May's system, the context in which they are evaluated is represented formally as a sequence, which operates as a function from indices to individuals: the value of a noun phrase with index i is the i th individual in the sequence. So in a sentence that contains two noun phrases with the same index, such as (1a), the two expressions will necessarily evaluate to the same individual. However, in a sentence such as (1b), with two noun phrases containing different numeric indices, the valuation procedure may yield different individuals or the same individual, for the different indices. Put another way, while each position in the sequence contains only one individual, nothing prevents an individual from occupying more than one position in the sequence. The outcome of this model of the grammar is that, while syntactic coindexing entails semantic coreference, it is not the case that syntactic noncoindexing entails semantic noncoreference.

2.12 The anti-indexing and dualist positions

Given this understanding of the role of indices within the theory, it might be argued that while serving quite adequately for third person noun phrases, this kind of syntactic indexing is neither necessary nor desirable for first and second person expressions. This viewpoint I have called the "anti-indexing" position, and it has two clear supporting

arguments. First, other linguistic features appear to be exploitable for the syntax to "see" whether indexical expressions are occurrences of the same expression or not, without bothering with numeric indices. Second, to interpret the indexical pronouns in the same way that third person expressions are is counterintuitive, especially when there is a direct method available through "character" in Kaplan's model. Because the argument I will advance is counter to the anti-indexing position, let's set up in brief detail how such an argument against numeric indices might go. For the purposes of simplicity, the discussion will be confined to singular expressions.

First consider the binding facts. For a limited range of data, such as shown in (2), the distribution of first and second person pronouns and reflexives is the same as that observed for third person: the pronouns must be free, the reflexives must be bound. (That the facts are actually not so clear in a larger range of data is off the point now, but will be returned to later.)

- (2) a. I hit myself
 b. * I hit me
 c. You hit yourself
 d. * You hit you

Despite this parallelism with third person, the anti-indexing position could maintain that it is hardly necessary to hypothesize indices as part of the structure of these noun phrases to explain the distribution in (2). Since person features must be part of the structure in order to account for, among other things, subject-verb agreement, which everybody agrees is syntactic, for the purposes of binding theory, why couldn't it be that syntactic sameness or difference is recognized on the basis of first and second person features alone for these expressions? It might be put forth as a further argument, by the anti-indexing theorist, that numeric indexing

would allow the structures in (3) and only rule out those in (4).

- (3) a. I_1 hit me_2
 b. You_3 hit you_4
- (4) a. * I_1 hit me_1
 b. * You_3 hit you_3

On the face of it, this might seem to be a good argument for the anti-indexing position, but as will be made clear below, it is not. This argument assumes that the conindexing as in (3) is never a legitimate representation, but I will show on the contrary that the theory requires the distinctions that numeric indexing is capable of making in (3) versus (4) to explain the distribution of indexical expressions in natural language.

The anti-indexing argument might continue by saying that if numeric indices are claimed to be part of the structure of these first and second person expressions, then these would be subject to the same evaluation procedure as third person expressions in interpretation, their values being calculated against a formal sequence, unless some special stipulation was made. If the interpretation proceeds through the formal sequence, there would have to be some checking procedure to make sure, for example with a first person expression, that the individual returned by the valuation function was indeed the speaker of the utterance containing that expression. Alternatively, the numeric indices could be stripped off prior to interpretation. Either way, this roundabout evaluation procedure is counterintuitive. If notions such as "speaker" and "hearer" must be appealed to anyway, why not hypothesize interpretation as proceeding directly to the speaker or the hearer of the utterance, via a "character" rule or procedure such as in Kaplan's model, without the mitigation of a formal context sequence?

As laid out here, the anti-indexing position is clearly a strong one. Starting from such a perspective, however, creates a disjunction in the grammatical theory of noun phrases, treating first and second person pronominal expressions differently from third. The extreme response to this complaint would be to abandon the claim that numeric indices are part of the structure of *any* expressions—first, second *or* third—and posit a new unified theory that explains the distribution and interpretation of all noun phrases without syntactic individuation of expressions. The benign response would be to take a "dualist" approach, such as Larson and Segal's, who say that such a disjunction is the best explanation for the facts: first and second person *are* different from third. To argue for the uniformity thesis, as I will, is to say that in terms of syntactic indexing, first and second person are *not* different from third.

Let's consider Larson and Segal's proposal in more detail, for if it can be shown that their compromise, dualist position is untenable, it will follow that the less benign anti-indexing position must be abandoned. Larson and Segal hypothesize that the formal expression of context, the interpretation sequence, is actually the union of two sequences, one numeric and the other alphabetic, the latter being a privileged portion of the sequence—the first r positions for some r —that is rigidly fixed, against which the indexicals are interpreted. Thus, instead of assuming that the context is formally structured as a simple function, their new sequence σ has the structure in (5) (= their [55b], p. 217).

$$(5) \quad \sigma = \langle \sigma(a), \sigma(b), \dots, \sigma(r), \sigma(I), \sigma(2), \dots, \sigma(i), \dots \rangle$$

For Larson and Segal, the first and second person pronouns—along with other indexicals—do not have numeric indices but instead have these special alphabetic indices, whereas third person pronouns continue to have the familiar numeric indices. The pronoun I is stipulated to always have the index a , while *you* has the index b . In Larson and Segal's evaluation function, "fixed utterance roles" are associated with $\sigma(a)$ through $\sigma(r)$; in an utterance u , $\sigma(a)$

= "the utterer of u ," $\sigma(b)$ = "the addressee of u ," and so on. The values of $\sigma(a)$ through $\sigma(r)$ might therefore be different from one utterance to the next, although the "role" associated with each alphabetic index remains constant—thus this special index may be seen as a representational correlate to Kaplan's character. In general, the alphabetic positions of Larson and Segal's sequence against which a particular utterance is interpreted may well evaluate to individuals that also occupy positions within the numeric portion of the sequence—which is of course in line with our previous understanding of context structure.

Larson and Segal's proposal directly solves—as it was designed to—the interpretation problem discussed above that there would be if numeric indices were assigned to first and second person expressions. While they only sketch the analysis for *I* and *you*, the other first person singular pronouns *me*, *my*, *mine*, and *myself* will presumably also be stipulated to have the index a , while all second person forms would have the index b . In such a procedural system, no checking back procedure would be needed to make sure that the individuals returned in evaluation have the appropriate "utterance roles," since the indexicals are evaluated directly via such roles, in the way of Kaplan's character.

That the index is of a different, non-numeric kind in Larson and Segal's proposal is relevant, to them, for interpretation. But because their solution postulates something having the function of "character" as an index, and not as a purely semantic property, certain of the disjunctive problems between expressions of different persons are solved under their analysis, assuming that their indices can "percolate" from the lexical item to the containing phrase. For example, although the alphabetic index is a special kind, there is no longer a problem in what is relevant to the syntactic binding conditions, for on Larson and Segal's proposal all noun phrases, whatever their person features, do have indices that can be used by the syntax to determine whether two expressions are the same or different. Assuming their stipulative a and b indices, the distribution of first and second person pronouns and reflexives, repeated in

(6), can thus straightforwardly be explained by direct appeal to the existing binding conditions. As with third person expressions, the rules can appeal to sameness or difference of index to determine boundness or freeness—and no appeal to sameness or difference of person features, morphology, or referents is necessary.

- (6) a. I_a hit myself_a
 b. * I_a hit me_a
 c. You_b hit yourself_b
 d. * You_b hit you_b

As discussed above, it is of no theoretical importance that numbers are conventionally used for indices, and likewise it is of no importance that Larson and Segal hypothesize this particular set of indices as being alphabetic—they could instead have reserved the first n numbers, or positions #63 through #117, of the numeric sequence as being these special, rigid, "utterance role" indices. Note, however, that the distinctions indicated in (3) will not be possible under Larson and Segal's account, since two first person forms (or two second person forms) will never have different indices, under the stipulation that assigns to them the particular alphabetic index a (or b). As mentioned in the discussion of (3), we will see that this entailment of the anti-indexing position is not a welcome result.

On the surface, it appears that Larson and Segal have come up with an attractive compromise between the extreme anti-indexing position and the uniformity thesis. However, once more complicated cases than those in (6) are considered, it becomes clear that their dualist position is untenable. Like the extreme anti-indexing position, they believe that first and second person pronouns are different from third person pronouns, in terms of syntactic individuation. Thus they posit two kinds of index to handle the distinction. But, having two kinds of index does not allow them to make all the distinctions necessary; and in other cases,

leads them to distinguish what should not be distinct. The problem they face is that first and second person pronouns are *not* different from third person pronouns, indexically speaking. Saying that there is *one* kind of index—saying that first, second, and third person expressions are the same in this regard—allows one to make all and only the distinctions that are needed.

2.13 Cross-person identity: evidence for the uniformity thesis

The first argument against the anti-indexing position involves examples of what I call "cross-person identity" in ellipsis sites. These cases show, I believe, that a disjunction in syntactic indexing between first and second person expressions versus third cannot be maintained. This includes both the stronger claim that first and second person expressions do not have indices at all, while third person do, as well as Larson and Segal's dualist proposal that the former have alphabetic indices and the latter have numeric.

I assume, following Fiengo and May, that verb phrase ellipsis is best described as a syntactic phenomenon, through reconstruction at the syntactic level of logical form (LF). Let's first consider an example that contains only third person expressions, such as (7). In (7b), the elliptical reply of speaker 2 has the logical form as shown to the right, with the reconstructed verb phrase indicated in brackets.¹

- (7) a. Speaker 1: Jack₃ loves her₄
 b. Speaker 2: Teddy₅ does, too = Teddy₅ [loves her₄], too

What licenses reconstruction at LF is verb phrase identity: the reconstructed verb phrase

¹ For the purposes of simplicity of exposition in this section, I will be discussing only cases of so-called "strict" identity in ellipsis sites, and thus am excluding from the examples indications of index type—which in any event would all be independent, α -occurrences. So-called "sloppy" identity, and the interaction of dependent occurrences of indices with first and second person expressions will play a crucial role in the thesis of this dissertation, however, beginning in chapter 3.

[*loves her*₄] in (7b) is the same as the overt verb phrase [*loves her*₄] in (7a). Note that identity for the two verb phrases is defined such that it attends to the numeric indices on the included noun phrases—neither of (8a-b) would be possible logical forms for the elliptical reply in (7b), since neither of these verb phrases is identical to the verb phrase in (7a).

- (8) a. ≠ Teddy₅ [*loves her*₆], too
 b. ≠ Teddy₅ [*loves Susan*₇], too

Importantly, that there is no identity between the verb phrases in (7a) and (8b) is due to the difference in numeric index of the noun phrases, and not the morphological difference in the lexical items contained therein. While sameness of noun phrase index is required, sameness of morphology is not necessary for overall syntactic identity of verb phrases, as is shown by the next two examples. In (9), the verb phrase in (9a) contains a pronoun, while the reconstructed verb phrase in (9b) contains a reflexive. Nonetheless, syntactic identity holds between the two verb phrases, as the numeric index on the contained noun phrases are the same. Fiengo and May term this process "vehicle change." Because of the coindexed subject noun phrase, there could not be a pronoun in (9b) without causing a condition B violation, so the "vehicle" that carries the index is changed to a reflexive.²

- (9) a. Speaker 1: Jack₃ voted for her₄
 b. Speaker 2: She₄ did, too = She₄ [*voted for herself*₄], too

Similarly, in (10) vehicle change occurs between a name and a pronoun— otherwise there would be a condition C violation in (10b).

² For reasons that will be made clear in the next chapter, where index types will be discussed in detail, vehicle changes from independent occurrences of pronouns to reflexives are less marked in opaque contexts—such as complements of verbs like *vote for*, as in the example shown.

- (10) a. Speaker 1: Jack₃ voted for Susan₄
 b. Speaker 2: She₄ wondered whether he₃ did = She₄ wondered whether he₃
 [voted for her₄]

These examples demonstrate that whether two third person noun phrases are occurrences of the same expression is determined by sameness of index alone, and is not constrained by whether the lexical item that the noun phrase contains is a third person pronoun, reflexive or name, even though these differences must be discriminable in the syntax for binding theory to apply. But given that sameness of morphology or anaphoric features is not a requirement, let's now consider the question whether noun phrases that differ in another respect, having different person features, may be occurrences of the same expression. Although person features clearly must be discriminable for syntactic agreement processes, such features may be as irrelevant as anaphoric features for the purposes of determining expression identity. While it is clear that they can refer to the same individual, can a first person expression such as *me* be an occurrence of the same expression as a second person expression *you* or to a third person expression *him*? Consideration of the exchange in (11) provides evidence that it can.

- (11) a. Speaker 1: Jack₄ loves me
 b. Speaker 2: Teddy₅ does, too

Two possible full forms correspond to speaker 2's elliptical reply in (11b), depending on whether her remark is directed back to the original speaker, or to some other person. In the first case, if she is replying to speaker 1, (11b) is the same as if she had said the full sentence *Teddy loves you, too*, where *you* refers back to speaker 1. But suppose speaker 2 does not reply to speaker 1, but instead turns to some third party, to whom she directs (11b). In this case, (11b) is the elided version of the full sentence *Teddy loves him, too*, where *him* refers to speaker 1. This being so-called strict identity, the object noun phrase within the elided verb

indices a and b , respectively. The problem is how then expression identity is to be defined across the three verb phrases in (13). Recall that on Larson and Segal's analysis, each of (13a-c) is evaluated against a slightly different formal sequence in which some of the individuals in the a through r positions vary, since the utterance context has changed. In the sequence against which (13a) is evaluated, speaker 1 and speaker 2 are the values of $\sigma(a)$ and $\sigma(b)$, respectively; while in the sequence for (13b), this is reversed: $\sigma(a)$ is speaker 2 and $\sigma(b)$ is speaker 1. In the sequence for (13c), on the other hand, speaker 1 is not the value for any of the alphabetic "utterance role" positions as he is neither speaking nor being addressed. So although all of the indices in (13) evaluate to speaker 1, each does so via a different route. Attempting to define expression identity across these very different syntactic entities seems nonsensical. That is, while there may be some ad hoc way for an alphabetically indexed noun phrase to be considered an occurrence of the same expression as—for the purposes of explaining cross-person identity—a numerically indexed noun phrase, this would, I think, defeat both the letter and the spirit of Larson and Segal's proposal.

The cross-person identity problem in (12), however, is not definitive evidence for the uniformity thesis. The anti-indexing position has a way out, and that is to deny that verb phrase ellipsis is licensed through syntactic identity in the first place. Contra Fiengo and May, arguments that verb phrase ellipsis might be better described as a purely *semantic* phenomenon have been advanced in the literature. Whatever the formal theory of how semantic reconstruction works, it is clear that there is identity among the predicates in (12), since evaluation will return the same individual—speaker 1—in all three cases. I note here only that this is, on the face of it, a reasonable objection.³ This semantic alternative cannot

³ Evaluation of certain of these competing semantic theories will be deferred until chapters 3 and 4, where it will properly include the phenomenon of "sloppy" identity, which has not yet been introduced here.

be offered, however, with the next examples, for it is not only with verb phrase ellipsis that there is a cross-person identity problem. A similar difficulty arises in the analysis of replies to questions, and unlike with verb phrase ellipsis, here it does not seem possible to argue that the phenomenon in question is semantic. Consider, for example, the exchange in (14).

- (14) a. Speaker 1: What are you doing?
 b. Speaker 2: Admiring myself

Speaker 2's reply in (14b) contains the reflexive pronoun *myself* but no apparent antecedent—what licenses it? Let's first put aside the possibility that it is some kind of "unbound" reflexive like those in (15)—first noticed, I believe, by Ross (1970) in his performative analysis of declarative sentences.

- (15) a. Admiring myself is fun
 b. Linguists like myself are hard to find

The sentences in (15) can stand alone, but (14b) cannot. Furthermore, as an answer to the alternative questions (16a) and (17a), *admiring myself* is ungrammatical.

- (16) a. Speaker 1: What am I doing?
 b. Speaker 2: * Admiring myself
- (17) a. Speaker 1: What is he doing?
 b. Speaker 2: * Admiring myself

There seem to be two approaches to analyzing how short answers to questions are licensed. One way is to take such replies as exactly what they look like: phrases or fragments, period. Felicitous answers are those syntactic phrases or fragments that

appropriately "fill the hole" that the question left open—where what counts as "appropriately" would have to be detailed. The second approach analyzes such replies as elliptical forms of syntactically complete sentences, which are reconstructed at LF under identity with an antecedent in much the same way as verb phrase reconstruction. Now here's the point: whichever analysis is preferred, *myself* in (14b) will not be licensed unless its index is numeric. Let's run through the two approaches to see why.

Under the "filling holes" approach to answering questions, speaker 2's reply in (14b) would replace, through some mechanism, the verb phrase *wh*-hole filled in the question by the dummy phrase *doing what*. On this account the overt *you* in (14a) would be the only candidate for antecedent of *myself* in (14b). If first and second person expressions are indexed numerically, this would be straightforwardly licensed by binding theory, as *myself* could have the same numeric index as *you*. On the other hand, under Larson and Segal's analysis, the alphabetic indices on the two expressions would have to be, by stipulation, the different *a* and *b*, making (14b) a binding violation, while by similar reasoning the ungrammatical (16b) would get through. Under the stronger anti-indexing position, the different person features on the pronouns would seem to preclude any possible explanation of the licensing of *myself*, yet at the same time (16b) would be fine.

On the elliptical analysis of answering questions, the (14b) reply is analyzed as an elided form of the full sentence *I am admiring myself*, in which the reflexive is appropriately bound. Using numeric indices, the LF structures for (14) would be as follows.

- (18) a. Speaker 1: What are you₂ doing? = you₂ are doing what
 b. Speaker 2: Admiring myself₂ = [I₂ am] admiring myself₂

What we'd want to say is that generally in elliptical answers, the pieces of the reply that are reconstructed at LF are syntactically identical to those corresponding pieces in the question.

The only difference between this case and the licensing of verb phrase ellipsis is that here, the reconstructed "pieces" are not syntactic constituents. Constituency aside, the reconstructed piece *I₂ am* in (18b) is syntactically identical to *you₂ are* in (18a), thus unproblematically licensing the reflexive in the elliptical reply. However, if Larson and Segal's alphabetic indices were used, as shown in (19), the problem of cross-person identity recurs: expression identity cannot be defined across the pronouns of different person, making the intuitive full form of the reply underivable through reconstruction. Reconstruction with alphabetic indices could only have the intuitively incorrect interpretation shown below, in which the reflexive still has no antecedent.

- (19) a. Speaker 1: What are you_b doing? = you_b are doing what
 b. Speaker 2: Admiring myself_a ≠ [I_a am] admiring myself_a
 = [you_b are] admiring myself_a

It should be clear that, unlike in the verb phrase ellipsis cases, a counter-argument hypothesizing a *semantic* account of reconstruction for elliptical replies to questions would be difficult to maintain. First of all, the level at which binding theory applies—the level at which the distribution of pronouns and reflexives is explained—is at the structural level of syntax. To be licensed, the reflexive *myself* must have a c-commanding antecedent, for example, but if the antecedent were to be reconstructed only semantically, the notion of c-command is without sense: without appeal to structural conditions such as c-command, *admiring myself* should be as appropriate an answer for the question *what is your mother doing?* as it is for *what are you doing?* Secondly, unlike in verb phrase ellipsis cases, where the missing verb phrase has been assumed by some to denote a semantic "property," it is difficult to see how the pieces that are elided in the question answering case could be argued to correspond to any coherent semantic chunk. It therefore seems most likely that reconstruction occurs in the

syntax, under some notion of syntactic identity.

In sum, whether the question answering examples are analyzed as hole-fillers or as elliptical, cross-person expression identity needs to be established in order to explain the distribution of noun phrases contained within them. The clearest way to do this is to hypothesize numeric indices as part of the structure of first and second person expressions and to maintain that the anti-indexing position is untenable.

2.14 Dreamscapes and counterfactuals

The anti-indexing position rests on the idea that numeric indices are theoretically superfluous for first and second person pronouns, needed neither for determination of syntactic identity nor for their evaluation. The former of these intuitions has been called into question: without such indexing, syntactic identity cannot be defined among noun phrases having different person features. Turning to the evaluation of first and second person expressions, we will see that numeric indices are not superfluous in this regard either. The problem involves occurrences of distinct expressions that have the same person features. Such examples include not only cases where same-featured expressions evaluate to different individuals, but more critically cases where same-featured expressions evaluate to the *same* individual, but nonetheless can be shown to be occurrences of different expressions. The former kinds of examples occur every day, when the person being addressed in a circumstance, or the person speaking, suddenly changes. Such examples lead to syntactic violations if an anti-indexing position is assumed, although evaluation in these cases can occur unproblematically. I will discuss these kinds of cases first below. The second kind of examples—which appear in so-called "dreamscapes" and counterfactuals—are more critical to the claims being made here, as the explanation for their evaluation is highly problematic in existing theories.

Larson and Segal proposed alphabetic indices to solve the evaluation problem for indexical expressions, each alphabetic index being associated with a "fixed utterance role." Kaplan's notion of indexical character ignores syntactic structure and syntactic indexing, being defined instead as a formal procedural function within the semantics. Whichever of these evaluation procedures is assumed, if there are two or more occurrences of a particular indexical expression in a sentence, all of them will corefer. But is this the correct result? On the face of it, it may seem so for first person singular pronouns, where the procedure will return the same individual—the speaker—no matter how many times it is employed. In (20), for example, it might seem correct that the occurrences of *I*, *my*, and *me*—whether through Larson and Segal's alphabetic index *a* or the first person's semantic "character"—will evaluate to the same individual.

(20) I think my resume will get me an interview

On the other hand, the result is unwelcome in the case where there are two or more second person pronouns, for a speaker can in a single utterance address as many different people as he chooses to with iterated occurrences of *you*; for example, a natural interpretation of (21) is that three are being taken, and the fourth is being left behind.

(21) I'll take you and you and you, but not you

In the alphabetic indexing system, all four occurrences of *you* would have to be coindexed, as in (22a). Such a structure seems counterintuitive, however, especially when compared to what the numeric indexing counterpart would presumably be, shown in (22b).

- (22) a. I'll take you_b and you_b and you_b, but not you_b
 b. I'll take you₁ and you₂ and you₃, but not you₄

A proponent of the dualist solution could argue, however, that the alphabetic coindexing in (22a) is the correct structure, and that what this example shows is that even within an utterance, the "fixed utterance role" associated with an alphabetic index—or "character" function, for that matter—can evaluate to different individuals, as the context changes each time that a new individual is addressed. That a speaker can use the second person to address different individuals in turn is clearly a fact about natural language that needs to be accounted for in any model: there must be some formal mechanism of context change, which Larson and Segal do not provide in their brief discussion. But clearly their theory must provide a formal mechanism of change, in order to derive different formal contexts across different speakers. (21) shows that it is not just *across* utterances that contexts change, and that while numeric coindexing entails coreference, even within an utterance, alphabetic coindexing does not.

In "Afterthoughts," Kaplan (1989) recognizes the problem of examples like (21) that contain more than one second person pronoun, and proposes an alternative solution to the one offered here. Instead of the context changing within the utterance, he hypothesizes rather that the context contains more than one addressee. "Although we must face life one *day* at a time," he says, "we are not condemned to perceive or direct our attention to one *object* at a time." (p. 587) But as Kaplan himself recognizes, evaluation to the new context he envisions would require a formal distinction among the different occurrences of *you*—for which he utilizes, without further discussion, numeric indices. I will continue to regard examples like (21) as context change; Kaplan's alternative suggestion is in fact incompatible with the model that will be proposed here, as will be made clear below.

On either analysis of (21), it is clear that contraindexing of two expressions having the same character or alphabetic index is theoretically necessary. Recall the cases in (3) and (4), repeated below, which were put forth as a possible problem for the uniformity thesis, but

which are in fact needed structures, as mentioned there. The distinction between the well-formed (3) and the ill-formed (4) can only be made under the assumption of numeric indices.

- (3) a. I_1 hit me_2
 b. You_3 hit you_4

- (4) a. * I_1 hit me_1
 b. * You_3 hit you_3

In contrast to the ambiguous structures possible under the uniformity thesis, *I hit me* and *you hit you* each have only one possible structure assuming alphabetic indices, which would both contain coindexing and thus a condition B violation. In light of (21), however, it appears that at least (3b) should not be ruled a binding violation, as it would be under any theory that did not distinguish the two occurrences of *you* syntactically.

In addition, (3a) should also be possible grammatically, although this may seem counter to intuition. While the possibility of different "addressees" in a single utterance is common, it might seem impossible for the context to change in such a way that there would be a different "speaker"—but in fact, there are cases where this does literally occur and two first person forms need to be distinguished syntactically. More importantly, though, there are cases where two first person forms need to be distinguished syntactically even though the speaker has not changed and they evaluate to the same individual.

Let's first get out of the way cases where the speaker literally changes partway through a sentence, in the circumstance where someone finishes another person's sentence.⁴

⁴ Over the years, different people have told me that this kind of thing just doesn't happen. I find this claim mind boggling, having come from a family in which we commonly/often/always finish each other's sentences—and nobody, by the way, considers it to be the least bit rude. Apparently this is a matter of variation of conversational styles.

Imagine for example, in (23), that the first speaker is on his knees presenting a dozen red roses, but being shy and young can only manage to stammer (23a). The second speaker, taking pity on the poor fellow and wanting her roses already, helps him out by finishing his sentence for him in (23b).

- (23) a. Speaker 1: I... I... I —
 b. Speaker 2: — love me?

It seems to me that the best way to regard (23a-b) is as a single sentence that just happens to have been uttered across two speakers. Like in (21), where the "addressee" in the context has changed mid-utterance, so too in (23), the "speaker" has changed. I would argue that the structure of the single sentence uttered across (23a-b) is as shown below. Without the ability to syntactically differentiate the two first person pronouns, (23a-b) would be a binding violation.

- (24) I_1 love me_2

Note that an anti-indexing proponent could not counter that this was a violation that simply "got through" somehow, as with many well known kinds of binding violations that occur among first and second person pronouns. For example, (25a-c) are taken from popular songs, and in these kinds of environments condition B violations typically occur.

- (25) a. I believe in me
 b. I've got to be me
 c. I'm gonna buy me a Cadillac

But (23a-b) is different in kind from the cases in (25). If *me* were replaced by *myself* in the (25) examples, the resulting sentences would all mean approximately the same thing as the

originals—at least in terms of *who* is doing something to/for *whom*. If *myself* were substituted into (23b), however, it would be nonsense.⁵

More interesting cases where first person pronouns need to be syntactically distinguished occur dramatically in so-called "dreamscape" examples and in counterfactuals. As mentioned above, in these kinds of cases, the explanation for their evaluation is highly problematic in the existing models that are based on Kaplan's character. Example (26) is a "dreamscape," included by Lakoff (1972) in a discussion of "counterpart" theory. For Lakoff, the problem presented by (26) was not an *indexing* problem per se, but rather raised difficulties for identification of individuals across possible worlds.

(26) I dreamt that I was Brigitte Bardot and that I kissed me

Like (23a-b), the second clause *I kissed me* does not seem intuitively to be a binding violation, even though, as Lakoff noted, it is ungrammatical in isolation. Unlike the situation in (23), though, it is not because the "speaker" has changed but rather that in the context of the dream, there are distinct individuals both of whom are the "speaker." But in fact there are not two people: the reason that a first person pronoun can be used for each, after all, is

⁵ Bob Fiengo has pointed out to me that (23) might be alternatively analyzed not as a single sentence but as two sentences, the idea being that (23a) and (23b) are each an elided form of a complete sentence, the missing pieces of each being reconstructed at logical form from the other. While I don't really see a clear way of choosing between the two analyses, on his alternative, numeric indices would still be necessary, similar to the question answering cases in the previous section. That is, only with numeric indices can each of the reconstructed pieces—shown in brackets below—be determined to be identical to its overt counterpart.

- (i) a. Speaker 1: $I_1 \dots I_1 \dots I_1$ — [love you₂]
 b. Speaker 2: [you_{1} \dots you_1 \dots you_1}] — love me₂ ?

If this alternative is accepted, then (23) is not actually a case of two first person pronouns evaluating to different individuals in the same sentence.

that the dreamer *is* the individual being referred to in both cases. This does not necessarily mean, however, that the two first person expressions are syntactic occurrences of the *same* expression. Assuming these to be reports of George's dreams, both *I* and *me* in the second clause of (26) refer to the "speaker," George. It is because George is dreaming that he is someone else, namely Brigitte, that in a report of his dreams *I* and *me* can be different expressions. Thus it is 'Brigitte'—who George is, in the dream—who kissed George in (26). Importantly, who is being kissed is different in (27), the intuition in this case being that 'Brigitte' kissed 'Brigitte,' and in this example *I* and *myself* in the second clause are occurrences of the same expression.⁶

(27) I dreamt that I was Brigitte Bardot and that I kissed myself

Using numeric indices, these intuitions can be naturally captured assuming that the structures of the final clause are conindexing and coindexing, respectively, as shown in (28).

- (28) a. ... I₁ kissed me₂
 b. ... I₁ kissed myself₁

Larson and Segal's alphabetic indexing would have the same *a* index on all the pronouns in (28), and they would somehow have to devise a way for the same index—or "character" function—to effect the distinction between (28a) and (28b), and this while respecting binding theory. In any event, it is difficult to see how (26) and (27) could be differentiated in any system that did not have a functional correlate to numeric indexing. Under Kaplan's assumptions, a speaker would not have the option of using two *different* first person

⁶ These intuitions as to who kissed whom are mine, and match those described by Lakoff. However, I am told that in addition to 'Brigitte' kissing George, the second clause of (26) may also have the meaning that George kissed 'Brigitte.' These alternate interpretations will be discussed in the next section.

expressions to refer to himself, since all first person expressions will have the same, fixed character, and the distinction made in (28) would thus not be possible.

The difficulty of accounting for such cases has not gone unnoticed. It is not only in the "dreamscapes" that a speaker may use occurrences of *different* first person expressions to refer to himself. For example, Reboul (1997) recognizes counterfactual examples like (29) as a problem for "procedural meaning" accounts of indexicals, for which she advocates a creative solution involving numeric indices.

- (29) a. If I were you, I wouldn't trust me
 b. If I were you, I wouldn't trust myself

Note that (29a-b) pattern similarly to the dreamscape pair (26) and (27); the subject *I* in both consequents is a different individual from the first *I* in the sentence, although both are still in an important sense the "speaker," and in the consequent of (29a), the two first person forms are occurrences of different expressions.

Reboul's strategy is to assign a different index to all the indexical pronouns in the sentence regardless of their status as first or second person forms. To justify this approach, she appeals to the idea that indexicals are autonomously interpreted due to their "procedural meaning"—an idea she credits as beginning with Kaplan. The only grammatical requirement in her theory of how this works is that *I* and *myself* must be coindexed, due to the fact that *myself* is a reflexive. The indexing patterns that result from this reasoning are shown in (30).

- (30) a. If I_1 were you₂, I_3 wouldn't trust me₄
 b. If I_1 were you₂, I_3 wouldn't trust myself₃

Sorting out who ends up not trusting whom is a matter, on Reboul's account, for pragmatics—and because noncoindexing does not entail noncoreference, some of the

noncoindexed expressions may well end up referring to the same individual. For example, in (30a), the pragmatic interpretation of the subject position in the consequent will be "the individual whose point of view is being expressed," while $[I]_3$ and $[me]_4$ will evaluate to the different people due to an "implicature of noncoreference."

There are a few problems with Reboul's approach. The first difficulty is the entailment that *no* two same-person pronouns will *ever* be coindexed unless one of them is a reflexive. That is, two distinct first person non-reflexive pronouns can never be considered to be occurrences of the same expression. But surely there are cases where coindexing is arguably the correct structural choice, as in the cases in (31). Besides being intuitively right, coindexing in such sentences is necessary to derive the so-called "sloppy" reading if a second clause such as *...and Alice does, too* follows these.⁷

- (31) a. I love my mother
b. I think Jack loves me

Reboul would conindex the pronouns in (31a) and (31b), and the fact that *I* and *my*, or *I* and *me*, end up picking out the same individual would be a matter of their use and would not be entailed by grammar. Why there would be no "implicature of noncoreference" in these cases is not clear.

There is also a problem with Reboul's account of the particular cases at hand. In assigning different indices all around as a matter of course, something crucial is missed about examples such as (30a) that licenses them in the first place. In the counterfactual (as in the dreamscape), the first clause sets up a context in which there seems to be more than one

⁷ I will defer until chapter 3 the details of the analysis of "sloppy" versus "strict" readings in verb phrase ellipsis sites, which involves the notions of dependent versus independent syntactic occurrences of indices.

individual who can legitimately be referred to by a first person form. But then there really shouldn't be an "implicature of noncoreference" because in some sense both of these individuals are the same individual. Furthermore, if the set-up is not there, the consequent becomes illegitimate. For example, compare (30a) to (32a). Intuitively there is a binding violation in the consequent of (32a) in sharp contrast to (30a). That is, in terms of binding, (32a) fares about as well as (32b).

- (32) a. ? If the moon were made of green cheese, I wouldn't trust me
 b. ? I don't trust me

On Rebol's approach, *I* and *me* would be conindexing in both examples in (32), making their syntax identical to (30a). This seems to me to be the wrong result. I would propose instead that the correct structures for (30) and (32) are as follows.⁸

- (30') a. If I_1 were you₂, I_2 wouldn't trust me₁
 b. If I_1 were you₂, I_2 wouldn't trust myself₂
- (32') a. ? If the moon were made of green cheese, I_1 wouldn't trust me₁
 b. ? I_1 don't trust me₁

In (30'), the intuition as to who isn't trusting whom in the consequents is captured, as is their relationship to who is picked out in the antecedents. In contrast, the indexical patterns in (32') reveal the binding violation that they intuitively contain.

Evidently, some first person forms behave as if they are syntactically occurrences of the same expression, while others behave as if they are occurrences of different expressions.

⁸ As mentioned in note 6 for the dreamscape example, apparently the reverse readings are available in the second clauses of (55') for some people. This issue will be addressed in the next section.

Numeric indexing is the formal device that appropriately indicates these facts. I will end this section with a more complex counterfactual example, due to Lakoff (1972). Compare the structure that would be assigned by Reboul, in (33a), to the indexing pattern that I would claim, shown in (33b).

- (33) a. If I_1 were you_2 and you_3 were me_4 , I'd₅ hate you_6
 b. If I_1 were you_2 and you_2 were me_1 , I'd₂ hate you_1

The one advantage to Reboul's approach is that the structure assigned can be trivially derived for any sentence; all the work is done in the pragmatics. On my view, however, this ignores the very important work contributed by the syntax. I have to this point in the discussion presented each of my alternative structures as a *fait accompli*, and it is not yet clear how the indexing patterns that I claim are derived. Are all indexing patterns syntactically possible, and a system of filters rules out the "bad" ones? Or if only one such pattern is possible, how is it syntactically derived? In the next section, I propose a model from which the numeric indexing patterns I have claimed for such examples are derivable.

The analysis of noun phrases containing indexical pronouns that has been discussed throughout this chapter has indicated that indexical expressions need to be individuated syntactically in the same way as third person noun phrases. The cross-person identity cases show that two indexical noun phrases that contain pronouns with different Kaplanian "character"—e.g., phrases containing first person versus second person pronouns—may be occurrences of the same expression, just as two third person noun phrases that are different—e.g., one containing a name and the other a pronoun—may be occurrences of the same expression. Numeric indexing marks this: $[I]_2$ and $[you]_2$ are occurrences of the same expression, as are $[Jack]_3$ and $[he]_3$. The "dreamscape" and counterfactuals, on the other hand, have shown that two indexical noun phrases that contain pronouns with the same

"character"—such as two first person pronouns—may be occurrences of different expressions: the sentence I_1 *kissed* me_2 contains occurrences of different expressions, just as he_3 *kissed* him_4 does. Any theory of indexical expressions that cannot make these distinctions—that is, any anti-indexing account that assumes "character" in the sense of Kaplan, even a dualist position such as Larson and Segal's—is explanatorily inadequate in this regard.

2.2 The new model

2.21 Syntactic orientation

The syntax of natural language has the capability of individuating expressions, marking some as occurrences of the same expression and others as different. In this regard, I have argued that expressions containing indexical pronouns are no different from those containing third person pronouns or names. This syntactic mechanism, which in this theory is formally marked with numeric indexing, is required for indexical expressions at the syntactic level of logical form to explain the distribution of indexical pronouns and reflexives, as well as the availability in the grammar of dreamscape and counterfactual indexical sentences.

However, one detail of the anti-indexing position that has not been countered is the problem of redundancy in evaluation—that is, assuming current models, indexical expressions will be evaluated twice over unless the model is revised. If the context is represented formally as a function from indices to individuals, all numerically indexed expressions will receive an evaluation in that context. How can this be squared with the idea that each indexical has a character, represented formally as a function that evaluates directly to an individual in the context? It can be, I claim, in the new model that I propose.

Recall that Kaplan's theory of indexicals incorporates a two-stage model, in the first of which operates the character function. Two stages are necessary, he argues, as the different indexical characters do not interact with, for example, necessity or possibility

operators, which come to play in the second stage. In "Afterthoughts," he calls the character stage "pre-semantic." In this last point I am in agreement with Kaplan, but probably not in the way he would expect. My claim is that there indeed exists something very like Kaplan's character, that is in fact a *syntactic* property of indexicals. I will call this property "orientation." Orientation is proposed to be a function that operates at the syntactic level of logical form. But unlike semantic character, the output of which is individuals, the output of the function of syntactic orientation is an *index*. By "index," I mean numeric index.

My proposal, therefore, is that while all have numeric indices, natural language syntax does, in another way, differentiate expressions containing first and second person pronouns from third person expressions. Indexical expressions have the property of orientation, from which their numeric indices must be derived. The function of orientation operates entirely within the syntactic level of logical form. Because on this proposal, numeric indices are derived through orientation, there is no longer a conflict between different evaluation procedures. Rather, "evaluation" for indexicals proceeds in a two-stage process. Unlike Kaplan's model, however, in which the two stages are both considered to be "semantic," the new model places the first stage completely in the syntax, from orientation to index, and the second in the semantics, from index to individual. Kaplan's "character" had to be semantic, in that he assumed it to be a function directly to individuals; once this notion is replaced by orientation, functioning to numeric index, the procedure is revealed as a syntactic operation. I continue to assume, however, that the function from index to individual operates in the semantics, not only for indexical expressions but also for expressions containing third person pronouns and names.

Notationally, I will indicate orientation formally with an arrow, based on the metaphoric understanding of orientation as a syntacticized, internal pointing. Supposing, to describe them informally, that first person expressions have an "inward" orientation and

second person have an "outward" orientation, I will use left and right arrows, respectively.

Every sentence containing an indexical thus has a structural description containing orientation, as shown in line 1 of (34) and (35), related derivationally to a numerically indexed structure, shown in line 2.

(34) line 1: I← am hungry

line 2: I₂ am hungry

(35) line 1: Are you→ hungry

line 2: Are you₃ hungry

How the derivation proceeds from line 1 to line 2 will be examined in detail in the next section. Note that the non-indexical counterpart to (34), shown in (36), is less derivationally complex, there being no line containing syntactic orientation.

(36) Tom₂ is hungry

The new model containing syntactic orientation provides a natural way to evaluate many of our earlier observations concerning sentences containing indexicals. For example, it is the derivational complexity of (34), compared to (36), that makes it the more precise tool in the situation of Tom Brown wanting breakfast in bed. The intuitions of "same-saying" or not also can be explained. When Jack says *I am hungry* and Teddy says *I am hungry*, there is a level of description—the oriented line 1—at which these sentences are indeed structurally identical, thus the intuition that they have said the same thing. However, *Jack is hungry* said of the cat and *Jack is hungry* said of the first baseman are structurally identical at no level of description. Neither is there structural identity when Susan, pointing at Jack, says *he is hungry*, and Alice, pointing at Teddy, says *he is hungry*. This pointing is an external,

pragmatic act, in contrast to syntactic orientation. Thus although in these last two examples, the speakers used the same words, they have not used the same *sentence* at any level, and thus the intuition that these are not cases of "same-saying."

Before moving on, let me answer a possible objection concerning whether syntactic orientation, thought of as an index, might not simply supplant numeric indexing. That is, if orientation exists at a syntactic level as is claimed in the new model, why does there need to be a derived level of numeric indices? Upon a little reflection, the answer is relatively simple. If there were no numeric level, the orientation proposal would collapse into a notational variant of Larson and Segal's alphabetic indices, having the same explanatory problems that their proposal had, as discussed throughout section 2.1 above.

2.22 From orientation to index, from index to individual

To illustrate how the proposed model works, I will compare it to previous models schematically. (37) represents a "standard" numeric context—something like which was assumed in Fiengo and May 1994. In such a semantic model, the context is formalized as a sequence—an uncomplicated function σ ; the indices that mark noun phrases in the syntax directly evaluate to individuals. The formal context is thus a semantic construct. In the following illustration of the structure such a formal context, $\sigma(1) = X$, $\sigma(2) = Y$ and $\sigma(3) = Z$, and so on.

(37)	1	2	3	...	n	...
	☺ /X\ ^	☺ /Y\ ^	☺ /Z\ ^		☺ /N\ ^	

Larson and Segal's more complicated union of alphabetic and numeric contexts is depicted in (38)—a pictorial version of (5). Recall that unlike the standard sequence, theirs is specifically

designed to take indexicals into account. The individuals that the alphabetic indices evaluate to vary; $\sigma(a)$ = the individual who is the speaker, $\sigma(b)$ = the individual who is the hearer, while the numeric portion of the sequence operates the same as in (37). This picture makes clear why Larson and Segal's proposal is very close in spirit to Kaplan's character, in that like character, the alphabetic indices function directly to individuals.

(38)

a	b	...	r	1	2	...	n	...
☺ /S\ ^	☺ /H\ ^			☺ /X\ ^	☺ /Y\ ^		☺ /N\ ^	

In contrast, the model of the context that I have proposed can be represented as a two-tiered structure depicted in (39). Unlike in Larson and Segal's model, where the indexical indices are conceived as bearing no relation to the numeric indices, in my model orientation overlays the numeric tier. Unlike character, however, orientation does not functionally evaluate to individuals but to numeric indices. Notationally I will use ω for the syntactic orientation function, and maintain σ for the semantic function of index to individual. In the context shown, $\omega(\leftarrow) = 2$ and $\omega(\rightarrow) = 3$, while as before $\sigma(2) = Y$ and $\sigma(3) = Z$. Thus (39) represents the formal context in the circumstances where Y is speaking to Z.

(39)

	\leftarrow	\rightarrow			
1	2	3	...	n	...
☺ /X\ ^	☺ /Y\ ^	☺ /Z\ ^		☺ /N\ ^	

The formal context in (39) details the link in the logical form derivations of (34) and (35) discussed in the previous section, which are repeated below. From line 1 to line 2, the numeric indices are derived through the function ω of syntactic orientation.

- (34) line 1: $I \leftarrow$ am hungry
 line 2: I_2 am hungry
- (35) line 1: Are you \rightarrow hungry
 line 2: Are you₃ hungry

When the formal context changes, \leftarrow and \rightarrow may appear in different positions on the top tier and ω will at that point derive different numeric values, but the output of the semantic function σ for a particular numeric index will remain the same.

Note that the syntax can only "see" the top two tiers, and in this sense my proposal is agnostic concerning the entities that are claimed to be in the third tier. From my choices in illustrations, the reader will no doubt have concluded that I am sympathetic with theories that propose actual real-life individuals as the output of σ . But the proposal of syntactic orientation as a function from arrow to index that I have here put forth is consistent with the bottom tier of the context containing properties, individual concepts, or any other philosophical construct.

The manner of context change will be very different in (38) versus (39). In Larson and Segal's representation of context, the individuals in the bottom tier will fluctuate with changing circumstances. For example, if Tom is speaking to Larry, Tom would be in the sequence position designated by a in (38), and Larry would be in position b . Then if Larry replies to Tom, which person is in which position would reverse. In contrast, *people* don't move around in the new model—only *arrows* do. That is, the patterning of arrows in the top tier may change from moment to moment—even in mid-sentence, depending on the circumstances, while the numeric second tier and individuals in the bottom tier stay relatively fixed. This fact about the structure of the new model makes it a more attractive one than Larson and Segal's in which to explain the various kinds of "context change."

Let's run through the derivation for a simple exchange that contains a cross-person "spin" in an ellipsis site, as when Alice says to Susan *Jack loves me*, and Susan responds *Teddy does, too*. Suppose that in the part of the context sequence that stays fixed across speakers, $\sigma(1) = \text{Alice}$, $\sigma(2) = \text{Jack}$, $\sigma(3) = \text{Susan}$, and $\sigma(4) = \text{Teddy}$.

When Alice speaks to Susan, $\omega(\leftarrow) = 1$ and $\omega(\rightarrow) = 3$, thus the syntactic derivation of the first sentence is as follows.

- (40) line 1: Jack₂ loves me_←
 line 2: Jack₂ loves me₁

When Susan replies, $\omega(\leftarrow) = 3$ and $\omega(\rightarrow) = 1$, thus syntactic reconstruction of the derivation of her reply is as follows.

- (41) line 1: Teddy₄ [loves you_→], too
 line 2: Teddy₄ [loves you₁], too

Note that syntactic identity holds between the verb phrases in line 2 of (40) and line 2 of (41), since the noun phrases have the same numeric index, thus licensing the ellipsis in the reply.

On this proposal, sentences containing non-indexicals are derivationally simple, using only the fixed bottom tiers of the formal context and only for interpretation. The syntactic structure of sentences containing indexical expressions, on the other hand, is derivationally complex, depending on a more complex formal context structure, that contains a constantly shifting upper tier. Assuming this model, it is not very surprising that very young children stick to their own names to refer to themselves, and even when they start using the indexical pronouns, confuse them. Part of our knowledge of language is the function of these complex formal contexts, and it seems that once it is learned how the arrows are shifted when speakers change, it is a small step to knowing how the arrows are shifted when the circumstances

include ventriloquists or answering machines.

What are the constraints on the pattern of orientations in the top tier of a well-formed context? In the typical "actual" circumstances, if X is addressing Y, it will be the case that in the formal context $\omega(\leftarrow) = i$ and $\sigma(i) = X$, and $\omega(\rightarrow) = j$ and $\sigma(j) = Y$, for some $i \neq j$. That is, because the orientation tier overlays the numeric tier, it will not be possible for different arrows to functionally evaluate to the same numerical value. Thus the ω function, unlike the σ function, is not many-one. Thus a particular numeric value *cannot* appear in more than one sequence position, although a particular individual *can*. An entailment of this is that, although it is possible for a speaker to refer to himself in the first person and third person without changing the formal context, it will not be possible for a speaker to refer to himself in both the first and second person unless he happens to be in two sequence positions. This situation is depicted in (42), which represents the formal context when Tom is talking to himself.

(42)

	←	→			
...	5	6	...	n	...
	⊙ /Tom\ ∧	⊙ /Tom\ ∧		⊙ /N\ ∧	

For example if Tom, while shaving, says to himself *you really let me down this time*, the derivation is as shown in (43).

- (43) line 1: You \rightarrow really let me \leftarrow down this time
 line 2: You $_6$ really let me $_5$ down this time

Note that although these two expressions corefer, the evidence is that they are not numerically covalued; if they were, we would expect a condition B violation for *me*.

I have assumed that orientation is a function, and as such, it should be determinant—that is, it should not be one-many. A possible objection may be that orientation is not necessarily a function, however, if there is evidence that it is possible, in a well-formed context, for both $\omega(\leftarrow) = i$ and $\omega(\leftarrow) = j$, where $i \neq j$. For example, recall the circumstances of George having the strange dream that he is Brigitte Bardot, and the two examples (26) and (27) in this "dreamscape," repeated below as (44a-b).

- (44) a. I dreamt that I was Brigitte Bardot and that I kissed me
 b. I dreamt that I was Brigitte Bardot and that I kissed myself

Assuming $\sigma(1) = \text{George}$, the syntactic derivation of the first part of (44a) or (44b)—that sets up the hypothetical situation—clearly is derived through the typical "actual" formal context, in which $\omega(\leftarrow) = 1$, as shown in (45).

- (45) line 1: I_{\leftarrow} dreamt that I_{\leftarrow} was Brigitte₂ and that I_{\leftarrow} kissed me \leftarrow /myself \leftarrow
 line 2: I_1 dreamt that I_1 was Brigitte₂ and ...

But the formal context has clearly changed for the second part of the sentence, which is occurring in the hypothetical dream circumstance. Earlier I described this situation as one in which there were somehow *two* individuals who were both "first person." Taking this intuition seriously might lead to the suggestion that the formal context that represents the dream circumstances simply contains two left arrows in the top tier, as shown in (46).

(46)

\leftarrow	\leftarrow		
1	2	3	...
\⊙/ George Λ	\⊙/ 'Brigitte' Λ	⊙ /Z\ Λ	

The idea would be that since George is dreaming he is Brigitte, George is actually in two sequence positions—his original position *and* the one that was Brigitte's in the actual context. But if (46) were a well-formed context, then there is more than one value that the "function" $\omega(\leftarrow)$ could return, and what would decide the matter? Perhaps all possible combinations of 1's and 2's are derivable in the consequent and it is up to a pragmatic account, such as Rehouf's, to decide who ends up kissing whom. But I think giving up the notion of orientation as a *function* would be a terrible blow in this model, since as conceived, orientation is a syntactic function through which the input into another functions—the numeric indices—are derived. I thus reject (46) as illegitimate on these theoretical grounds; ω must return a single value.

There is evidence that (46) should be rejected on empirical grounds, as well. If (46) were indeed the formal context that correctly represented the world of the dream, then it presumably would be the context in operation *within* the dream. But during the dream, while still dreaming that he is Brigitte, George could not say *I kissed me* with the same meaning as in (44a). It seems that the reason he can use different first person expressions in (44a), is because he is reporting on the dream *from the actual world*. Similarly, the reason that different first person expressions can be used in the "counterfactual" examples seems to be that what would happen in the hypothetical situation is being reported *in the actual world*.

How, then, are the cases of more than one "first" person to be handled? Through context change. Just as when a speaker addresses four people in succession *you₁, you₂, you₃, and you₄*, the idea is that the formal context changes as required. In the dreamscape case, the idea is that there is an "actual" context, depicted in (47), in which $\omega(\leftarrow) = 1$, but the content of the first clause sets up an alternate dream circumstance, the formal "dream" context depicted in (48), in which $\omega(\leftarrow) = 2$. Set up this way, it will follow that within the dream, the dreamer cannot say *I kissed me* with anything but a reflexive interpretation, but that upon

waking, he can, in reporting on the dream, shift from one context to the other.

(47)

←			
1	2	3	...
\⊙/ George Λ	\⊙/ Brigitte Λ	⊙ /Z\ Λ	

(48)

	←		
1	2	3	...
\⊙/ George Λ	\⊙/ 'Brigitte' Λ	⊙ /Z\ Λ	

In the second halves of (44a-b), then, the syntactic derivation shifts to the "dream" alternate context in (48). Note that both "actual" and "dream" formal contexts are functionally well-formed in the sense that there will be only one numeric value that a particular orientation function will return. Subsequent to the shift to the "dream" context and the derivation of the subject expression in the second clause, the interpretations available indicate that the derivation thereafter may at any point shift back to the "actual" context. That is, return to the "actual" context is possible at any time. In the derivation of (45), this would mean that the numeric index for the subject *I* in the consequent would be derived in the "dream" context to be $\omega(\leftarrow) = 2$. If that same "dream" context is still in place when the numeric index for the object noun phrase is derived, it will still be the case that $\omega(\leftarrow) = 2$. This will be fine if the object is the reflexive, but will lead to a binding violation for the pronoun. On the other hand, if the context shifts back to "actual" mid-consequent, for the object $\omega(\leftarrow) = 1$, which will be fine for the pronoun but a violation for the reflexive. Four structures are thus derivable, half of which are ungrammatical due to binding theory. Thus only one possible numeric indexing will result for each, and the intuitive indexing for the dreamscape examples

shown above in (28) have been derived. Note that a character-based or alphabetic indexing account cannot achieve this result; even if the theories were modified to include a mechanism of context shift, all four readings would be derived, and there would be no way to rule out the two that do not occur.

It should be noted that many people find the dreamscape and counterfactual sentences difficult to understand, and that the judgments of what they can mean are not consistent across speakers. I have to this point discussed my own judgments in these cases, but as noted in footnotes 6 and 8, Reboul, for example, claims that in addition to the first two readings indicated by the numeric values in (30'), repeated as (49a-b)—both of which I find good—that these sentences also have the possible readings indicated in (49c-d). The former are derivable on the account I have given here, parallel to the dream cases, but to derive the latter—in which the "hypothetical" context is shifted to as soon as it is set up by the conditional—my account would have to be modified to allow a freer choice in shifting possibilities.

- (49)
- a. If I_1 were you₂, I_2 wouldn't trust me₁
 - b. If I_1 were you₂, I_2 wouldn't trust myself₂
 - c. If I_1 were you₂, I_1 wouldn't trust me₂
 - d. If I_1 were you₂, I_1 wouldn't trust myself₁

I have serious reservations concerning the interpretations in (49c-d), but apparently there are native speakers of English for whom these readings are available. If these readings do indeed exist, the model is capable of accommodating them without fundamental changes to the theory. The idea would be that the formal context shift to the hypothetical from the actual could occur at any time, or not at all for a case like (49d).

I do think that there is evidence, however, that in the case of two competing contexts—an "actual" versus a "hypothetical," as in the dreamscape or counterfactual—that the

contexts cannot *arbitrarily* shift back and forth; that rather, once the derivation returns to the "actual" from the "hypothetical" that it cannot willy-nilly return. Consider the eight possible meanings for (50) shown in (51). Now (50) has been constructed to avoid the complications of Lakoff's and Reboul's examples that are due to binding violations. According to my own intuitions, the only available readings for (50) are the first three shown in (51a-c), consistent with my description about how context shift in the model works: for me, it seems, the formal context must shift immediately upon being set up, and thus the subject of the consequent *must* be interpreted in the "hypothetical" context. There seems to be a choice after that point to either *stay* in the "hypothetical" context or to *return to* the "actual" context. Interpretation can proceed according to the "hypothetical" for the entire second clause, deriving the structure in (51a), or return to the "actual" at any point within the second clause—(51b) and (51c) reflecting different points at which this can occur. What can't be done is to jump back and forth: it seems to be impossible to *leave* the "hypothetical" context for the "actual" context and derive the middle pronoun, and then jump back to "actual" for the final pronoun, to derive the structure in (51d). To mean what (51d) represents, I would have to say ... *I would give my resume to your mother.*

(50) If I were you, I would give my resume to my mother

- (51)
- a. If I_1 were you₂, I_2 would give my₂ resume to my₂ mother
 - b. If I_1 were you₂, I_2 would give my₂ resume to my₁ mother
 - c. If I_1 were you₂, I_2 would give my₁ resume to my₁ mother
 - d. * If I_1 were you₂, I_2 would give my₁ resume to my₂ mother
 - e. * If I_1 were you₂, I_1 would give my₂ resume to my₁ mother
 - f. * If I_1 were you₂, I_1 would give my₂ resume to my₂ mother
 - g. * If I_1 were you₂, I_1 would give my₁ resume to my₂ mother
 - h. * If I_1 were you₂, I_1 would give my₁ resume to my₁ mother

But if there is a grammar like Reboul's that allows the subject of the consequent to be interpreted in the "actual" context, then it is clear what intuitions would be predicted for them for (51e-h), all of which are, as indicated, not possible interpretations for me. I would predict that shifting back and forth would be difficult or impossible, and thus (51e) should be bad. However, (51f-g) should be allowed in this grammar, and possibly (51h) as well, in which the "actual" is never left. Unfortunately, the informants who have assured me that (49c-d) are possible interpretations in the *wouldn't trust* examples, were not able to evaluate an example complicated with more pronouns; I must therefore leave this prediction open for evaluation to any reader who is in agreement with Reboul's judgments.

I have argued that numeric indices are necessary at logical form for sentences containing indexicals, and have proposed a two-tiered formal context through which numeric indices may be functionally derived in the syntax. This proposal constitutes, on the face of it, a highly explanatory model of direct reference, providing a unified account for expressions containing indexicals and non-indexicals alike. Furthermore, it allows a natural explanation of context shift, and provides mechanisms for describing different grammars that may exist in this regard. However, while I have hypothesized a property of syntactic orientation, I have offered no direct evidence for its presence at logical form. In the next two chapters, support for syntactic orientation is advanced through observations of what I call the "switch" phenomenon. Analysis of switch reference reveals that orientation interacts with the syntactic property of dependency, and thus can be seen as further evidence for the model I have proposed. It remains to be seen, however, how this model will fare in the larger picture beyond first and second person singular pronouns. In the final chapter of this dissertation, the theory of syntactic orientation will be extended to plural indexical pronouns, as well as to locative and temporal indexical expressions, coming full circle back to a proper account of the so-called "demonstratives" within the theory.

Chapter 3: The syntax of switch

3.0 Introductory remarks

In this chapter, I will discuss a specific problem in the linguistic description of indexical expressions. My central concern will be sentences containing first and second person pronouns that have, under ellipsis, what I call a "switch" interpretation. I will argue that current theory does not provide an explanation for this phenomenon, but that a natural explanation can be advanced if the formal syntactic description of expressions containing first and second person pronouns is augmented with the hypothesized property of orientation, as proposed in chapter 2. In this light, the switch phenomenon can be seen as evidence for syntactic orientation.

As mentioned in the previous chapters, I assume the theoretical framework of *Indices and Identity* (Fiengo and May 1994), but to this point I have not discussed the central innovations of dependency theory that are developed therein. Fiengo and May hypothesize that occurrences of indices may be of two types—"independent" or "dependent"—formally indicated in the theory by α and β , respectively. Assuming that some form of binding theory determines the distribution of the numeric *values* of noun phrases in a syntactic structure, dependency theory determines the distribution of the index *types*.¹ Along with the syntactic account of verb phrase ellipsis, discussed in the previous chapter, the α/β distinction, in its simplest application, accounts for the two possible interpretations of the second clause in (1), where the first clause is taken to mean that John loves John's mother.

¹ A terminological note is in order here. For Fiengo and May, the word "indexical" is used as the adjectival form of "index," thus in their formal syntactic descriptions, *all* noun phrases will have an "indexical value" and an "indexical type," whether or not they are "indexicals" as I have used the term. To prevent confusion, I have substituted for Fiengo and May's terms "numeric value" and "index type," respectively, reserving the form of the word "indexical" for "indexical expressions" as discussed in chapter 1.

(1) John loves his mother, and Bill does, too

The "strict identity" reading of the second clause is that Bill loves John's mother; the "sloppy identity" reading is that Bill loves Bill's mother. The two readings arise, on Fiengo and May's account, because the first clause is structurally ambiguous in terms of the index types it contains; which of these interpretations is available turns on whether the noun phrase containing the pronoun *his* in the first clause is syntactically independent or dependent. There are correspondingly two possible structures at the syntactic level of logical form (LF), as shown below, with the reconstructed verb phrases of the second clause represented in square brackets.

- (2) a. John₁ loves his_{1 α} mother, and Bill₂ [loves his_{1 α} mother], too
 b. John₁ loves his_{1 β} mother, and Bill₂ [loves his_{2 β} mother], too

The noun phrase [*his*] in the first clause contains an independent or α -occurrence of the index *I* in (2a), and a dependent or β -occurrence of the index *I* in (2b). Identity conditions at LF require that the reconstructed verb phrase in the second clause be identical to the first.

Simply stated, for noun phrases with independent α -indices to be identical, their numeric values must be equal; thus the reconstructed [*his*] in the second clause of (2a) must have the index *I*. On the other hand, for noun phrases with dependent β -indices to be identical, they must occur within the same "dependency," defined linearly within phrase structure theory.

The index *I* on [*his*] in the first clause of (2b) is a dependent occurrence, possible because of the presence of another noun phrase [*John*] of index *I* earlier in the clause. The reconstructed [*his*] in the second clause of (2b) must have the index 2; so it too is a dependent occurrence. If it had any other numeric value, it would not be occurring in a dependency identical to the

dependency realized in the first clause.²

The structural ambiguity of the first clause—the difference in index types—does not result in different interpretations of the first clauses across the two sentences—both mean that John loves John's mother. The distinction becomes "visible" in the interpretation of the second clauses: from (2a) is derived the so-called "strict"—Bill loves John's mother; and from (2b) the so-called "sloppy"—Bill loves Bill's mother. In general, reconstruction of independent, α -type indices leads to strict readings, while reconstruction of dependent, β -type indices leads to sloppy readings.³

The cases I will be concerned with in this chapter also exhibit an ambiguity in verb phrase ellipsis sites. However, their interpretations cannot be analyzed, on the face of it, as following a "strict" versus "sloppy" pattern of readings. The phenomenon in question occurs robustly in sentences containing first and second person pronouns. The paradigm example is given in (3).

- (3) a. Speaker 1: I₁ love you₂
 b. Speaker 2: I₂ do, too

For many speakers of English, two interpretations are available for (3b), one making the declaration in return, the other meaning that speaker 2 loves the same person that speaker 1 loves—suggesting that (3b) has the following possible LF structures (shown without index type).

² In the discussion of "cross-person identity" in chapter 2 there were examples of verb phrase identity in reconstruction sites, but for simplicity of exposition I did not include indications of index type there. The cases in that discussion were similar to (2a), and in a fuller description the noun phrase indices would have been marked as α -occurrences.

³ This generalization is actually a simplification of the facts, as will be seen in section 3.32.

- (4) a. Speaker 2: I_2 [love you₁], too
 b. Speaker 2: I_2 [love me/myself₂], too

Only the structure in (4b), however, is expected by dependency theory. Since the indices in (3a) are different values, they must both be α -occurrences; to fulfill the condition of identity with an α -indexed noun phrase of value 2, the numeric value of the reconstructed noun phrase must also be 2. Thus (4b) evaluates to the straightforward strict reading, and as no other pattern of index types is available for (3a), it is the only interpretation predicted to occur for the reply in (3b).

How, then, can the existence of (4a) be explained? It cannot be analyzed as sloppy, as there is no dependency in the structure. As the numeric values have seemingly reversed positions in antecedent and consequent, I call this problematic interpretation "switch." The apparatus provided by dependency theory seems to offer no solution for its derivation. Nevertheless, the switch interpretation in (4a) is not only available to English speakers, it is by contrast to (4b) the more usual one. Judgments generally pattern as follows: for speakers who like the switch in (4a), the strict in (4b) is marginal, the "funny" or "joke" interpretation. For speakers who don't accept (4a), the only possible reading of speaker 2's reply in (3) is the strict (4b)—often offered within a caveat such as "well, if it means anything, it means that." For the moment, I seek to explain the grammar of the former speakers; however, the "marginality" of the strict reading will be returned to.

Perhaps, some readers may be thinking, appeal to dependency theory is needlessly complex: why bother with numeric values and index types, when one notices that in the switch reading for (3), *the words* of the verb phrase [love you] are identical across the two speakers? Such an observation might lead to the hypothesis that for purposes of reconstruction, the overt and elided verb phrases can be considered identical just in case they

contain the same exact words. One of those words—namely *you*—will simply have a different meaning for speaker 2 than it did for speaker 1. Though attractive, this idea must be rejected, as it would overgenerate is cases such as (5).

- (5) a. Speaker 1: I₁ love you₂
 b. Speaker 2: Alice₄ does, too

That is, if the proposal had any merit, (5b) should be able to have the LF structure in (6), since the verb phrase here contains the "same exact words" as the verb phrase in (5a).

- (6) Speaker 2: Alice₄ does [love you₁], too

In fact, however, only the strict reading—*Alice loves me, too*—is available for (5b); (6) is impossible.

Dependency theory is not alone in failing to account for the switch reading. For example, appeal to semantic theories that account for verb phrase ellipsis under a predicate-based approach, such as those inspired by Sag 1976 and Williams 1977, offers no remedy.⁴ In such theories the interpretation of elided verb phrases is analyzed to be a case of predicating the same semantic property as in the antecedent. In the case of a strict reading, as in (2a) and (4a), the predicated property is that of loving a particular person, formally expressed, using the device of lambda abstraction, as a lambda expression containing a constant. For a noun phrase to be interpreted sloppily, it must be a variable inside the lambda predicate, under the scope of the prior noun phrase; for example for (2b), $\lambda x [x \text{ loves}$

⁴ Although the failure of a predicate-based approach to explain the full range of "strict" and "sloppy" occurrences of noun phrases in English has been convincingly shown by Fiengo and May (see especially chapter 4), I will be returning now and then to such approaches for comparison purposes. In the next chapter, I will discuss in some detail an analysis developed by Rebuschi (1994, 1997) within such a framework for the switch phenomenon.

x's mother}. Since in a switch interpretation, no coreferential prior noun phrase for the elided pronoun is available, a predicate-based sloppy analysis is untenable: the elided pronoun would be a free variable in the lambda expression, and the property would thus be illegitimate.

In both dependency theory's syntactic account of ellipsis, and in the semantic predicate-based theories, analysis of "sloppy" readings involves the existence of a prior noun phrase having the same index or referent, that has not been elided and is therefore overtly available. Since in the switch cases such a prior phrase is not evident, analyzing switch as a kind of sloppy reading seems impossible on either approach. Nevertheless, a careful examination of the cases where switch occurs reveals regularities that will make it possible to conclude that switch readings, like sloppy ones, are derivable through an analysis incorporating dependent index types in an extension of dependency theory—on the assumption, that is, that orientation is a syntactic property of indexical expressions.

3.1 The switch phenomenon

After examining possible alternative explanations for the switch phenomenon in section 3.2, I will in section 3.3 put forth my proposal for a dependency analysis that relies on the hypothesis of syntactic orientation. In this section, however, let's put these issues aside, in order to more thoroughly review the data concerning the switch phenomenon in English. Where do switch readings seem never to occur, and where do switch readings most robustly occur?

3.11 Switch and the third person

The first observation to make is that switch appears to occur only between indexical expressions, as in the paradigm example given in (3) above. There are no cases in which

switch occurs between first person and third person, in either order, as in (7) and (8), or between second and third, as in (9) and (10).

- (7) a. Speaker 1: I₁ love Jack₃
 b. Speaker 2: He₃ does, too ≠ He₃ [loves you₁], too
- (8) a. Speaker 1: Jack₃ loves me₁
 b. Speaker 2: You₁ do, too ≠ You₁ [love Jack₃], too
- (9) a. Speaker 1: You₂ love Susan₅
 b. Speaker 2: She₅ does, too ≠ She₅ [loves me₂], too
- (10) a. Speaker 1: Susan₅ loves you₂
 b. Speaker 2: I₂ do, too ≠ I₂ [love Susan₅], too

None of the (b) examples in (7-10) has the switch reading indicated to the right.

Neither does switch occur between two non-indexical noun phrases, as in (11).

- (11) a. Speaker 1: Jack₃ loves Susan₅
 b. Speaker 2: She₅ does, too ≠ She₅ [loves him₃], too

Do the (b) examples in (7-11) have strict interpretations? It seems that they do, but the status of the strict readings is rather marginal. With the caveat that these kind of fuzzy judgments constitute not the best data, the strict readings of (7)—*He loves himself, too*, and (9) and (11)—*She loves herself, too*, seem "worse" than the strict reading for (8)—*You love yourself, too*, and (10)—*I love myself, too*, which in turn seems "worse" than the strict reading for (3) discussed earlier. Before moving on to the switch cases, let's consider why this might be so.

Note first that if alternate (b) responses were supplied for (7-11), strict readings would

occur quite robustly. For example, when the conversation in (12) is compared to (7), where (12a) = (7a), the different response in (12b) straightforwardly yields a strict interpretation.

- (12) a. Speaker 1: I_1 love Jack₃
 b. Speaker 2: Susan₅ does, too = Susan₅ [loves Jack₃], too

This is as predicted by dependency theory, since all of the indices here are of type α .

Recall that an important tenet of dependency theory is the availability of what Fiengo and May call "vehicle change," defined in the previous chapter under the discussion of cross-person identity. The numeric value and index type of two noun phrases determine whether they are identical for purposes of reconstruction; it does not matter, from the standpoint of dependency theory, what "vehicle" carries the index. Vehicle change allows identity among names, pronouns, reflexives, and even zero-elements. One noun phrase containing—say—a name, while another contains a reflexive, is irrelevant to identity, although it may be relevant to other conditions in the grammar, such as binding.

Note that because (7-11) were constructed to examine whether switch occurs in these cases, the object of the first utterance becomes the subject of the elliptical reply. Thus the "marginal" strict readings in (7b-11b) are all cases where the numeric index of the reconstructed pronoun is the same as the value of the overt subject of the sentence. Let's examine more closely what the structure at LF would be that would yield the strict reading for (7). One possibility is shown in (13).

- (13) a. Speaker 1: I_1 love Jack_{3 α}
 b. Speaker 2: He₃ [loves him_{3 α}], too

While (13b) fulfills the identity conditions of dependency theory, it runs afoul of condition B of binding theory and must therefore be rejected. Similarly, if the reconstructed verb phrase

were [*loves Jack*_{3 α}], identity conditions would be met, but binding condition C would be violated. Dependency theory, however, allows yet another possibility:

- (14) a. Speaker 1: I₁ love Jack_{3 α}
 b. Speaker 2: He₃ [*loves himself*_{3 α}], too

Although vehicle change allows identity between a name and a reflexive, reflexives of type α are, in general, marked. In the unmarked case, reflexive pronouns are dependent, that is, they bear β -indices. But Fiengo and May do observe marked positions in which " α -reflexives" can appear: generally noun phrase positions within intensional domains, including complements of certain verbs such as *vote for*. The complement of the verb *love* is not generally a position allowing an α -reflexive. If the verb is changed in the example from *love* to *vote for*, the status of the strict reading goes up in acceptability; in (15b), the strict reading is perfect.

- (15) a. Speaker 1: I₁ voted for Jack_{3 α}
 b. Speaker 2: He₃ did, too = He [*voted for himself*_{3 α}], too

The marginality of the strict readings in (7-11) can be attributed, then, to the relative markedness of α -reflexives in the position of the complement to the verb *love*. Why, then, do some of the readings seem "better" than others? For the time being, I will leave this question unanswered: a certain understanding of this mystery will, however, be achieved in chapter 4.

3.12 Core cases of switch

While switch occurs only between the indexical pronouns, it does not do so in every sentence containing them. Descriptively, the circumstances in which the switch reading is

most salient are intimate situations such as romantic love, as in (3) and (16-18), and accusations like (19-21). Sometimes these overlap, as in (22). The linear order of the pronouns in the sentence—that is, which appears before the other—does not seem to matter for switch to occur.

- (16) a. Speaker 1: I₁ want your₂ body
 b. Speaker 2: I₂ do, too = I₂ [want your₁ body], too
- (17) a. Speaker 1: Do you₂ love me₁?
 b. Speaker 2: Do you₁? = Do you₁ [love me₂]?
- (18) a. Speaker 1: I₁ think you₂'re wonderful
 b. Speaker 2: I₂ do, too = I₂ [think you₁'re wonderful], too
- (19) a. Speaker 1: You₂ cheated me₁!
 b. Speaker 2: You₁ did, too! = You₁ [cheated me₂], too!
- (20) a. Speaker 1: You₂ don't scare me₁ one bit!
 b. Speaker 2: You₁ don't, either! = You₁ don't [scare me₂ one bit], either!
- (21) a. Sibling 1: I₁'m going to tell Mom on you₂!
 b. Sibling 2: I₂ am, too! = I₂'m [going to tell Mom on you₁], too!
- (22) a. Speaker 1: You₂ don't love me₁ anymore!
 b. Speaker 2: And you₁ do?! = And you₁ [love me₂ (still)]?!

For all of these switch is not only the usual reading, it seems to be the only reading: a strict interpretation seems impossible. It is probably the case, however, that the status of the strict

readings here is the same as in (7-11) discussed in the previous section, but that because the switch reading is so strong, it drowns out the marginally available strict reading. The lower availability of strict here may also be due to the pragmatic unlikelihood of their meanings: declaring *I want my body* is certainly odd for most people, as is telling someone *you don't scare yourself one bit*. Asking *do you love yourself?* instead of answering the question in (17) flouts the Gricean cooperative principle; it nonetheless seems the "best" of the possible strict readings in (16-22).

In many other types of circumstances—usually duller ones—the switch reading either is a stretch or is unavailable, as in the examples given in (23-26).

- (23) a. Speaker 1: I_1 saw you_2 in the library
 b. Speaker 2: I_2 did, too \neq I_2 [saw you_1 in the library], too
- (24) a. Speaker 1: Do you_2 think I_1 should ask for a raise?
 b. Speaker 2: Do you_1 ? \neq Do you_1 [think I_2 should ask for a raise]?
- (25) a. Speaker 1: I_1 'd like a copy of $your_2$ paper
 b. Speaker 2: I_2 would, too \neq I_2 'd [like a copy of $your_1$ paper], too
- (26) a. Speaker 1: You_2 met my_1 husband last year
 b. Speaker 2: You_1 did, too \neq You_1 [met my_2 husband last year], too

A further difficulty is illustrated by (27), in which switch is unavailable as well.

- (27) a. Speaker 1: I_1 think Jack loves you_2
 b. Speaker 2: I_2 do, too \neq I_2 [think Jack loves you_1], too

The switch meanings shown to the right of (23b-27b) are perfectly understandable; there is nothing pragmatically odd about them as responses. Nevertheless, the (b) examples only have the strict meanings here, even when they are a bit strange or useful only as wise-cracks: *I saw myself in the library, too; I'd like a copy of my paper, too; You met your husband last year, too.*

Let's review, examining the structural positions of the first and second person pronouns where switch does and does not occur. Switch is available in cases where the first and second person pronouns are in subject and object argument positions of a verb, as in (3), (17), (19), (20), (22); but switch is unavailable in (23) which has this same co-argument arrangement. Similarly, switch occurs in (16), with one pronoun in subject position and the other within the object, but does not occur in the structurally similar (26).

Switch can occur when the pronouns are not in a c-command configuration, as in (28-30); but often does not, as in (31).

- (28) a. Speaker 1: My₁ heart is yours₂
 b. Speaker 2: Mine₂ is, too = My₂ heart [is yours₁], too
- (29) a. Speaker 1: Your₂ hair turns me₁ on
 b. Speaker 2: Yours₁ does, too = Your₁ hair [turns me₂ on], too
- (30) a. Speaker 1: My₁ house is your₂ house
 b. Speaker 2: Mine₂ is, too = My₂ house [is your₁ house], too
- (31) a. Speaker 1: Your₂ paycheck is on my₁ desk
 b. Speaker 2: Yours₁ is, too ≠ Your₁ paycheck [is on my₂ desk], too

Finally, locality does not seem to be a requirement for a switch reading. While there

is no switch in (24), (25) and (27) where the second pronoun is in some position within an embedded sentence, switch does occur in (18) and (21), similarly "distant" structural environments. Furthermore, there are plenty of examples such as (32-35), in which the first and second pronouns are quite "far away" syntactically from each other, and yet the switch readings for these are quite good.

- (32) a. Speaker 1: You₂ don't know the first thing about the way I₁ feel
 b. Speaker 2: You₁ don't, either = You₁ don't [know the first thing about the way I₂ feel], either
- (33) a. Speaker 1: I₁ think the world would be a terrible place if you₂ weren't in it
 b. Speaker 2: I₂ do, too = I₂ [think the world would be a terrible place if you₁ weren't in it], too
- (34) a. Speaker 1: How dare you₂ imply that the graduate program shouldn't have accepted me₁?
 b. Speaker 2: How dare YOU₁? = How dare you₁ [imply that the graduate program shouldn't have accepted me₂]?
- (35) a. Speaker 1: My₁ heart leaps into my₁ throat whenever anyone passes by who has your₂ color hair, your₂ walk, your₂ smell
 b. Speaker 2: Mine₂ does, too = My₂ heart [leaps into my₂ throat whenever anyone passes by who has your₁ color hair, your₁ walk, your₁ smell], too

To summarize these observations, the only absolute requirement for a switch reading to occur has been the presence of both a first person pronoun and a second person pronoun somewhere in the sentence. Positionally, the two indexical expressions do not have to be in the syntactic relationship of c-command, nor do they have to occur in the same local domain.

The linguistic relationship that this recalls is syntactic dependency; dependency relations are defined linearly, and do not require *c*-command or locality. Switch, then, may be analyzable as resulting from some kind of dependency between the first and second person pronouns.

The LF structure leading to a switch reading would, on such an analysis, contain a pronominal noun phrase of type β : for the reconstructed verb phrase to meet identity conditions with the prior verb phrase, the dependencies of the contained noun phrases would have to be the "same," however this notion would be defined.

A dependency analysis would straightforwardly predict that switch could not occur unless the initial pronoun were outside the ellipsis site; otherwise, the postulated dependency would be wholly contained and result in a strict reading. In all of the cases of switch seen so far, the initial pronoun is indeed overt. And the prediction is borne out: switch cannot occur if both pronouns are elided, as in (36) and (37).

- (36) a. Speaker 1: Alice₄ thinks I₁ love you₂
 b. Speaker 2: Larry₇ does, too \neq Larry₇ [thinks I₂ love you₁], too
- (37) a. Speaker 1: It looks like you₂'ve got me₁
 b. Speaker 2: It certainly does \neq It certainly [looks like you₁'ve got me₂]

The dependency analysis would also predict that the relationship between the pronouns in antecedent and ellipsis must be structurally parallel for switch to occur; this prediction is also borne out. For example, in (38b), where the pronouns are in structurally different positions than in (38a), there is no switch.

- (38) a. Speaker 1: My₁ heart burns for you₂
 b. Speaker 2: I do, too \neq I₂ [burn for you₁], too

On the other hand, if speaker 2's response in (38) were *Mine does, too*, the switch interpretation is perfect, as would be predicted by a dependency analysis.

The evidence, then, suggests that the relationship between the indexical pronouns that leads to a switch interpretation is one of syntactic dependency. It must, of course, be a different kind of dependency than the familiar one. Although similar to the usual dependency in the ways just discussed, this special dependency somehow occurs between noun phrases bearing indices of different values. In the remainder of this chapter, I will pursue this approach, developing an analysis of switch along these lines. But care needs to be taken concerning the limits of this approach. While a dependency analysis seems promising in determining the conditions under which switch can occur, it is as yet unclear why switch does not occur in many sentences structurally similar to those where it does.

3.2 A different kind of dependency?

3.21 The theoretical description of dependency

In the theory developed by Fiengo and May in *Indices and Identity*, syntactic dependencies may exist only in structures that contain at least two occurrences of the same value numeric index. Dependent or β -type indices are licensed just in case there is an α -occurrence of the same value in some linear factorization of the phrase structure. Formally, a dependency is a triple consisting of: the noun phrases bearing the numeric index; the numeric value itself; and the smallest portion of the structural description that contains the noun phrases. As a simple example, the formal descriptions of the dependencies realized in the sentences of (39) are shown in (40).

- (39) a. John_{1 α} loves himself_{1 β}
 b. Bill_{2 α} loves himself_{2 β}

- (40) a. $\langle ([_{NP} \text{John}]_{\alpha}, [_{NP} \text{himself}]_{\beta}), 1, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} \text{Bill}]_{\alpha}, [_{NP} \text{himself}]_{\beta}), 2, \langle NP, V, NP \rangle \rangle$

Recall that the well-formedness of reconstruction depends on the identity of dependencies. Fiengo and May formally define two dependencies to be "i-copies"—that is, syntactically identical—just in case they differ only with respect to numeric value—formally, the second member of the triple. By this definition, (40a) and (40b) are i-copies, since the only syntactic difference between them is that (40a) has value 1 and (40b) value 2. Importantly, lexical differences are not relevant to the identity: dependencies are part of syntactic structure—they occur among noun phrases, not among the lexical items contained in noun phrases. Identity holds despite the fact that the (40a) dependency contains the lexical item *John* and (40b) contains *Bill*; furthermore, both would be considered identical to the dependency encoded in *Mary loves herself*, although lexically, the reflexives differ in gender.

To explain switch under a dependency analysis, the notion of dependency must be extended to allow a β -occurrence of an index without an α -occurrence of that same index. It is clear that the theory should not allow dependent, β -type indices freely, even if this were somehow restricted to noun phrases containing first and second person pronouns. That is, the extended notion of dependency developed here must not operate in cases like (5) and (36), repeated below.

- (5) a. Speaker 1: I_1 love you_2
 b. Speaker 2: $Alice_4$ does, too \neq $Alice_4$ [loves you_1], too
- (36) a. Speaker 1: $Alice_4$ thinks I_1 love you_2
 b. Speaker 2: $Larry_7$ does, too \neq $Larry_7$ [thinks I_2 love you_1], too

In the examples in which switch occurs, an overt noun phrase containing the alternate

indexical pronoun is always present earlier in the sentence, although it has a different numeric value than the lower noun phrase that will be analyzed as "dependent." The new kind of dependency must therefore include the overt α -type noun phrase as well as the elided β -type noun phrase, in which the lower indexical expression noun phrase will be a dependent occurrence in virtue of the other's presence.

To allow this dependency between non-coindexed noun phrases, my proposal will be to appeal to the hypothesis advanced in chapter 2 that indexical expressions have the additional syntactic property of orientation. I will advance the idea that dependencies are licensed to occur not only among coindexed expressions, but also among syntactically oriented expressions. For reasons of economy, however, such an approach needs to be treated with caution. That is, before appealing to an additional hypothesized property, it must be asked whether a dependency analysis can be constructed using existing structural properties. Thus before developing the orientation proposal any further, let's consider some alternate approaches for deriving the switch reading that do not involve the complication of syntactic orientation.

3.22 Alternative hypothesis #1: cross-indexed dependencies *simpliciter*

An analysis of switch as involving a different kind of dependency will, of course, involve a complication somewhere in the theory. One way to express the new dependency would be to license additional structures such as (41), allowing dependency to simply occur among non-coindexed noun phrases. Let's call these hypothetical dependencies "cross-indexed."

- (41) a. Speaker 1: $I_{1\alpha}$ love you $_{2\beta}$
 b. Speaker 2: $I_{2\alpha}$ [love you $_{1\beta}$], too

The formal description of dependency could be altered to accommodate such an approach by defining the second member of the dependency triple to be an ordered pair of numeric values instead of a singleton.⁵ On this approach, the dependencies in (41) would have the following descriptions.

- (42) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), \langle 1,2 \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), \langle 2,1 \rangle, \langle NP, V, NP \rangle \rangle$

Technically, this alteration would be unproblematic for the existing machinery of dependency theory; the ordered pair in a "normal" dependency of noun phrases both bearing numeric value 1 would be $\langle 1,1 \rangle$. Defining the dependencies in (42) as such, however, would not by itself license (41). For the reconstruction in (41b) to be well-formed, (42a) and (42b) would also have to be syntactically identical. The current definition of *i*-copy has it that two dependencies may differ in indexical value; now that the "value" may be an ordered pair of values, the definition would have to be amended to accommodate this fact. For example, the definition could be extended as follows.

- (43) Two dependencies are *i*-copies just in case they differ only with respect to their numeric indices in either of the following ways:
- a. value: $\langle i,i \rangle$ versus $\langle j,j \rangle$
 b. order: $\langle i,j \rangle$ versus $\langle j,i \rangle$

Fiengo and May's identity condition for dependencies is preserved in (43a), so that the existing analysis of "sloppy identity" would remain intact. The alternate identity condition in (43b) would deem the cross-indexed (42a) and (42b), which differ only with respect to the

⁵ I limit discussion here to simple dependencies containing two noun phrases; on the hypothesis suggested in the text, dependencies containing three noun phrases might require an ordered *triple* of numeric values, and so on. (Switch cases involving more than two pronouns will be discussed later in this chapter.)

order of their values, to be i-copies. Thus, reconstruction would be licensed in (41b), leading to the switch reading.

The reader may be wondering why the i-copy condition needs amendment, for if dependencies may differ in value, what difference does it make if that "value" is an ordered pair, $\langle 1,2 \rangle$ being a different value than $\langle 2,1 \rangle$? The complication is necessary because without something like (43b), not just the "switched" values would be licensed, but *any* numeric pair of values would be licensed. For example, two dependencies whose values were $\langle 1,2 \rangle$ and $\langle 3,4 \rangle$ and otherwise identical would also be i-copies—and these do not occur. To illustrate such a case, imagine a situation in which two lovers are watching a movie, in which one of the characters says *I love you* to another character. The intuition here is that if one of the viewers turns to the other and say *I do, too*, this can only have the strict meaning that he loves the movie star, and not mean that he loves his companion in the theater.

- (44) a. *Movie star 1 to Movie star 2*: I_1 love you $_2$
 b. *Movie goer 3 to Movie goer 4*: I_3 do, too \neq I_3 [love you $_4$], too

This example shows that on the cross-indexed hypothesis, the i-copy condition needs something like the added complexity as shown in (43).

Note that the structural requirement of the i-copy condition has not been affected, and that structural identity must remain a requirement no matter along what lines a dependency analysis develops. Recall that in cases like (38), repeated below as (45), the switch reading does not occur.

- (45) a. Speaker 1: My $_1$ heart burns for you $_2$
 b. Speaker 2: I do, too \neq I_2 [burn for you $_1$], too

The dependencies realized in (45) would have the following formal descriptions:

- (46) a. $\langle ([_{NP} \text{my}]_{\alpha}, [_{NP} \text{you}]_{\beta}), \langle 1,2 \rangle, \langle \text{NP}, \text{N}, \text{V}, \text{P}, \text{NP} \rangle \rangle$
 b. $\langle ([_{NP} \text{I}]_{\alpha}, [_{NP} \text{you}]_{\beta}), \langle 2,1 \rangle, \langle \text{NP}, \text{V}, \text{P}, \text{NP} \rangle \rangle$

The lack of a switch reading in (38) is directly explained by the cross-indexed hypothesis, as it would be by any dependency analysis. (46a) and (46b) are not *i*-copies, due to the difference in structural description.

It should be clear that the revised treatment of identity set forth above is not the only technical solution for "cross-indexing." On an alternate approach, the dependency could be defined with respect to an *unordered* pair of indices, while preserving the one numeric value of the "normal" dependency as a singleton. The identity condition for dependencies with singleton values would remain intact; the identity condition for non-singleton dependencies would be that the value sets cannot differ—that is, they must be identical. Such a solution would have the same results as (43), licensing the switch reading in (41b) but not in (44b).

The alterations to the theory thus far, however, whether stated in terms of ordering or not, would not be enough. While allowing cross-indexed identical dependencies correctly derives the switch reading in (41) and correctly prevents the switch reading in (44) and (45), it also massively overgenerates, predicting switch readings in sentences where they never occur, such as between third person pronouns. For example, nothing yet in the cross-indexed hypothesis would rule out the strict reading in (47b).

- (47) a. Speaker 1: $\text{He}_{5\alpha}$ loves $\text{her}_{6\beta}$
 b. Speaker 2: $\text{She}_{6\alpha}$ does, too \neq $\text{She}_{6\alpha}$ [loves $\text{him}_{5\beta}$] too

Formally, the cross-indexed dependencies realized in (47) would be as shown in (48).

- (48) a. $\langle ([_{NP} \text{he}]_{\alpha}, [_{NP} \text{her}]_{\beta}), \langle 5,6 \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$
 b. $\langle ([_{NP} \text{she}]_{\alpha}, [_{NP} \text{him}]_{\beta}), \langle 6,5 \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$

There is no relevant difference between (48a-b) and (42a-b); both pairs are i-copies by either revised definition of i-copy. It is unclear that any further revision would allow identity in (42) but not in (48) except in a purely stipulative way. To repeat, dependencies are syntactic in nature; the lexical contents of the noun phrases in a dependency are irrelevant.

Perhaps some general pragmatic condition could be called upon to filter out cases like (47), allowing a switch reading to occur only if the dependency is between speaker and hearer in a conversation. Theoretically, this would move the job of restricting all of the non-switch cases to conditions on use; in an extreme version, the syntax would license cross-indexed dependencies everywhere, but some of the sentences would be unusable. Such a condition would filter out the switch in (47) but allow it in (41). The difficulty with this pragmatic solution is that the largest cut between switch and non-switch cases really does seem internal to language. To make this clear, imagine a situation in which two lovers have pet names for each other: she calls him "Pookie" and he calls her "Snookums." Now consider the following exchange between them.

- (49) a. Speaker 1: Snookums₁ loves Pookie₂
 b. Speaker 2: Pookie₂ does, too

The intuition here is that (49b) does not have a switch reading, even though the noun phrases therein ultimately refer to speaker and hearer in the conversation. The lexical contents of the noun phrases in (49) are not, however, in the first and second person, but in the third.

Intuitively, while there may be pragmatic conditions that differentiate *I love you* from *I saw you*, making the switch reading less available following the latter, it seems unlikely that pragmatic conditions can do the *entire* job of also differentiating *I love you* from *he loves her*.

Suppose there were a way to restrict the i-copy condition for cross-indexed

dependencies just in case the noun phrases were third person expressions. The conditions for the syntactic relation of dependency would then be referring not only to numeric values but also to person features. Although it is not clear to me exactly how this condition would be stated, even with such revision, the new condition still would not suffice. This becomes clear when considering what Bob Fiengo has dubbed the "same-speaker problem," shown in (50). When a standard switch example like (41) is placed in the mouth of one individual, instead of across two speakers in a conversation, the switch reading disappears.

(50) I love you and you do, too \neq $I_{1\alpha}$ love you $_{2\beta}$ and you $_{2\alpha}$ [love me $_{1\beta}$], too

The cross-indexed dependencies realized in (50) would be:

- (51) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), \langle 1,2 \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} you]_{\alpha}, [_{NP} me]_{\beta}), \langle 2,1 \rangle, \langle NP, V, NP \rangle \rangle$

Since none of the noun phrases in the dependencies in (51) contain third person pronouns, (51a) and (51b) would be i-copies even with a revised i-copy condition that specifies non-third person, and the switch reading is predicted to be available for (50). But it is not.

Summarizing the "cross-indexed" hypothesis, we began by altering the formal definition of dependency to include an ordered pair of values, and then revised the definition of i-copy to allow cross-indexed dependencies to be identical. While solving the technical difficulty of deriving dependencies among non-coindexed noun phrases, these alterations massively overgenerated switch readings. Attempting to further restrict the solution led to other problems. A pragmatic filter failed to make the proper cut, as the switch really is restricted to noun phrases whose lexical contents are not third person. But even if a way were found to state a third person restriction in a way that wouldn't matter within the theory,

there still remains the same-speaker problem, where switch never occurs between first and second person. The astute reader will no doubt have realized that I have in this discussion made every attempt to "save" the cross-indexed dependency hypothesis up to hypothesizing an additional syntactic property on first and second person expressions—such a move would, of course, make it isomorphic to the hypothesis I will in fact later defend. It must be concluded that crossed-indexed dependencies *simpliciter*, however, are unworkable.

3.23 Alternative hypothesis #2: lexical dependencies

In section 3.0, it was observed that in a switch reading, *the words* of the verb phrase are identical across the two speakers. In examining the difference between the dependencies that allow switch, such as (42), and the dependencies that never do, in (48) and (51), a similar observation holds: the lexical contents of the noun phrases are identical in (42a) and (42b), but differ between (48a) and (48b) and between (51a) and (51b). That is, in the cases that switch, *the words* are the same. The different kind of dependency seen in the switch cases might, then, be hypothesized to be not a syntactic dependency among noun phrases but a "lexical" dependency among *words*.

Such an approach would presuppose that Fiengo and May's independent and dependent α - and β -types are more universally available in the grammar than proposed in *Indices and Identity*. In addition to independent and dependent occurrences of noun phrase numeric indices, there would also be independent and dependent occurrences of words themselves. Such an approach would fall naturally in line with the radical "anti-indexing" position discussed in the previous chapter.

The attraction of this idea lies in its simplicity. First of all, the problem of different numeric values in the switch cases would become irrelevant. Since indices are borne by noun phrases, not by lexical items, lexical dependencies could not have numeric indices as part of

their definition. Formally, a lexical dependency would be defined not as a triple but as consisting of two members: the lexical items involved; and the smallest portion of the structural description that contains the lexical items. The lexical dependencies realized in (41) would thus look like (52).

- (52) a. $\langle (I_{\alpha}, you_{\beta}), \langle N, V, N \rangle \rangle$
 b. $\langle (I_{\alpha}, you_{\beta}), \langle N, V, N \rangle \rangle$

A cursory look at (52a) and (52b) suggests an extremely simple definition of identity here: two lexical dependencies can be defined to be "i-copies" just in case they do not differ—period. That is, they are identical just in case they are identical. In contrast to the disjunctive i-copy condition in (43) required for the cross-indexed hypothesis, this definition is entailed by the definition of i-copy already existing in the grammar.

The identity of the lexical dependencies in (52) would license the switch reading for (41), but switch readings would be correctly predicted not to occur in the third person examples in (47) and (49). The lexical dependencies that would lead to switch readings in these cases are, respectively:

- (53) a. $\langle (he_{\alpha}, her_{\beta}), \langle N, V, N \rangle \rangle$
 b. $\langle (she_{\alpha}, him_{\beta}), \langle N, V, N \rangle \rangle$

- (54) a. $\langle (Snookums_{\alpha}, Pookie_{\beta}), \langle N, V, N \rangle \rangle$
 b. $\langle (Pookie_{\alpha}, Snookums_{\beta}), \langle N, V, N \rangle \rangle$

Interestingly, the simple definition of the identity of lexical dependencies does not need to mention first, second or third person to distinguish switch and non-switch cases. (53a) and (53b) are not identical, nor are (54a) and (54b). Further, the lexical dependencies in the

same-speaker problem are also not i-copies, as (55a) is not identical to (55b).

- (55) a. $\langle (I_\alpha, you_\beta), \langle N, V, N \rangle \rangle$
 b. $\langle (you_\alpha, me_\beta), \langle N, V, N \rangle \rangle$

Thus the lexical dependency hypothesis correctly predicts the lack of a switch reading in the same-speaker example (50).

Unfortunately, this hypothesis fails when a larger class of cases are considered. Like the previous hypothesis, lexical dependencies massively overgenerate, though to a different set of sentences. For example, the reconstructed structure indicated in (56b) would be licensed.

- (56) a. Speaker 1: I_1 love him_5
 b. Speaker 2: I_2 do, too $\neq I_2$ [love him_7], too

- (57) a. $\langle (I_\alpha, him_\beta), \langle N, V, N \rangle \rangle$
 b. $\langle (I_\alpha, him_\beta), \langle N, V, N \rangle \rangle$

The lexical dependencies (57a) and (57b) are identical, both occurring between the words *I* and *him*. The inadequacy of the lexical identity definition is that since indices are irrelevant, they are, well, irrelevant. It appears that numeric indices must somehow be brought back in to the picture. But since the center of the definition is on identity of lexical form, the difficulty remains with (58b), which does not have a switch reading. The lexical dependencies realized in (58a) and (58b) are identical.

- (58) a. Speaker 1: Let me tell you about John and Bill. $He_{5\alpha}$ loves $him_{7\beta}$
 b. Speaker 2: $He_{7\alpha}$ does, too $\neq He_{7\alpha}$ [loves $him_{5\beta}$], too

Yet another problem arises in the imagined situation in which two lovers have the *same* pet

name for each other: each calls the other "Pookie." Consider now the following exchange between them.

- (59) a. Speaker 1: Pookie₁ loves Pookie₂
 b. Speaker 2: Pookie₂ does too

The intuition here is that (59b) has only the strict reading *Pookie₂ loves Pookie₂, too*, and not the switch *Pookie₂ loves Pookie₁, too*.

It might be thought that these problems could be solved by specifying that lexical dependencies can only occur among first and second person expressions. But not only does the lexical dependency hypothesis overgenerate in (56), (58) and (59), which all contain third-person forms, but it also would overgenerate in non-third person cases. Recall the movie-goer example, repeated below, in which one of the characters in the film says (60a). Said by a viewer, (60b) can only have the strict meaning that he loves the movie star, and not that he loves his companion in the theater.

- (60) a. *Movie star 1 to Movie star 2*: I₁ love you₂
 b. *Movie goer 3 to Movie goer 4*: I₃ do, too ≠ I₃ [love you₄], too

Without access to numeric value, there is no way to distinguish the lexical dependencies realized in (60) from those in (52) that licensed the paradigm switch example; (61a) and (61b) are identical, and the reading shown in (60b) would be incorrectly predicted to occur.

- (61) a. < (I_α , you_β), <N, V, N> >
 b. < (I_α , you_β), <N, V, N> >

Perhaps most damaging to the lexical dependency hypothesis, identity of form is not required for switch to occur, as is shown by a switch example that involves plurals. I heard

this next example in a recent revival of the play *Holiday*.⁶ The switch is perfect in (62b), but the lexical dependencies, shown in (63), are not identical.

- (62) a. *Laura*: Oh Susan and Nick, I_{1 α} love you_{2 \oplus 3 β}
 b. *Susan*: Darling, we do, too = ...we_{2 \oplus 3 α} [love you_{1 β}], too
- (63) a. $\langle (I_{\alpha}, you_{\beta}), \langle N, V, N \rangle \rangle$
 b. $\langle (we_{\alpha}, you_{\beta}), \langle N, V, N \rangle \rangle$

The notion of a lexical dependency is, initially, an extremely attractive hypothesis. It fails precisely because it *is* defined at the lexical level. Without access to numeric values, the identity of lexical dependencies can only be identity with respect to form. But switch does not occur in some cases where there is identity of form, such as the third person examples (58) and (59), or the movie-goer example (60), and does occur in other cases where there is not identity of form, such as the *Holiday* example (62). But if reference to numeric value *is* required to explain these special dependencies, then they are not lexical dependencies. They are syntactic ones.

3.24 Alternative hypothesis #3: alphabetic dependencies

Before moving on, let's recall Larson and Segal's "dualist" proposal, discussed in the previous chapter, and consider the possibility of explaining switch through hypothesizing syntactic dependency among their proposed *alphabetic* indices. Recall that on their analysis, first person pronouns have the index *a* and second person have index *b*. To derive switch, the new dependency would have to be licensed between *a*'s and *b*'s. Technically, alphabetic

⁶ I assume that the plural form has a "fusion" index here, notated by \oplus in the structure, although nothing turns on this in the current example. The analysis of plural indexical pronouns will be returned to in later discussion.

indices are appended to lexical items in Larson and Segal's system, not noun phrases, while dependencies are defined between noun phrase occurrences. To reconcile this difference, we can assume as before that the indices have "percolated" up to the containing phrase.

At first blush, this hypothesis fares far better than the cross-indexed or lexical hypotheses, accounting for many more of the observations made thus far, without running into a problem of overgeneration. Since third person expressions do not have the special alphabetic indices in Larson and Segal's proposal, but rather have standard numeric indices, the cut between the indexical expressions and third person expressions occurs up front. The structures for the paradigmatic switch example would on this approach be as follows.

- (64) a. Speaker 1: $I_{a\alpha}$ love you $_{b\beta}$
 b. Speaker 2: $I_{a\alpha}$ do, too = $I_{a\alpha}$ [love you $_{b\beta}$], too

Identity of dependencies in (64a) and (64b) is simply identity, and in fact, the same result could have been achieved without defining a dependency to exist in the structure at all, by assuming everything to be α , since $b = b$. and because the alphabetic index b evaluates via its "utterance role" to the addressee, who it picks out will be different in (64b) than in (64a).

Furthermore, it is unproblematic for the alphabetic dependency hypothesis to correctly predict that switch will not occur in the "same speaker" problem example, repeated below. The alphabetic dependencies realized in (65) would be as shown in (66); all that would have to be said is that a dependency with the alphabetic values $\langle a, b \rangle$ is not identical to a dependency with the values $\langle b, a \rangle$.

- (65) * $I_{a\alpha}$ love you $_{b\beta}$ and you $_{b\alpha}$ [love me $_{a\beta}$], too

- (66) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), \langle a, b \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} you]_{\alpha}, [_{NP} me]_{\beta}), \langle b, a \rangle, \langle NP, V, NP \rangle \rangle$

There are a few difficulties with the alphabetic dependency hypothesis, however. First, although the switch reading is easily derived in (64), it seems that it is the only reading that *can* be derived using alphabetic indices. As noted above, the switch reading seems as if it would occur whether a dependency was in the structure or not. But impossible to derive is the strict reading for that example, which is after all a possible interpretation. This is, in fact, another case of the general problem of deriving strict readings using alphabetic indices, which I earlier called the "cross-person identity" problem.

Secondly, the alphabetic dependency hypothesis fares no better than the lexical dependency hypothesis with the movie-goer example, repeated again as (67). The patterns of alphabetic indices in the structures shown in (67) should be allowed by the same mechanisms used to derive (64), incorrectly predicting that a possible interpretation of (67b) would be that movie goer #3 loves movie goer #4.

- (67) a. *Movie star 1 to Movie star 2*: I_a love you_b
 b. *Movie goer 3 to Movie goer 4*: I_a [love you_b], too

Despite its initial appeal in separating indexical from non-indexical examples, the alphabetic dependency hypothesis has been shown to be inadequate. Although it is a syntactic account, the alphabetic account fails in just those cases where appeal to numeric value seems to be necessary, just as the lexical hypothesis did. Thus in addition to the arguments advanced in the previous chapter for abandoning the alphabetic indexing proposal, it may be added that it offers little help in the description of the switch phenomenon.

3.3 The orientation analysis of switch

Alternatives to the syntactic property of orientation for a dependency analysis of switch have been examined and shown to be inadequate. Attempts to utilize the existing

properties of numeric value or lexical form lead to massive overgeneration. Appeal to alphabetic indexing as an alternative syntactic property also fail. Let's return, finally, to the hypothesis that indexical expressions are syntactically oriented: first person noun phrases informally described as having an "inward" orientation and second person "outward." As hypothesized in the previous chapter, orientation is a syntactic property, operating as a function from arrow to index, the derivation of which occurs at the syntactic level of logical form. When Susan says *I*, for example—assuming that $\omega(\leftarrow) = 3$ and $\sigma(3) = \text{Susan}$ —the derivation of that noun phrase at LF would be as shown in (68).

- (68) line 1: [I] \leftarrow
 line 2: [I]₃

Understood as a derivational process, orientation and numeric value exist on adjacent structural lines; however, for ease of exposition I will conflate lines 1 and 2 in representations. Thus notationally, indexical expressions such as (69a-b) will be distinguished from third person noun phrases (69b-d) as indicated.

- (69) a. [NP I]₃ \leftarrow
 b. [NP you]₃ \rightarrow
 c. [NP she]₃
 d. [NP Susan]₃

That the four noun phrases in (69) are "cross-person identical" is indicated by the same numeric value across the four expressions. There is no context, of course, in which (69a) and (69b) could be simultaneously derived, since in no context can $\omega(\leftarrow) = \omega(\rightarrow)$. But assuming as before that $\sigma(3) = \text{Susan}$, all four of these expressions pick out Susan.

Hypothesizing that dependencies can occur among orientations offers a better

explanation for switch than the alternatives discussed above. It does not overgenerate as the cross-indexed or lexical dependency hypotheses did. Like the alphabetic hypothesis, the orientation hypothesis makes the cut between indexical expressions and third person expressions up front, since the latter are not syntactically oriented. But because indexical expressions structurally have derived numeric values as well as orientation, the former may be utilized in the description of the switch phenomenon—an option that was unavailable for the alphabetic proposal.

3.31 Dependency and orientation pattern

On my proposal, syntactic dependency will be sensitive to either numeric value or orientation. Recall that in Fiengo and May's theory, dependent occurrences are licensed to occur in structures containing an α -occurrence of the same numeric value. Let's call these numeric dependencies, to distinguish them from the *oriented* dependencies that are now proposed. Both are still dependencies, occurring among noun phrases under a particular structural description. But there is now an additional licensing condition for β -hood to which numeric value is irrelevant: a dependent β -occurrence of an oriented noun phrase may occur in structures containing an oriented independent α -occurrence. Importantly, the α -occurrence need not have the *same* orientation, it merely must have *some* orientation. With this condition in place, the structure leading to the switch interpretation will be as shown below for the paradigm example. The dependent, oriented noun phrase containing *you* is, in each of (70a) and (70b), licensed to occur in virtue of the independent, oriented noun phrase containing *I*.

- (70) a. Speaker 1: $I_{1\alpha}^-$ love you $_{2\beta}^+$
 b. Speaker 2: $I_{2\alpha}^-$ [love you $_{1\beta}^+$], too

Intuitively, the new dependency is a *pattern* of orientations: descriptively, two such dependencies will be identical just in case they have the same pattern. The notion of an orientation pattern implicitly requires order, so by definition, the new dependency will contain an ordered set of orientations. The set of numeric values in the dependency, however, need not be ordered. Formally, the definition of a dependency will on this proposal be a quadruple consisting of the noun phrases, the unordered set of indices, the ordered set of orientations, and the structural description. By this definition, the dependencies realized in (70a-b) are formally shown below.

- (71) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), (1,2), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), (1,2), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$

Defining the new dependency as containing an orientation pattern and an unordered set of indices has the result that (71a) and (71b) are identical. Formally, there is no need for additional stipulations in the identity condition on dependencies: (70a) and (70b) encode the *same* dependency. Note that Fiengo and May's definition of dependency is contained in—and thus falls out from—the revised version: the formal description of dependencies among same-valued third person noun phrases will contain three non-null members, as in the original definition. Since third person noun phrases have no orientation, the third member in such a dependency will be empty; furthermore, the set of indices will be a singleton.

In addition, the i-copy condition needs to be clarified: as noted in the discussion of the cross-indexed hypothesis, while dependencies among same-valued third person noun phrases can differ in numeric index, dependencies among oriented noun phrases must contain the same set of values. The formal definition of i-copy should, therefore, be reworded to allow difference of numeric value only in the case where the value set contains one member.

- (72) Two dependencies are *i-copies* just in case they differ by no more than a singleton numeric value set.

It will be entailed by (72) that the only way for dependencies that contain a set of more than one numeric value to be identical will be for them to be identical.

The explanation for strict interpretations, it should be noted, is not lost under the orientation analysis, as it was in the alphabetic dependency proposal. While the new definition allows the oriented noun phrase containing *you* in (70a) to bear a dependent or β -occurrence of an index, nothing prevents it from alternatively bearing an independent or α -occurrence. The structure leading the strict reading for the paradigm example is as shown in (73).

- (73) a. Speaker 1: $I_{1\alpha}^-$ love you $_{2\alpha}^+$
 b. Speaker 2: $I_{2\alpha}^-$ [love me $_{2\alpha}^+$], too

Recall that for noun phrases with independent α -indices to be considered syntactically identical, their numeric values must be equal. What (73) teaches is that for identity of α -type indices, this condition has not changed; orientation is irrelevant to cross-person identity. It does not matter whether the numeric value has been derived through one orientation or the other, or not derived at all: the value $\vec{2}$ is identical to $\overleftarrow{2}$ is identical to 2.

Now that the preliminary notation of the oriented dependency analysis is in place, let's return to examples where the earlier hypothesis failed in various ways. Under the orientation analysis, dependencies can occur either among noun phrases of the same numeric value, or among oriented noun phrases, but there will be no "mixed" dependencies. As a result the cases involving third person that have only strict interpretations are readily explained. For example, recall (5), repeated below as (74).

- (74) a. Speaker 1: $I_{1\alpha}^{\leftarrow} \text{love you}_{2\alpha/\beta}^{\rightarrow}$
 b. Speaker 2: $\text{Alice}_{4\alpha}$ does, too = $\text{Alice}_{4\alpha} [\text{loves me}_{2\alpha}^{\leftarrow}]$, too
 $\neq \text{Alice}_{4\alpha} [\text{loves you}_{1\beta}^{\rightarrow}]$, too

There is a structural ambiguity in (74a), as indicated: the oriented noun phrase containing *you* may bear an independent α -index, or it may bear a dependent β -index licensed by the oriented α -occurrence earlier in the structure. Only one of these can be utilized without violation for purposes of reconstruction in (74b), however—the one that contains an independent noun phrase and leads to the strict interpretation, shown in the first reconstructed structure in (74b). Since the values of the contained α -noun phrases are equal, syntactic identity holds; the verb phrases in antecedent and consequent are reconstructions of each other. An alternate structure containing a β -occurrence, such as the one shown second in (74b), is illegitimate, as there is no α -oriented noun phrase in the structure to license the dependent noun phrase. Thus the only possible reading of (74b) is strict. A similar violation occurs in all the third person cases where the cross-indexed or lexical dependency hypotheses fail; because third person forms do not occur in oriented noun phrases, the only legitimate dependencies in such structures will be numeric ones, explaining why switch interpretations do not occur.

The orientation pattern realized in (70) is not the only one possible. In (75), for example, the orientation set differs. The dependencies realized in (75) are shown in (76).

- (75) a. Speaker 1: $\text{Do you}_{2\alpha}^{\rightarrow} \text{love me}_{1\beta}^{\leftarrow} ?$
 b. Speaker 2: $\text{Do you}_{1\alpha}^{\rightarrow} ?$ = $\text{Do you}_{1\alpha}^{\rightarrow} [\text{love me}_{2\beta}^{\leftarrow}] ?$

- (76) a. $\langle ([_{\text{NP}} \text{you}]_{\alpha}, [_{\text{NP}} \text{me}]_{\beta}), (1,2), \langle \rightarrow, \leftarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$
 b. $\langle ([_{\text{NP}} \text{you}]_{\alpha}, [_{\text{NP}} \text{me}]_{\beta}), (1,2), \langle \rightarrow, \leftarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$

The orientation set in (76a) is the same as the one in (76b), and the dependencies are otherwise identical, allowing the structure in (75b) that leads to the switch interpretation.

Note that the $\langle \rightarrow, \leftarrow \rangle$ pattern is, however, different from the $\langle \leftarrow, \rightarrow \rangle$ pattern seen in (71), since orientation sets are, by definition, ordered. This fact becomes crucial to the solution of the same-speaker problem, repeated below as (77), where recall switch does not occur. Recall that the cross-indexed hypothesis predicted a switch interpretation in the same-speaker example.

(77) * $I_{1\alpha}^{\leftarrow}$ love you $_{2\beta}^{\rightarrow}$ and you $_{2\alpha}^{\rightarrow}$ [love me $_{1\beta}^{\leftarrow}$], too

An examination of the oriented dependencies realized in (77) reveals that they are not i-copies under the proposed analysis, as they encode different orientation patterns: in (78a), the orientation set is $\langle \leftarrow, \rightarrow \rangle$; in (78b), it is $\langle \rightarrow, \leftarrow \rangle$.

(78) a. $\langle ([_{NP} \Pi]_{\alpha}, [_{NP} \text{you}]_{\beta}), (1,2), \langle \leftarrow, \rightarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$
 b. $\langle ([_{NP} \text{you}]_{\alpha}, [_{NP} \text{me}]_{\beta}), (1,2), \langle \rightarrow, \leftarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$

The verb phrases in (77) are thus not reconstructions of each other, and the structure is illegitimate. As a result, the same-speaker example is correctly predicted to have only a strict interpretation.

That indexical expressions have numeric values as well as orientation has allowed strict readings to be derived under this proposal as well as switch readings. And as seen earlier, including the set of numeric values as part of the *definition* of dependency has the result that the familiar same-valued dependency is contained in the new definition, but nothing in the switch cases has yet turned on this inclusion. However, when returning to cases where the lexical and alphabetic dependency hypotheses failed, such as the movie-goer example, repeated below as (79), having the numeric values included becomes crucial to the explanation

of why switch does not occur. The oriented dependencies realized in (79) are shown in (80).

- (79) a. *Movie star 1 to Movie star 2*: $\Gamma_{1\alpha}^- \text{ love you } \vec{2}_\beta$
 b. *Movie goer 3 to Movie goer 4*: $\Gamma_{3\alpha}^- [\text{love you } \vec{4}_\beta]$, too

- (80) a. $\langle ([_{\text{NP}} I]_\alpha, [_{\text{NP}} \text{you}]_\beta), (1,2), \langle \leftarrow, \rightarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$
 b. $\langle ([_{\text{NP}} I]_\alpha, [_{\text{NP}} \text{you}]_\beta), (3,4), \langle \leftarrow, \rightarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$

Although the orientation patterns in (80a) and (80b) are identical, the dependencies are not otherwise the same. In this case, the set of numeric values differs across the two dependencies: they are thus not i-copies, and the structure shown in (79b) is illegitimate. The movie-goer example underlines the importance of the clarified i-copy condition (72). Dependencies with singleton value sets can differ in numeric index and still be i-copies; where the value sets have more than one member, as in (80), difference is not tolerated.

Finally, recall the *Holiday* example, repeated below as (81), which the lexical dependency hypothesis incorrectly predicted would not have a switch interpretation.

- (81) a. *Laura*: Oh Susan and Nick, $\Gamma_{1\alpha}^- \text{ love you } \vec{2} \oplus_{3\beta}$
 b. *Susan*: Darling, $\text{we } \vec{2} \oplus_{3\alpha} [\text{love you } \vec{1}_\beta]$, too

Under the orientation analysis, the dependencies realized in (81) are as shown below.

- (82) a. $\langle ([_{\text{NP}} I]_\alpha, [_{\text{NP}} \text{you}]_\beta), (1,2 \oplus 3), \langle \leftarrow, \rightarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$
 b. $\langle ([_{\text{NP}} \text{we}]_\alpha, [_{\text{NP}} \text{you}]_\beta), (1,2 \oplus 3), \langle \leftarrow, \rightarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$

Like numeric dependencies, oriented dependencies remain defined as part of syntactic structure; they occur among noun phrases, not among the lexical items contained in noun phrases. The only difference between (82a) and (82b) is lexical; this is not relevant to

parallel to the sloppy/strict ambiguity in third person cases: it occurs when the antecedent predicate has two possible structures, being licensed to contain either a dependent or independent occurrence of a noun phrase. The switch or sloppy interpretation results when the structure contains a dependency; the strict results when it does not. In (84b), for example, the strict reading results because all the noun phrases are independent. Orientation, recall, is irrelevant to the determination of identity among noun phrases of type α .

- (84) a. Speaker 1: $I_{1\alpha}^{\leftarrow} \text{love you}_{2\alpha}^{\rightarrow}$
 b. Speaker 2: $\text{You}_{1\alpha}^{\rightarrow} \text{do?}$ = $\text{You}_{1\alpha}^{\rightarrow} [\text{love me}_{2\alpha}^{\leftarrow}]?$

On the other hand, the indexing of (83), shown in (85), does not contain any α -type noun phrases. By hypothesis, the switch interpretation of (85b) cannot result unless (85a) and (85b) contain oriented dependencies in their structures. The only possible structure of (85c), then, must also contain an oriented dependency.

- (85) a. Speaker 1: $I_{1\alpha}^{\leftarrow} \text{love you}_{2\beta}^{\rightarrow}$
 b. Speaker 2: $I_{2\alpha}^{\leftarrow} [\text{love you}_{1\beta}^{\rightarrow}]$, too
 c. Speaker 1: $\text{You}_{2\alpha}^{\rightarrow} [\text{love me}_{1\beta}^{\leftarrow}]?$

However, when the dependencies in (85) are examined formally, the dependency realized in (85c) is revealed to not be an i-copy of the others: its orientation pattern differs.

- (86) a. $\langle ([_{\text{NP}} I]_{\alpha}, [_{\text{NP}} \text{you}]_{\beta}), (1,2), \langle \leftarrow, \rightarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$
 b. $\langle ([_{\text{NP}} I]_{\alpha}, [_{\text{NP}} \text{you}]_{\beta}), (1,2), \langle \leftarrow, \rightarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$
 c. $\langle ([_{\text{NP}} \text{you}]_{\alpha}, [_{\text{NP}} \text{me}]_{\beta}), (1,2), \langle \rightarrow, \leftarrow \rangle, \langle \text{NP}, \text{V}, \text{NP} \rangle \rangle$

Recall that orientation sets are ordered; the analysis developed here relies on just this difference to explain the lack of a switch reading in the same-speaker problem discussed in

the previous section. Since (85c) does not encode the same dependency as (85b) or (85a), the verb phrases are not reconstructions of each other and the structure in (85c) should be illegitimate. In fact, by the assumptions made thus far, no grammatical reconstruction should be possible for (85c). Nevertheless, the interpretation shown in (85c) is readily available to speakers of English.

A solution to this problem already exists within dependency theory that does not entail abandoning the ordered orientation sets that explain the same-speaker problem. Loosely speaking, there are two possible ways to "copy" a β -occurrence. The most common is under the condition of i-copy for dependencies, which has been discussed above in detail. The second possibility derives mixed sloppy-strict interpretations in multiple clause sentences such as (87), which Fiengo and May call the "Dahl puzzle" after its discoverer Östen Dahl (see their chapter 4).

(87) Max thinks he is strong, Oscar does, too, but his father doesn't

The relevant reading here is the one in which the interpretation of the second clause is sloppy and the final clause is strict relative to the second clause: *Max thinks Max is strong, Oscar thinks Oscar is strong, his (Oscar's) father doesn't think Oscar is strong*. Fiengo and May observe that such a construal is possible only when *his* in the final clause is taken to be coreferential to *Oscar*; the final clause does not have this strict reading when *his* is taken to be someone else, or is replaced by a non-coreferential noun phrase, such as in (88).

(88) Max thinks he is strong, Oscar does, too, but Sam's father doesn't

On Fiengo and May's analysis of the mixed sloppy-strict interpretations, a β -occurrence may "copy" *with the same numeric value* if and only if there is a dependency that is "resolvable" in the reconstruction. In other words, an alternative way for two verb phrases to be

reconstructions of each other will be the case where the numeric indices of the β -occurrences are the same and each β -type noun phrase is part of a dependency on some line of their respective phrase markers; crucially, the structural parallelism required by the i-copy condition does *not* have to hold in resolving the dependencies when the values of the contained noun phrases are the same.

To make this clear, let's review the circumstances under which syntactic identity holds for two verb phrases. The three ways are shown schematically below.

- (89) a. $[\text{VP} \dots X \dots \text{NP}_{i\alpha} \dots Y \dots] = [\text{VP} \dots X \dots \text{NP}_{i\alpha} \dots Y \dots]$
 b. $[\text{VP} \dots X \dots \text{NP}_{i\beta} \dots Y \dots] = [\text{VP} \dots X \dots \text{NP}_{j\beta} \dots Y \dots]$ iff dependencies are i-copies
 c. $[\text{VP} \dots X \dots \text{NP}_{i\beta} \dots Y \dots] = [\text{VP} \dots X \dots \text{NP}_{i\beta} \dots Y \dots]$

The two verb phrase identities shown in (89a-b) are the familiar ones. If the included noun phrases bear independent α -indices, as in (89a), they must be structurally identical down to and including the numeric values, leading to the standard strict interpretation. If the included noun phrases bear dependent β -indices, their numeric values may differ as in (89b); however, identity holds in this case only if the dependencies realized in the overall structures are identical by the i-copy condition. This leads to the traditional sloppy interpretation, as well as to switch. In the third circumstance, shown in (89c), if the verb phrases are identical down to and including the numeric values of included *dependent* noun phrases, syntactic identity holds—the i-copy condition is irrelevant. Nothing special need be said to achieve this result: identity in (89c) and identity in (89a) are, simply, identity: the special case is (89b), in which difference of a sort is tolerated and an additional condition is required. The conditions allowing (89c) are independent of verb phrase identity. Unlike the verb phrases in (89a), which will be grammatical in whatever sentence they occur in, each dependent occurrence in the (89c) verb phrases must be licensed to occur in its respective overall structure; when

licensed, this dependent occurrence results in a strict interpretation, which I will call the "Dahl strict."

The strict/sloppy ambiguity, this makes clear, should not be mistaken to be identical or parallel to the α/β type distinction: strict readings may result from either independent or dependent occurrences of indices. The final clause of the Dahl puzzle example (87) contains a β -occurrence of *the same value* as the one in the middle clause, which is resolvable in the structure due to the presence of the covalued noun phrase containing *his*, as shown in (90a); a same-valued β -type noun phrase is not licensed in (88), however, as shown in (90b).

- (90) a. Max_{1 α} thinks he_{1 β} is strong, Oscar_{2 α} [thinks he_{2 β} is strong], too, but his_{2 α} father doesn't [think he_{2 β} is strong]
- b. * Max_{1 α} thinks he_{1 β} is strong, Oscar_{2 α} [thinks he_{2 β} is strong], too, but Sam's_{3 α} father doesn't [think he_{2 β} is strong]

Given Fiengo and May's insight into the Dahl puzzle, the strict interpretation of (85c) relative to (85b) can now be accounted for as a reconstruction of a verb phrase containing a β -type noun phrase—in this case, a noun phrase licensed to be dependent due to orientation. Because the dependent [_{NP} *me*] in (85c) has the same value *I* as the dependent [_{NP} *you*] in (85b), verb phrase identity holds and is legitimate in any structure in which the dependency can be resolved. In (85c), the dependent occurrence is licensed by the presence of the oriented α -type noun phrase containing *you*. That is, because the numeric value of the dependent noun phrase has stayed the same, the difference of the orientation pattern is irrelevant, because the dependency can be otherwise resolved.

That analyzing (85c) as Dahl strict is correct becomes clear when the subject of (85c) is replaced with a noun phrase on which the dependency cannot resolve, as in (91). Exactly as is predicted on the Dahl strict analysis of (85c), (91c) does not have a strict reading relative to (91b); indeed, (91c) is uninterpretable on any reading when (91b) has switched.

- (91) a. Speaker 1: $I_{1\alpha}^-$ love you $\vec{2}_\beta$
 b. Speaker 2: $I_{2\alpha}^-$ do, too = $I_{2\alpha}^-$ do [love you $\vec{1}_\beta$], too
 c. Speaker 1: Sam $_{3\alpha}$ does, too \neq Sam $_{3\alpha}$ does [love me $\vec{1}_\beta$], too

If the Dahl strict does occur in oriented structures, same-valued reconstructions of oriented β -occurrences would also be predicted to occur in structurally non-parallel dependencies, as in the original Dahl puzzle. This prediction is borne out: unlike (91c), (92c) does have a strict interpretation relative to (92b).

- (92) a. Speaker 1: $I_{1\alpha}^-$ love you $\vec{2}_\beta$
 b. Speaker 2: $I_{2\alpha}^-$ do, too = $I_{2\alpha}^-$ do [love you $\vec{1}_\beta$], too
 c. Speaker 1: Your $\vec{2}_\alpha$ mother does, too = Your $\vec{2}_\alpha$ mother [loves me $\vec{1}_\beta$], too

Despite the structural difference between the dependencies in (92b) and (92c), since the numeric values of the dependent noun phrases are the same, verb phrase identity holds. The dependent noun phrase in (92c) is licensed by the presence of the oriented α -type noun phrase containing *your*.

In both (85c) and (92c), the strict reading is the only interpretation available when the previous sentence has the switch interpretation. In those examples, the only possible way for the β -occurrence to be reconstructed is with the same value and resolution in some dependency; an i-copy dependency with different value is not possible due to differences in orientation set in (85) and structural differences in (92). There are cases, however, where *both* the Dahl strict reading and a standard switch reading are available. Consider the following, where (93b) has the switch reading.

- (93) a. Speaker 1: $I_{1\alpha}^-$ love you $\vec{2}_\beta$
 b. Speaker 2: $I_{2\alpha}^-$ do, too = $I_{2\alpha}^-$ do [love you $\vec{1}_\beta$], too

c. Speaker 1: Actually, $I_{1\alpha}^-$ don't

The intuition here is that there are two possible interpretations for (93c), that actually, speaker 1 doesn't love speaker 2 (a "reswitch"), or that actually, speaker 1 doesn't love himself (strict).⁷ Both interpretations are explained upon examining the two possible structures for (93c) under the orientation analysis, shown in (94).

- (94) a. Actually, $I_{1\alpha}^-$ don't [love you $_{2\beta}^+$]
 b. Actually, $I_{1\alpha}^-$ don't [love me $_{1\beta}^+$]

The dependency realized in (94a) is an i-copy of the dependency in (93b), which in turn is identical to the dependency in (93a); the interpretation of switch in (93b) therefore switches back again in (93c).⁸ On the other hand, the dependent noun phrase containing *me* in (94b), of the same value as the dependent noun phrase in (93b) and therefore identical to it, is licensed because it is resolvable in some dependency within the (94b) structure: in this case, by the presence of a covalued α -noun phrase. To repeat, the resolution of same-valued dependent noun phrases does not require i-copy; in this case, the dependent noun phrase in (93b) occurs in a dependency containing more than one value in its numeric set, while the dependency in (94b) contains a singleton.

The Dahl strict analysis also explains contrasts such as between (95) and (96). The switch interpretation is impossible in (95b), but apparently available for the same string of words in (96b).

⁷ Stress differences can best bring out the two interpretations for (96c): said flatly, the interpretation is the reswitch; with stress on *I*, it is strict.

⁸ Robert May has pointed out to me that alternatively, the "reswitch" reading for (98c) might be analyzed as a case of verb phrase identity back to (98a). Whichever analysis of the "reswitch" is chosen, however, is irrelevant to the point here, which is the explanation for the "strict" reading in (98c) relative to (98b).

- (95) a. Speaker 1: $I_{1\alpha}^-$ love you $_{2\beta}^+$
 b. Speaker 2: My $_{2\alpha}^+$ mother doesn't \neq My $_{2\alpha}^-$ mother doesn't [love you $_{1\beta}^+$]
- (96) a. Speaker 1: $I_{1\alpha}^-$ love you $_{2\beta}^+$
 b. Speaker 2: $I_{2\alpha}^-$ do, too, but my $_{2\alpha}^+$ mother doesn't $=$ $I_{2\alpha}^-$ [love you $_{1\beta}^+$], too, but my $_{2\alpha}^+$ mother doesn't [love you $_{1\beta}^+$]

The lack of the switch reading in (95b) is predicted, as the i-copy condition does not hold among the dependencies realized due to structural differences: $\langle \text{NP V NP} \rangle$ in (95a) versus $\langle \text{NP N V NP} \rangle$ in (95b). Alternatively, a Dahl strict β -noun phrase in (95b) would need to have an index of the same numeric value 2, which although resolvable in the structure would not result in switch: the interpretation of such a structure collapses extensionally with the strict reading resulting from α -occurrences all around. Thus the only possible interpretation of (95b) is strict.

If speaker 2 first utters a legitimate switch, however, as in (96b), the same string of words *my mother doesn't* can have a "switch" interpretation relative to speaker 1's utterance. In fact, the final dependent noun phrase containing *you* in (96b) is identical in value to the dependent noun phrase containing *you* in the first clause, and is thus analyzable as a Dahl strict β -occurrence, resolvable due to the presence of the α -oriented noun phrase containing *my*. Without such an α -oriented noun phrase, the dependency would not be resolvable, correctly predicting the lack of a "switch" for the second clause in (97b).

- (97) a. Speaker 1: $I_{1\alpha}^-$ love you $_{2\beta}^+$
 b. Speaker 2: $I_{2\alpha}^-$ do, too, but Sam $_{3\alpha}$ doesn't \neq $I_{2\alpha}^-$ [love you $_{1\beta}^+$], too, but Sam $_{3\alpha}$ doesn't [love you $_{1\beta}^+$]

Finally, further extending the discourse beyond three sentences results in interpretations that are consistent with the analysis developed here. As an interesting

example, recall (85), where the strict reading of (85c) was analyzed as resulting from a Dahl strict β -occurrence. Because this structure in (85c) contains an oriented dependency, a switch reading is predicted to be available for a subsequent utterance. And indeed this is the case, as shown in (98), in which a fourth sentence has been added to (85). The interpretation of (98d) can switch (a reading that is best brought out by stressing *you*).

- (98) a. Speaker 1: $I_{1\alpha}^-$ love $you_{2\beta}^+$
 b. Speaker 2: $I_{2\alpha}^-$ do, too = $I_{2\alpha}^-$ do [love $you_{1\beta}^+$], too
 c. Speaker 1: $You_{2\alpha}^+$ do? = $You_{2\alpha}^+$ do [love $me_{1\beta}^-$]?
 d. Speaker 2: $YOU_{1\alpha}^+$ do? = $You_{1\alpha}^+$ do [love $me_{2\beta}^-$]?

As mentioned above, the verb phrase in (98c) is identical to the verb phrase in (98b) on the (89c) schematic, the contained dependent noun phrase being licensed in the overall structure. The (98c) verb phrase is also identical to the verb phrase in (98d), in this case by the (89b) schematic; because the numeric values differ, the i-copy condition must of course hold—and it does. In (98b-d), a switch, a Dahl strict, and a switch follow each other in succession—possible because the occurrences within the three verb phrases are all dependent.

The problematic nature of extended discourse to the oriented dependency analysis as presented at the beginning of this section is thus explained as a natural consequence of well-studied processes within dependency theory that have been shown to be operating in the third person. Extended exchanges that include oriented dependencies parallel cases of third person dependencies across many clauses. Verb phrases containing same-valued dependent noun phrases, whether licensed by an independent oriented noun phrase or an independent covalued noun phrase, can be proper reconstructions of each other just in case the dependent occurrences are resolved. We have seen here that it does not matter to the resolution of a dependent noun phrase whether it occurs within an oriented dependency or within a numeric

dependency. The challenge to the theory would come if Dahl strict noun phrases were *not* found in oriented dependencies; the extended discourse examples in fact add further support to the oriented dependency analysis.

3.33 Many pronouns and the ATB many indexical pronoun puzzle

In the previous section, we saw that, given the orientation analysis, the switch phenomenon occurring for first and second person pronouns in extended discourse shows no special behavior in terms of the syntactic dependencies involved, but rather parallels the "many clauses" cases involving third person pronouns. I turn now to switch examples that are similar to Fiengo and May's "many pronouns" cases, increasing the complexity of the core switch sentences by additional pronouns. Switch interpretations do indeed occur in sentences containing more than two indexical pronouns, showing that like numeric dependencies, oriented dependencies can contain any number of noun phrases. However, sentences containing additional indexical pronouns do not appear to have the same number of structural possibilities as their third person counterparts. Unlike in the extended discourses cases, these differences cannot be readily explained by processes already operating elsewhere in the grammar.

To begin, let's review third person cases involving many pronouns. Example (99) is taken from Fiengo and May, chapter 4.

(99) Max₁ said he₁ saw his₁ mother, and Oscar₂ did, too

When the three noun phrases in the first clause of (99) are coreferential, as indicated, Fiengo and May observe that the second clause has three possible interpretations. The first of these is strict across-the-board (ATB): *Oscar said Max saw Max's mother*. The second is sloppy ATB: *Oscar said Oscar saw Oscar's mother*. The third, less salient than the first two, is a

mixed reading in which the medial pronoun is sloppy and the final pronoun is strict: *Oscar said Oscar saw Max's mother*. Totally unavailable is another mixed interpretation of the medial pronoun as strict and the final pronoun as sloppy: *Oscar said Max saw Oscar's mother*.

That there are three—and only three—interpretations of the second clause of (99) is a direct result of the possible patterns of index types in the structure of the first clause. The distribution of types indicates which of the noun phrases—if any—are contained in the same dependency. A sentence containing n covalued NPs has $2^{(n-1)}$ possible distributions of alphas and betas within the verb phrase. In the verb phrase in the first clause of (99), there are four possible distributions— $\alpha\alpha$, $\beta\beta$, $\beta\alpha$, and $\alpha\beta$ —indicated in the first clauses of (100a-d). Reconstruction of the verb phrase in (100a), in which both noun phrases are independent, leads to the strict ATB reading for the second clause; while (100b), in which both noun phrases are dependent, leads to the sloppy ATB. (100c), in which the noun phrases are respectively dependent and independent, results in the mixed sloppy/strict interpretation. Reconstruction of the verb phrase in (100d), in which the noun phrases are respectively independent and dependent, wholly contains a dependency, and thus results in the same ATB strict interpretation as (100a).

- (100) a. $\text{Max}_{1\alpha}$ said $\text{he}_{1\alpha}$ saw $\text{his}_{1\alpha}$ mother, and $\text{Oscar}_{2\alpha}$ [said $\text{he}_{1\alpha}$ saw $\text{his}_{1\alpha}$ mother], too
 b. $\text{Max}_{1\alpha}$ said $\text{he}_{1\beta}$ saw $\text{his}_{1\beta}$ mother, and $\text{Oscar}_{2\alpha}$ [said $\text{he}_{2\beta}$ saw $\text{his}_{2\beta}$ mother], too
 c. $\text{Max}_{1\alpha}$ said $\text{he}_{1\beta}$ saw $\text{his}_{1\alpha}$ mother, and $\text{Oscar}_{2\alpha}$ [said $\text{he}_{2\beta}$ saw $\text{his}_{1\alpha}$ mother], too
 d. $\text{Max}_{1\alpha}$ said $\text{he}_{1\alpha}$ saw $\text{his}_{1\beta}$ mother, and $\text{Oscar}_{2\alpha}$ [said $\text{he}_{1\alpha}$ saw $\text{his}_{1\beta}$ mother], too

The four possible distributions thus reduce to three possible readings. Note that none of the possible type distributions results in the (unobserved) mixed strict/sloppy interpretation. The likeliest candidate is (100d), since the distribution of types within the verb phrase is $\alpha\beta$.

To result in the strict/sloppy reading, however, it would have to be possible for the dependency in the first clause of (100d) to contain $[_{NP} Max]$ and $[_{NP} his]$, skipping, as it were, the medial noun phrase. But by definition, β -occurrences must be resolved in the smallest part of a factorization; thus the only possible dependency in (100d) is one containing $[_{NP} he]$ and $[_{NP} his]$, which, as mentioned, is wholly contained in the verb phrase, leading to the strict ATB interpretation.⁹

Why is the mixed sloppy/strict marginal compared to the across-the-board interpretations? Fiengo and May observe that the preference in the grammar is for structures that contain the fewest possible dependencies; a structure containing more dependencies is marked with respect to an alternative with fewer dependencies. Using their markedness metric, the structure leading to the available mixed reading in (100c) will be marked to degree 1, whereas (100a) and (100b), which result in the ATB interpretations, are 0-degree marked.

Let's now turn to oriented dependencies that contain three indexical noun phrases. The data here become more complex. For third person noun phrases, the only possible dependencies have the same value regardless of the number of noun phrases; for n oriented noun phrases in a sentence, the number of possible orientation patterns is $(2^n - 2)$ (excluding the two patterns with singleton numeric value sets). In the case of three noun phrases, there are therefore six patterns to consider: $\langle \leftarrow, \rightarrow, \leftarrow \rangle$, $\langle \leftarrow, \rightarrow, \rightarrow \rangle$, $\langle \leftarrow, \leftarrow, \rightarrow \rangle$, $\langle \rightarrow, \leftarrow, \rightarrow \rangle$, $\langle \rightarrow, \leftarrow, \leftarrow \rangle$, and $\langle \rightarrow, \rightarrow, \leftarrow \rangle$. Exchanges containing each of these are shown in turn below, along with intuitions concerning their possible interpretations; unavailable readings are indicated by *.

⁹ Like the solution to the Dahl puzzle, Fiengo and May's account of the "many pronoun" cases provides a compelling argument against semantic approaches to ellipsis. Unlike predicate-based accounts, which in the three-NP case would predict four readings, dependency theory correctly predicts the reduced number of readings that are actually observed. (For discussion, see chapter 4 of Fiengo and May 1994.)

(101) a. Speaker 1: I think you love my mother

b. Speaker 2: I do, too

strict ATB: *I think I love your mother*

switch ATB: *I think you love my mother*

switch/strict: * *I think you love your mother*

strict/switch: * *I think I love my mother*

(102) a. Speaker 1: I think you love your mother

b. Speaker 2: I do, too

strict ATB: *I think I love my mother*

switch ATB: *I think you love your mother*

switch/strict: * *I think you love my mother*

strict/switch: * *I think I love your mother*

(103) a. Speaker 1: I think I love your mother

b. Speaker 2: I do, too

strict ATB: *I think you love my mother*

switch ATB: *I think I love your mother*

switch/strict: *I think I love my mother*

strict/switch: * *I think you love your mother*

(104) a. Speaker 1: Do you think I love your mother?

b. Speaker 2: Do you?

strict ATB: *Do you think you love my mother?*

switch ATB: *Do you think I love your mother?*

switch/strict: * *Do you think I love my mother?*

strict/switch: * *Do you think you love your mother?*

(105) a. Speaker 1: Do you think I love my mother?

b. Speaker 2: Do you?

strict ATB: *Do you think you love your mother?*

switch ATB: *Do you think I love my mother?*

switch/strict: * *Do you think I love your mother?*

strict/switch: * *Do you think you love my mother?*

- (106) a. Speaker 1: Do you think you love my mother?
 b. Speaker 2: Do you?

strict ATB: *Do you think I love your mother?*
 switch ATB: *Do you think you love my mother?*
 switch/strict: *Do you think you love your mother?*
 strict/switch: * *Do you think I love my mother?*

Parallel to third person cases, all of (101-106) have salient across-the-board interpretations, both strict and switch, and none has the mixed strict/switch reading, as would be expected. However, only two out of the six orientation patterns have the expected mixed switch/strict interpretation. Degree 1 markedness does not seem enough to explain the complete lack of the switch/strict in (101), (102), (104) and (105), which is completely unavailable and not merely marginal. It is rather the available mixed readings in (103) and (106) that have the feel of degree 1 markedness.

Let's examine the structures for one of the problematic orientation patterns; the grammatical possibilities for (101), for example, are shown below. Like in the third person example containing three noun phrases in (100), there are $2^{(3-1)}$ or four possible index type distributions within the verb phrase of the first sentence of the exchange, shown respectively in (107a), (108a), (109a), and (110a).

- (107) a. Speaker 1: $I_{1\alpha}^{\leftarrow}$ think you $\vec{2}_{\alpha}$ love my $\leftarrow_{1\alpha}$ mother
 b. Speaker 2: $I_{2\alpha}^{\leftarrow}$ [think $I_{2\alpha}^{\leftarrow}$ love your $\vec{1}_{\alpha}$ mother], too
- (108) a. Speaker 1: $I_{1\alpha}^{\leftarrow}$ think you $\vec{2}_{\beta}$ love my $\leftarrow_{1\beta}$ mother
 b. Speaker 2: $I_{2\alpha}^{\leftarrow}$ [think you $\vec{1}_{\beta}$ love my $\vec{2}_{\beta}$ mother], too (i-copy)
 $I_{2\alpha}^{\leftarrow}$ [think $I_{2\beta}^{\leftarrow}$ love your $\vec{1}_{\beta}$ mother]. too (Dahl)
- (109) a. Speaker 1: $I_{1\alpha}^{\leftarrow}$ think you $\vec{2}_{\alpha}$ love my $\leftarrow_{1\beta}$ mother
 b. Speaker 2: $I_{2\alpha}^{\leftarrow}$ [think $I_{2\alpha}^{\leftarrow}$ love your $\vec{1}_{\beta}$ mother], too (Dahl)

- (110) a. Speaker 1: $I_{1\alpha}^-$ think you $_{2\beta}^-$ love my $_{1\alpha}^-$ mother
 b. Speaker 2: $I_{2\alpha}^-$ [think you $_{1\beta}^-$ love your $_{1\alpha}^-$ mother], too (i-copy)
 $I_{2\alpha}^-$ [think $I_{2\beta}^-$ love your $_{1\alpha}^-$ mother], too (Dahl)

The $\alpha\alpha$ distribution within the verb phrase leads to the strict ATB in (107b).

Paralleling the third person, the $\alpha\beta$ distribution in (109b) also leads to the strict ATB—in this case, the wholly contained dependencies in (109a) and (109b) are not i-copies, and the only possible reconstruction of the verb phrase will have a dependent Dahl strict in the final noun phrase position. Switch ATB results in (108b) from the $\beta\beta$ distribution: the dependency here has the value set (1,2) and the orientation pattern $\langle \leftarrow, \rightarrow, \leftarrow \rangle$, which is an i-copy of the dependency realized in (108a). An alternative Dahl strict reconstruction of (108a) is also legitimate in (108b), as it is in (110b)—both of these result in the strict ATB again. The puzzle comes from the legitimate $\beta\alpha$ distribution in (110a), which the theory predicts should result in the mixed switch/strict in the i-copy reconstruction in (110b), although marked to degree 1 with respect to the degree-0 ATB interpretations. But as observed above, this mixed reading is completely unavailable.

Although the complexity increases for additional pronouns, there is a consistency in the intuitions concerning available readings. To see this, let's examine just one of the (2^4-2) or 14 possible orientation patterns in a four noun phrase sentence, such as in (111). Of the eight interpretations imaginable, only the across-the-board ones are available; the six mixed readings are all impossible. However, dependency theory predicts four readings here and not just the two across-the-boards: the first two mixed readings shown—the switch/switch/strict and the switch/strict/strict—are also predicted to occur under dependency theory assumptions.

- (111) a. Speaker 1: I think you should tell your mother about me
 b. Speaker 2: I do, too

ATB strict: *I think I should tell my mother about you*
 ATB switch: *I think you should tell your mother about me*
 switch/switch/strict: * *I think you should tell your mother about you*
 switch/strict/strict: * *I think you should tell my mother about you*
 switch/strict/switch: * *I think you should tell my mother about me*
 strict/strict/switch: * *I think I should tell my mother about me*
 strict/switch/switch: * *I think I should tell your mother about me*
 strict/switch/strict: * *I think I should tell your mother about you*

Of the $2^{(4-1)}$ or eight possible type distributions within the verb phrase of a sentence containing four oriented noun phrases, four— $\alpha\alpha\alpha$, $\alpha\alpha\beta$, $\alpha\beta\alpha$, $\alpha\beta\beta$ —result in the strict ATB interpretation for (111b), while the switch ATB results from the $\beta\beta\beta$ distribution. In addition, the various Dahl reconstructions of the patterns containing dependent occurrences also result in the strict ATB reading. Each of the ATB readings has a degree-0 marked structure; but although marked, the first two mixed readings shown in (111) should also be available: *I think you should tell your mother about you*, which results from the $\beta\beta\alpha$ distribution and is marked to degree 1 by the metric, and *I think you should tell my mother about you*, which results from either $\beta\alpha\beta$ or $\beta\alpha\alpha$, marked to degree 1 or 2. But both of these predicted mixed interpretations are entirely unavailable for (111b). As already mentioned, dependency theory correctly predicts the unavailability of the final four mixed interpretations shown in (111), since in each of these cases, the dependency would have to "skip" one or more medial noun phrases for the structure to result in the mixed reading shown.

The many indexical pronoun case has led to a serious puzzle. Unlike extended discourses containing oriented noun phrases which parallel the many clauses cases in the third person, the structural possibilities for many oriented noun phrases do not seem to parallel those for many noun phrases of the same numeric value in the third person. Strict ATB and switch ATB interpretations are available, but mixed readings are for the most part not found

in examples containing many oriented noun phrases. For a sentence with three oriented noun phrases, the one mixed reading that is predicted in addition to the two ATBs is only available in one-third of the cases examined. For a sentence containing four noun phrases, two mixed readings are predicted, yet only the two ATB readings are available.

3.34 Level of licensing and the fifth many pronoun structure

The many oriented noun phrase exchanges raise an important question that does not come up in two-noun phrase switch cases such as *I love you—I do, too*. In the latter, an oriented dependency is the only kind of dependency possible—there can be no numeric dependency in *I love you* as the two noun phrases have different numeric values. When more indexical pronouns are added, however, noun phrases within the structure do have the same numeric value—in the three-noun phrase case, for example, two of them will always have the same numeric value. The available switch ATB interpretations in (101-106) show that all three oriented noun phrases within such a structure may be in the same oriented dependency; the question that arises is whether there can be an alternate structure in which the two covalued noun phrases are in a numeric dependency.

Recall that as hypothesized, the syntactic property of orientation is derivationally separated from numeric value, occurring on a structurally adjacent line, although for purposes of ease of exposition I have represented orientation and value coexisting together in the same structure. The analysis I have proposed licenses dependencies among syntactic orientations—which is in fact a proposal that dependency is licensed on two distinct structural lines. What happens in the case where dependency *can* be licensed at one line or the other—are both oriented and numeric dependency structures allowed by the grammar, or does one take priority over the other? In the three indexical pronoun case, this question specifically becomes: in addition to the four α/β type patterns among the orientations that are predicted

by dependency theory, is there also a *fifth* possible structure that encodes a numeric dependency among the two that happen to have the same value?

To illustrate, let's reconsider the grammatical possibilities for (101a), which in the previous section, I assumed had the four possible structures shown in (107a), (108a), (109a), and (110a). The representations in all of these, of course, are conflated showing orientation and numeric values together, which I have repeated in (112) without the complication of indexical types. That is, (112) is an abbreviation for two lines of LF structure, shown properly re-separated on adjacent structural lines in (113).

(112) I_1^{\leftarrow} think you $_2^{\rightarrow}$ love my $_1^{\leftarrow}$ mother

(113) line 1: I^{\leftarrow} think you \rightarrow love my \leftarrow mother

line 2: I_1 think you $_2$ love my $_1$ mother

The possible fifth structure in this example would be one in which the final noun phrase is in a numeric dependency with the covalued initial noun phrase. Such a possibility might be illegitimate, since by definition a dependent occurrence must be resolved in the smallest part of a factorization, and a smaller factorization does exist for the resolution of the final noun phrase—namely, in the oriented dependency with the medial noun phrase. However, the resolution would be on a different line of structure, and thus the fifth structure may be allowed. In fact the evidence suggests that the numeric dependency that "skips" the medial noun phrase is indeed a possible structure for (112), as shown by (114). The interpretation given for (114b) is quite salient.

(114) a. Speaker 1: I think you love my mother

b. Speaker 2: Susan $_5$ does, too = Susan $_5$ [thinks I love her $_5$ mother],
too

In order to result in the interpretation shown, the structure of (114b) must encode a dependency between the noun phrases containing *Susan* and *her*, entailing that the structure of (114a) contains a numeric dependency between $[_{NP} I]$ and $[_{NP} my]$. How can this be, since there is a closer noun phrase in which the dependent $[_{NP} my]$ can be resolved? The conclusion is that there must be a structural possibility for (114a) in which the closer noun phrase *cannot* resolve the final β -occurrence, because the dependency is licensed not on the structural line 1 containing orientation, but on the adjacent structural line 2 containing numeric values. If the dependency in (114a) is licensed at the numeric level, the medial noun phrase is irrelevant and a numeric dependency containing the initial and final noun phrases is possible. The fifth possible structure, then, becomes legitimate; the analysis of (114) would be as follows.

- (115) a. Speaker 1: $I_{1\alpha}$ think you $_{2\alpha}$ love my $_{1\beta}$ mother
 b. Speaker 2: Susan $_{5\alpha}$ [thinks $I_{2\alpha}$ love her $_{5\beta}$ mother], too

The ability to license dependency at different levels solves another problem heretofore unexamined, which arises in cases of cross-person sloppy identity. The available interpretations shown in (116) are difficult to explain under an analysis in which dependency must be defined at the level of orientation.

- (116) a. I love myself and you do, too = ...and you [love yourself], too
 b. I love myself and he does, too = ...and he [loves himself], too

By the definitions developed above, a dependency among indexical noun phrases includes an orientation set as part of its formal description. If the dependencies among the noun phrases containing first and second person pronouns in (116) are licensed at the level of orientation,

the dependencies cross person will not be i-copies. since some will have orientation patterns and some will not, as shown in (117). No pair of these are i-copies, as they differ not only with respect to their numeric value, but also with respect to their orientation sets.

- (117) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} \text{myself}]_{\beta}), (1), \langle \leftarrow, \leftarrow \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} \text{you}]_{\alpha}, [_{NP} \text{yourself}]_{\beta}), (2), \langle \rightarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$
 c. $\langle ([_{NP} \text{he}]_{\alpha}, [_{NP} \text{himself}]_{\beta}), (3), \langle NP, V, NP \rangle \rangle$

On the other hand, if dependency is licensed at the numeric level, the orientation sets of all the dependencies in (116) will be null. Differing only with respect to a singleton numeric value, they will be i-copies, and cross-person reconstruction is readily explained.¹⁰

Returning to many pronoun cases, a new difficulty emerges, but this one can quickly be put to rest. The apparent problem is as follows: if a numeric dependency between initial and final noun phrases is possible as in (115a), why is the mixed strict/switch reading in (101), repeated below as (118), unavailable? In the previous section, this possibility was assumed not to occur because the dependency in the first sentence could contain only the medial and final noun phrases. At the numeric level, however, as (115) shows, there is a legitimate dependency containing the initial and final noun phrases.

- (118) a. Speaker 1: $I_{1\alpha}$ think you $_{2\alpha}$ love my $_{1\beta}$ mother
 b. Speaker 2: $I_{2\alpha}$ do, too $\neq I_{2\alpha}$ [think $I_{2\alpha}$ love my $_{2\beta}$ mother], too

¹⁰ Paul Postal informs me that apparently there are many people for whom sloppy identity cases like (116), that differ in person features, are ungrammatical. An explanation on the account offered here might be that in the grammar of such people, dependencies that can be resolved on the orientation level must be, so there could not be i-copy across the encoded dependencies due to difference in orientation pattern. A straightforward prediction of this account would be that someone who does not get the sloppy reading in (116) would also get only ATB readings for (103) and (106).

Comparing the structures in (118) with those in (115) makes clear why the mixed strict/switch interpretation in (118b) is unavailable. The dependencies in (115a) and (115b) are i-copies; the dependencies in (118a) and (118b) are not. The independent medial noun phrase in (115b) has a different value and thus does not affect the encoded dependency. In (118b), however, the independent medial noun phrase *is* covalued with the final dependent occurrence; the dependency realized in this structure, by definition, must occur in the smallest factorization and thus contains the medial and final noun phrases. Because the structural descriptions of the dependencies realized in (118a) and (118b) are different, the i-copy condition fails. By the same reasoning, the lack of a mixed strict/switch in (104) is explained. Note that a Dahl strict reconstruction of the (118a) verb phrase is also not possible, as the final (non-oriented) dependent noun phrase of value *I* would not be resolvable in the overall (118b) structure.

Returning to the ATB many pronoun puzzle in light of the optionality of licensing dependency at the different levels of structure, it turns out that the problem has been greatly reduced. The cases where mixed readings are observed are just those interpretations that are derivable from the fifth structural option of numeric dependency. Cases without mixed readings are those in which the fifth structure does not lead to an interpretation for other reasons. Reexamining the judgments in the many pronoun cases that do have mixed readings versus the ones that do not, the generalization emerges that the mixed is available when the orientation pattern is $\langle xxy \rangle$, and is not when the pattern is $\langle xyx \rangle$ or $\langle xyy \rangle$. The two examples of available mixed readings in (103) and (106) occur when the initial and medial noun phrases have the same numeric value and thus might be in a numeric dependency. Mixed readings do not occur when the initial and medial noun phrases have different numeric values.

In (118), we examined the fifth numeric dependency structure for the many noun phrase exchange (101) on the $\langle xyx \rangle$ orientation pattern, in which the initial and medial

pronouns had *different* values. This structure did not result in an additional reading for (101b) but rather in ungrammaticality. The numeric dependency structure for an exchange such as (102) on the <xyy> pattern, in which the initial and medial pronouns are also different, is shown in (119).

- (119) a. Speaker 1: $I_{1\alpha}$ think you $_{2\alpha}$ love your $_{2\beta}$ mother
 b. Speaker 2: $I_{2\alpha}$ do, too = $I_{2\alpha}$ [think $I_{2\alpha}$ love my $_{2\beta}$ mother], too

No violation occurs in (119b), but since the numeric dependency is wholly contained, it results not in a mixed reading but in another ATB strict reading. On the other hand, the numeric dependency structure for an <xxy> pattern like (103), shown in (120), in which the initial and medial pronouns have the *same* value, is legitimate and does result in an additional reading.

- (120) a. Speaker 1: $I_{1\alpha}$ think $I_{1\beta}$ love your $_{2\alpha}$ mother
 b. Speaker 2: $I_{2\alpha}$ do, too = $I_{2\alpha}$ [think $I_{2\beta}$ love my $_{2\alpha}$ mother], too

The dependencies encoded in (120a) and (120b) are i-copies: they have the same structural description, differing only with respect to a singleton numeric value. Unlike (117b), (120b) is legitimate, resulting in the interpretation *I think I love my mother*. This reading is indeed available; it is in fact the reading that I called the mixed "switch/strict" in (103). In both (103) and (106) with the <xxy> orientation pattern, the possibility of a numeric dependency leads to the attested "mixed" reading; in (101), (102), (104) and (105), where no mixed reading is observed, such a dependency does not lead to a mixed reading. Since the observed mixed readings are accounted for by assuming that numeric dependencies, and not just oriented ones, can be licensed in sentences containing indexical expressions, the simplified generalization can be made that *no* structure containing an oriented dependency leads to a

mixed interpretation. On this reasoning, unlike the case with numeric dependencies, in an oriented dependency all the orientations in a structure are required to be included in an oriented dependency; partial dependencies among a subset of the oriented noun phrases are, for some reason not yet explained, disallowed. Thus is revealed a split between the different kinds of dependency: not only are oriented dependencies defined on a different level from numeric dependencies, but they are further restricted in some as yet unknown way.

To summarize, sentences containing many first and second person pronouns have the following three structural options. First, the indexical expressions may all be independent α -occurrences, leading to the strict ATB interpretation in reconstruction. Orientation is irrelevant in this case, as identity of α -occurrences is determined by numeric value alone. Second, the indexical noun phrases may behave syntactically like third person noun phrases, in that the covalued noun phrases may be in a numeric dependency, licensed at the post-orientation level of structure. In some cases, such numeric dependencies may lead to the "mixed" interpretations of these sentences in reconstruction, in cases where the i-copy condition holds. Finally, the noun phrases may occur together in an oriented dependency, licensed at the syntactic level of orientation, leading to the switch ATB interpretation in reconstruction. In contrast to numeric dependencies, however, partial oriented dependencies do not occur. That dependency can be licensed at different derivational levels has thus reduced the ATB many pronoun puzzle to the question of why partial dependencies are not possible in structures containing many oriented noun phrases. There is an important aspect to the "many indexical pronoun" cases that is, as yet, unexplained.

3.35 The Jack puzzle

Reviewing the observations made at the beginning of this chapter of examples in which switch does or does not occur, another puzzle arises for which there is, as yet, no

explanation. Compare (27), repeated below as (121), to (122).

(121) a. Speaker 1: I think Jack loves you

b. Speaker 2: I do, too \neq I [think Jack loves you], too

(122) a. Speaker 1: I think my mother loves you

b. Speaker 2: I do, too $=$ I [think my mother loves you], too

The switch interpretation is not available when *Jack* (or any other third person form) occurs in the medial noun phrase position as in (121); switch becomes available in a parallel structure such as (122), in which the medial noun phrase contains a first or second person pronoun. Neither does switch occur when *Jack* occurs in the final noun phrase position, as in (123), in comparison to the available switch when *my mother* is in this position, as in (124).

(123) a. Speaker 1: I think you love Jack

b. Speaker 2: I do, too \neq I [think you love Jack], too

(124) a. Speaker 1: I think you love my mother

b. Speaker 2: I do, too $=$ I [think you love my mother], too

I will call this problem "the Jack puzzle." It's solution may shed light on the ATB many pronoun puzzle: could whatever is blocking partial dependencies in a sentence containing many indexical noun phrases also be responsible for blocking an oriented dependency among indexical expressions in a sentence that also contains a third person noun phrase like *Jack*?

In the previous section, it was shown that certain sentences that contain numerically covalued indexical expressions may be ambiguous between whether they contain an oriented dependency or a numeric dependency. The evidence showed that both oriented and numeric dependency structures are allowed by the grammar. The Jack puzzle raises a related question:

can both kinds of dependency coexist in the same derivation? That is, given that a sentence may be ambiguous between structures containing the different dependencies, can there be a structure that contains *both* an oriented dependency and a numeric dependency at the same time? Analysis of the *Jack* puzzle reveals the answer to be no.

Let's examine the orientation-to-numeric derivation of (121a), shown in (125) below, and consider the licensing of dependencies that would be required for the switch reading in (121b).

(125) line 1: $I \leftarrow \text{think Jack}_3 \text{ loves you} \rightarrow$
 line 2: $I_1 \text{ think Jack}_3 \text{ loves you}_2$

To derive switch, there would have to be an oriented dependency in the line 1 level of structure including the noun phrases containing *I* and *you*. However, this leaves the noun phrase containing *Jack* undefined with respect to a dependency—and as it is a referential expression, it must be contained in a dependency, even if that dependency has only one member. However, the dependency containing *Jack* cannot be defined at line 1, as it is not oriented; rather, it must be licensed at the numeric line 2 level of structure. For the switch reading to occur, an oriented dependency would have to be licensed at line 1, *and* a numeric dependency containing *Jack* would have to be licensed at line 2. It is this double-licensing that appears to be illegitimate: in the derivation of a particular structure, the dependencies may be licensed on one line or the other, but not both.

The ban on double-licensing has the result that oriented dependencies will only occur in sentences that contain noun phrases that are or contain indexicals. In contrast to (125), the dependency in (126) may be defined only on the oriented level. Unlike in the *Jack* sentence, no noun phrase is left undefined with respect to dependency.

- (126) line 1: I \leftarrow think my \leftarrow mother loves you \rightarrow
 line 2: I₁ think my₁ mother loves you₂

An objection might be raised with respect to (126) that not all the referential noun phrases have been taken into account. Doesn't the compositional noun phrase [*my mother*] also have an index? Evidence that it does can be shown by examples like (127).

- (127) [*My mother*]₅ loves herself₅

However, the structural description of the dependency encoded in (127) is a less expanded line of the phrase marker than the structural description of the embedded clause in line 1 of (126); $\langle \text{NP}, \text{V}, \text{NP} \rangle$ versus $\langle \text{NP}, \text{N}, \text{V}, \text{NP} \rangle$. The point is that there is a line of structure in the *my mother* sentences at which the oriented dependency can be licensed, and at which no numeric index is undefined with respect to dependency. Thus an oriented dependency will be structurally licensed as long as all the referential noun phrases are *or contain* an indexical expression. This is not the case in the Jack sentences—any line of structure that contains both \leftarrow and \rightarrow in (125) also contains the numeric index of *Jack*, which can only be licensed in a dependency at the numeric level.

Does the ban on double-licensing offer anything for the ATB many indexical pronoun problem? That is, can the impossibility of partial dependencies among orientations be seen to follow from this? I believe that it does. Recall the ATB problem, repeated in example (128) below. As discussed above, the index types shown in (128a)— $\alpha\beta\alpha$, indicating that the first two noun phrases are in a dependency, and the final noun phrase is independent—should be allowed on the oriented structural line, as there is evidence that this pattern occurs in numeric dependencies. However, the "mixed" reading that should result from this structure in (128b) is unattested.

- (128) a. Speaker 1: $I_{1\alpha}^{\leftarrow}$ think you $_{2\beta}^{\rightarrow}$ love my $_{1\alpha}^{\leftarrow}$ mother
 b. Speaker 2: $I_{2\alpha}^{\leftarrow}$ do, too \neq $I_{2\alpha}^{\leftarrow}$ [think you $_{1\beta}^{\rightarrow}$ love your $_{1\alpha}^{\rightarrow}$ mother], too

Structures like (128), which contain an $\alpha\beta\alpha$ pattern of types, encode two dependencies, the first containing the noun phrases [*I*] and [*you*] and the second containing the one noun phrase [*my*]. Dependencies are defined with respect to structural descriptions, and a dependency containing a single noun phrase is one such possibility. Recall that oriented dependencies intuitively contain a *pattern* of orientations, and are defined with respect to that pattern, while numeric dependencies are defined with respect to a singleton numeric index. I would put forth the hypothesis that dependencies containing a single expression are inherently numeric, arguing that a dependency containing a single noun phrase, even if it is an indexical expression such as [*my*], cannot be licensed as an oriented dependency, because it contains no pattern. The failure to find partial dependencies among orientations, on this proposal, follows from the ban that prevents structural dependencies from being licensed on the two levels simultaneously: if any one of the indexical expressions in a many pronoun case is left out of the dependency, like *Jack* it would have to be licensed at the numeric level. Therefore the only grammatical oriented dependencies will be across-the-board.

3.4 Orientation patterns as sentential properties

The syntactic account of dependency among orientations has come a long way towards accounting for switch interpretations. Simple cases of switch versus non-switch have been explained, including the "same speaker" problem. The analysis has made correct predictions in extended discourse examples, and further, has accounted for the occurrence of switch in the many indexical pronoun cases. The lack of "mixed" readings in exchanges containing many indexical noun phrases, along with the failure of sentences to "switch" if *Jack* is along for the

ride, have been shown to follow from the fact that orientation occurs on a different structural level than the numeric indices that are derived from it. The data suggest that dependencies can be licensed at the level of orientation or at the numeric level, but not at both levels in the same structure. As a result, oriented dependencies, in contrast to numeric dependencies, occur either across-the-board or not at all.

For a sentence that contains only indexical expressions, these various factors in the grammar provide a structural possibility that encodes an orientation pattern, and another that does not. I will call the former structures *oriented* sentences. For a sentence to be oriented, part of its grammatical description includes an oriented dependency in which all referential noun phrases therein are included: without dependency, there is no orientation pattern. Because oriented dependencies among partial structural factorizations are excluded, an orientation pattern can be described as a *sentential* property.

For all its success in offering an explanatory account of a great deal of the data, unaccounted for under this syntactic analysis are examples occurring in the many circumstances described as "non-intimate," where switch does not occur, in comparison to the intimate circumstances, such as loving or cheating, where switch robustly occurs. Across two exchanges where the same pronouns occur in structurally parallel positions, often one has a switch interpretation while the other does not. For example, compare (16), which switches, repeated below as (129), to a close correlate (130) which does not.

- (129) a. Speaker 1: I want your body
 b. Speaker 2: I do, too = I [want your body], too
- (130) a. Speaker 1: I like your car
 b. Speaker 2: I do, too ≠ I [like your car], too

The syntactic analysis thus far predicts that switch should be as available in intimate as well as non-intimate circumstances. So although the oriented dependency analysis has accounted for a great deal of the switch data, there remain several unresolved puzzles.

In the next chapter, I will compare the conventional uses of oriented sentences to those that are not. Sentences that contain the different kind of dependency and have an orientation pattern will be shown to fill a specific communicative requirement. Furthermore, this discussion will reveal that there are regularities of the context structure in which switch occurs. Through this discussion, the remaining mysteries of switch will be accounted for. In addition, I will review an alternative analysis of the switch phenomenon under a predicate-based semantic approach.

Chapter 4: The use and meaning of oriented sentences

4.0 Introductory remarks

The syntactic analysis developed in the previous chapter has accounted for much of the "switch" phenomenon. Similarly to "sloppy identity," which occurs in elliptical utterances due to encoded numeric dependencies, switch interpretations have been analyzed to occur due to encoded oriented dependencies. There are, however, important differences between numeric and oriented dependencies—differences that follow from the fact that they are licensed at different levels. Since all of first, second, and third person expressions are numerically indexed, numeric dependencies can occur in any sentence that contains two or more numerically covalued expressions—it is irrelevant whether they are indexical or non-indexical—and partial numeric dependencies are common, though marked with respect to their across-the-board counterparts. But because all dependencies in a structure must be licensed at one level or the other, oriented dependencies are more restricted than numeric dependencies. A sentence that contains one or more non-indexical expressions cannot encode an oriented dependency, and even in a sentence that contains only indexicals, a dependency among syntactic orientations must occur sentence-wide or not at all. Thus it is only for a sentence in which all of the referential noun phrases are or contain indexicals that the grammar provides the structural option of an oriented dependency. A sentence that encodes an oriented dependency I have called an "oriented sentence."

The discussion of "switch," however, is not yet complete. The availability of a switch interpretation provides a diagnostic tool for determining whether a particular sentence can encode an oriented dependency. But although oriented dependencies can thus be detected, there are structural configurations in which switch is not observed where it might be expected. This has not yet been explained. As noted in the previous chapter, across similar structural

configurations, *switch* robustly occurs in some circumstances but not others. To shed light on this problem, the *use* of oriented sentences needs to be examined—a discussion that will comprise the first part of this chapter. The implications of oriented dependencies for the new model of context structure developed in chapter 2 will then be explored. In the final section of this chapter, an alternative theory of *switch*, developed in a semantic framework proposed by Rebuschi (1994, 1997), will be evaluated in contrast to the analysis I have developed here.

4.1 The use of oriented sentences

As sketched in chapter 1, the Precision principle says, "Select the most precise tool for the task." It was suggested that Precision should be thought of as a corollary of Grice's maxim of quantity. The idea was that a speaker chooses sentences under syntactic descriptions, with respect to given tasks. To repeat an example, consider the following choices that a particular speaker may have:

- (1) a. I₂ am hungry
b. Tom₂ is hungry

Putting aside floutings and violations for the moment, depending on the circumstances, the speaker following Precision will choose either (1a) or (1b). It was submitted in chapter 1 that because a first person expression is structurally more complex than a third, it is, for most tasks involving referring to oneself, the *more precise tool*. Given the model of context as developed in chapter 2, we can add a little to our understanding of how this is so. Because the numeric value of the indexical in (1a) is derived at logical form through its syntactic orientation, the expression is guaranteed to unambiguously pick out one and only one individual, assuming that the formal context is in place. However, if the speaker has reason to believe that the formal context may be opaque or unknown to the addressee, (1b) may be

the pragmatic preference, despite the fact that understanding it may require knowledge beyond knowledge of language.

Now that an oriented dependency has been argued to be a structural possibility for sentences containing indexicals, let's ask how the operation of such pragmatic choices may be affected. In an example such as (1a), there is no possibility of an oriented dependency, since there is only one noun phrase in the sentence—which as claimed in chapter 3, must therefore be an α -occurrence licensed at the numeric level of logical form. Thus the analysis does not increase the choices a speaker has in (1)—there are still just the two possibilities (1a) and (1b) from which to choose. Even though (1) was presented as a choice between sentences, in fact it constitutes a choice between two subject expressions—one indexical, one non-indexical—for the task of referring. However, when there is a structural possibility of an orientation dependency, the pragmatic situation becomes more complex, because in this case not only is there an indexical versus non-indexical choice of expressions, as in (1), but there are *two* structural possibilities for a sentence containing indexicals—one that contains an orientation dependency and the other not. In deciding among the choices in (2), for example, the speaker must truly choose among *sentences*, the structural possibilities as shown below.

- (2) a. $I_{1\alpha}^{\leftarrow} \text{ love you}_{2\beta}^{\rightarrow}$
 b. $I_{1\alpha}^{\leftarrow} \text{ love you}_{2\alpha}^{\rightarrow}$
 c. $\text{Jack}_{1\alpha} \text{ loves Susan}_{2\alpha}$

Both (2a) and (2b)—the choices containing indexicals—are structurally more complex than (2c), in that they contain syntactic orientation. However, (2a) contains a dependency where (2b) does not. Thus while (2a) and (2b) both contain indexicals, only (2a) is an oriented sentence. Structurally, (2b) shares properties with each of the others: like (2a) it contains only indexicals, but like (2c) its expressions are all independent occurrences. In terms of

representational complexity, (2a) and (2b) are equivalent, so it seems unlikely that the Precision principle can decide between them. Are there distinct tasks, however, for which each of these would be the best tool? Why would a speaker choose to utter an oriented sentence, such as (2a), when he or she might "say the same thing" using a sentence that contains only indexicals but does not encode a dependency, such as (2b)? These are the issues before us.

In the model that I have proposed, indexical expressions are derivationally more complex than non-indexicals. Unlike non-indexicals, each indexical expression is guaranteed to be anchorable into the discourse context, without an assumption of any knowledge beyond the formal context. The formal context—a new model of which was proposed in chapter 2—is a structure that reflects circumstances in the discourse situation and functions as an anchor to individuals in those circumstances. But is there any difference in this regard between a sentence that contains an oriented dependency and one that contains independent indexicals? I would argue that there are two important differences, both entailments of the fact that an oriented sentence structurally contains an orientation pattern. First, an orientation pattern can be anchored to the context *all at once*, regardless of the number of noun phrases, while structures that contain independent occurrences of indexicals must attach through the individual orientations of each noun phrase. An appropriate metaphor is to liken an oriented sentence to an old-fashioned string of Christmas tree lights wired in series. When plugged in to the context, all the bulbs in the string—that is, noun phrases in the sentence—light up at once. This metaphor also illustrates the across-the-board property of oriented sentences: in a string of lights that is wired in series, *none* of the bulbs will light when even *one* of the bulbs is removed or is blown. On the other hand, in the non-oriented sentence each of the bulbs is plugged in individually, independent of the others. So although any sentence containing only indexical expressions is guaranteed attachment into the discourse, only the oriented sentence

attaches *easily*.

The second difference is an entailment of the fact that in a structure that contains an oriented dependency, no other dependencies are possible. A sentence that contains only indexical expressions can be anchored to things in the discourse situation; an oriented sentence goes one step further. What follows from the syntactic conditions licensing an oriented dependency is the guarantee that there is no anchoring *outside* the immediate discourse situation: thus an oriented sentence ensures *exclusivity*. A speaker, in choosing an oriented sentence, has selected a tool that is guaranteed to concern only the conversational participants. So the question becomes, under what conditions would it serve the interests of a speaker for his utterance to have a guarantee of exclusivity? To answer this, let's evaluate more closely the circumstances in which switch occurs.

4.11 Oriented sentences and speech acts

Switch interpretations have been observed to occur most robustly in what I have called "intimate" circumstances. Interestingly, for many of the cases where a switch interpretation seems initially unavailable, it can be brought out if the intonation is "souped up" or if an intimate situation is contrived. Recall the final example in the previous chapter, repeated below as (3), in which speaker 2's reply did not have a switch interpretation.

- (3) a. Speaker 1: I like your car
 b. Speaker 2: I do, too

Now imagine a *Baywatch* situation for (3), such as a hunk in his Jaguar and a babe in her Ferrari, stopped side by side at the same red light. She smiles at him suggestively and purrs, *I like your car*. In this scenario, (3a) isn't really about the car but is some sort of come-on, and the switch reading for (3b) becomes perfect: when the hunk leers back, *I do, too*, it can

clearly mean *I like your car, too*—which, note, is not really about a car either.

That switch becomes available in a "souped up" version of (3) shows that the conditions limiting the switch in these kinds of structural configurations are not syntactic in nature. By way of comparison, switch does not occur in the Jack puzzle, repeated below, however intimate a circumstance is contrived. Imagining that (4) takes place in a *Baywatch* situation—a sexy lady purring (4a) to an interested suitor—does not bring out a switch reading for (4b).

- (4) a. Speaker 1: I think Jack loves you
 b. Speaker 2: I do, too

In the previous chapter, the lack of switch reading in (4b) was argued to follow from syntactic conditions that disallow both an orientation dependency and a numeric dependency in the same structure—an analysis that now has additional support, given the rigid nature of the lack of switch in the Jack sentences, even in *Baywatch* circumstances. The intimacy versus non-intimacy puzzle, on the other hand, is pragmatic in nature.

As another example, consider (5), first brought to my attention by Ruth Reeves. The initial intuition is that (5b) does *not* have a switch interpretation.

- (5) a. Speaker 1: You love me
 b. Speaker 2: You do, too

This example is minimally different from the paradigm switch case *I love you—I do, too*, the obvious difference being that the pronouns are in the reverse linear order. But we have observed as many switch interpretations with second person preceding first person as vice versa. What are the pragmatic differences? *I love you* is a declaration, while *you love me* is not—rather it is some kind of statement of fact. *You love me* remains a statement of fact even

Observations of a distinction of this sort—that is, between utterances that state facts and utterances that do something different—have been made by many people over the years. For example, Kimball (1970) contrasted "expressive" uses of sentences with "reportive" uses. He observed that a sentence like *it hurts* can be used expressively by a person experiencing pain, similar to an utterance like *ouch!*, which is always expressive. The sentence *it hurts* can also be used reportively, however, as in response to a doctor asking *how does your head feel?* (If the patient instead says *ouch!* in response to the doctor's question, he does not actually report his pain, although the doctor might well conclude that, based on his expression.) Kimball's reportive use is similar to what I have called "stating facts," while the expressive use is doing something different. Similarly, and perhaps more famously, Austin (1962) distinguished sentences that have mere "locutionary force" from those with "illocutionary force"; the former are confined to acts of "saying that" (which were not, for Austin, performative¹), while the latter can be used to make explicit "speech acts." We have seen that a sentence that encodes an oriented dependency seems never to be used as simply reportive or in acts of "saying that," suggesting that oriented sentences are used only as expressives.

Might orientation be related to Austin's original notion of illocutionary force? Let's explore this idea. In exchanges containing explicit speech acts, switch interpretations are in fact, in most cases, the only ones available. Both speakers in (7) are doing the speech act of promising, in (8), betting, and in (9), apologizing—and since all three examples must switch, they must, under the analysis here, encode oriented dependencies.

¹ That is, in Austin's original observations of performatives, which *do* something, which are separated as a class from other, non-performatives that "merely" *say* something. In Austin's later observations, and subsequently in speech act theory, this distinction is somewhat lost, as just about everything said becomes a speech act. For Searle 1969 "saying that" *is* a speech act. Similarly, from a linguistic perspective, Ross (1970) proposed that *all* English declaratives were hidden "performatives," again blurring the distinction I wish to preserve.

- (7) a. Speaker 1: I promise to love you forever
 b. Speaker 2: I do, too = I [promise to love you forever], too
- (8) a. Speaker 1: I bet you \$5
 b. Speaker 2: I do, too = I [bet you \$5], too
- (9) a. Speaker 1: I'm sorry I hit you
 b. Speaker 2: I am, too = I'm [sorry I hit you], too

Although they are not in my dialect, I have been told that certain other classic performative formulas, shown in (10-12), also have switch readings.²

- (10) a. Speaker 1: I bid you farewell
 b. Speaker 2: I do, too = I [bid you farewell], too
- (11) a. Speaker 1: I give you my word
 b. Speaker 2: I do, too = I [give you my word], too
- (12) a. Speaker 1: I thank you
 b. Speaker 2: I do, too = I [thank you], too

Considering that "speech acts," at least in the classic sense, only occur using sentences that contain a first person subject and non-negated present tense performative verb, it cannot be assumed that all switch cases are speech acts. We have seen many occurrences of switch with a second person subject, and switch interpretations do occur in sentences containing negation and past tense. Under the analysis developed in chapter 3, because the

² The equivalent of (12) in my dialect would have to be *thank you—me, too*, which is terrible, suggesting that there is no *I* syntactically present in *thank you* to depend on, which seems to match intuitions concerning what has become a fixed, conventional phrase.

switch interpretation occurs in (13), both (13a) and (13b) must structurally encode oriented dependencies, and yet neither speaker has performed a speech act of "promising."

- (13) a. Speaker 1: I never promised you a rose garden
 b. Speaker 2: I never did, either = I never [promised you a rose garden],
 either

Although the utterances in (13) are not classic speech acts, they do seem to qualify as expressive, in Kimball's terminology, as they do something other than merely report.

So there are oriented sentences that are used expressively but not as speech acts—but are there speech acts that are not oriented? The hypothesis that explicit speech acts of the sort discussed by Austin are a proper subclass of expressives, and can only be made with oriented sentences seems to have support: evidence that this proposal is on the right track comes not from switch cases but from sentences that contain only first person pronouns. Consider (14), a classic explicit performative act of promising.

- (14) a. Speaker 1: I promise I'll be on time
 b. Speaker 2: I do, too = I [promise I'll be on time], too

The sloppy interpretation of (14b) suggests that there is a dependency encoded among the two noun phrases containing *I* in (14a), but since these are co-oriented as well as numerically covalued, is this dependency an oriented dependency or a numeric dependency? As seen in the discussion of the many pronoun switch cases, which structural line such a dependency is licensed on in such a case is an open question, as both kinds of dependency are structurally possible. (14a) might then be structurally encoding the dependency in either (15a) or (15b).

- (15) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} I]_{\beta}), (1), \langle \leftarrow, \leftarrow \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} I]_{\alpha}, [_{NP} I]_{\beta}), (1), \langle NP, V, NP \rangle \rangle$

The sloppy reading of (14b) is consistent with either of these dependencies, since it would result from the encoding of either (16a)—an i-copy of (15a), or (16b)—an i-copy of (15b). Each pair differs only with respect to a singleton numeric value. Thus from the interpretation of (14) alone it cannot be determined whether these are oriented sentences or not.

- (16) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} I]_{\beta}), (2), \langle \leftarrow, \leftarrow \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} I]_{\alpha}, [_{NP} I]_{\beta}), (2), \langle NP, V, NP \rangle \rangle$

The evidence comes when the second speaker changes to third person, as in (17). In this case, there is no sloppy interpretation. But if the dependency encoded in (17a) were a numeric one as in (15b), then the dependency realized in (17b) would be (18), which is identical to (15b) by the i-copy condition.

- (17) a. Speaker 1: I promise I'll be on time
 b. Speaker 2: John does, too \neq John [promises he'll be on time], too

- (18) $\langle ([_{NP} John]_{\alpha}, [_{NP} he]_{\beta}), (3), \langle NP, V, NP \rangle \rangle$

The lack of a sloppy interpretation in (17b) suggests that the structure of the sentence used by the first speaker to make an explicit promise does not encode an ordinary, non-oriented numeric dependency. On this reasoning, the only structure that (17a)—and thus (14a)—can have will be one including an oriented dependency, and the hypothesis that only oriented sentences are used to make speech acts has some support.

But is this the only possible explanation for the lack of a sloppy reading in (17b)? For example, one might suggest that, by convention, the present tense use of *promise* must have a first person subject, and that the violation in (17b) might be that the present tense *promise* has a third person subject. However, the present tense use of *promise* does have uses

other than in speech acts—for example, in (19).

- (19) a. Speaker 1: Every day I promise I'll be on time
 b. Speaker 2: John does, too = [Every day] John [promises he'll be on time], too

In (19a), the present tense is used in the "habitual" sense, forced by the sentential adverbial *every day*, and is not a speech act of promising. And unlike in (17b), in (19b), the sloppy interpretation is available.

The contrast between (14b) in the first person, which has a sloppy interpretation, and (17b) in the third person, which does not, seems particular to the verb *promise*. Note that by convention, first person, present tense *promise*—as in *I promise I'll be on time*—is generally used only for the speech act of promising: to say this utterance is to promise. Under the analysis being offered here, while the grammar provides both oriented and non-oriented structures for such a sentence, only the oriented one is conventionally used, making the sloppy reading in (17b) impossible. In a case where the convention can be subverted, as in the "habitual" (19), the non-oriented structure is available and the sloppy interpretation becomes available for (19b). Other performative verbs have not become as narrowed in their conventional use—for example, in addition to the use of *to be sorry* to perform the speech act of apologizing, there is a non-speech act use to report an emotional state. In response to (20a), the sloppy interpretation is available whether speaker 2 stays within first person or changes to the third person—and this without forcing a "habitual" present tense interpretation.

- (20) a. Speaker 1: I'm sorry I lied
 b. Speaker 2: I am, too = I'm [sorry I lied], too
 John is, too = John is [sorry he lied], too

In contrast to (14a) or (17a), for which it is hard, though not impossible, to find circumstances in which they are *not* speech acts, there are not as strong conventions governing the use of *to be sorry*—an utterance of (20a) can be used as a speech act or not, more or less interchangeably. This would mean, on this analysis, that an utterance of (20a) is ambiguous between two possible dependency structures equally available—one containing an oriented dependency that is used to express the apology, and the other containing a numeric dependency, which is available for the reportive use of describing one's feelings. Only the second can be reconstructed without an i-copy violation when changing to the third person—and indeed, *John is sorry he lied* is not a speech act of apologizing but rather is a report of John's feelings. In addition to the two structures containing the different dependencies, there is a third structure possible for (20a) with independent α -occurrences all around, which leads to the strict readings for (20b) *I'm sorry you lied, too* and *John is sorry you lied, too*—both also reports, not apologies.

That oriented sentences are the ones that are used to not merely report facts, but to do something other than report facts, could offer further insight as to why the switch reading in conversations such as *I love you—I do, too* is so salient, often the only available reading, in contrast to the strict reading, which for many speakers is only a joke, if available at all. The idea would be that although to utter *I love you* isn't to love you, in the way that to utter *I promise* is to promise, the oriented structure of *I love you* is used expressively to make the declaration, just as oriented sentences are used for promising or other speech acts. For the strict, "joke" interpretation to occur for *I do, too*, there must be reconstruction of the other possible structure of *I love you*, that contains no dependency. Thus for a second speaker to reply *I do, too*, intending the strict, "joke" reading, is to deny the expressive nature of the first speaker's utterance—which is to deny that a declaration has been made—and instead assume a reportive use for the original utterance that contains no dependency. While this

assumption is allowed by the grammar, it is easy to see why this "joke" might be objected to by many speakers in actual conversations. Although an utterance of *I love you* is syntactically ambiguous between a structure that contains an oriented dependency and a structure that contains no orientation and no dependency, to use it to make a declaration a speaker has chosen the former structure, just as the conventional use of first person, present tense *promise* to make a promise chooses the oriented, dependent structure. Note that similarly, the strict reading of utterances containing explicit performatives such as in (7-9) above is far less salient than the loud and clear switch. In line with previous observations, note that the relative weight of the readings is quite different for *promise*, while in the case of the ambiguous *to be sorry*, however, the readings are rather on a par.

Why would oriented sentences be the structure of choice—the best tool for the task—for making a speech act or expressive utterance? The answer is convention, but the convention can be seen to follow, I believe, in consideration of the fact that oriented sentences are "exclusive." As discussed above, because it structurally contains an oriented dependency, it is entailed that an oriented sentence is not only guaranteed anchoring to the discourse situation, it is also guaranteed that there is no anchoring *outside* the immediate discourse situation. A speaker, in choosing an oriented sentence, selects a tool that is guaranteed to concern only the conversational participants. In considering the classic speech acts, they are generally not *about* the participants in the conversation but acts that take place *between* them. Promising, betting, apologizing—all constitute deals made between the speaker and hearer. The oriented sentence, because it is exclusive, is the best tool for such a task, and so by convention, is the structure used for expressive utterances.

Given that there is a conventional use of oriented sentences, certain pragmatic conditions must be in place for a switch reading to occur. It appears that not only must the original structure containing an oriented dependency have an appropriate expressive use, but

so also must the switch reply, which reconstructs the oriented dependency. In most of the cases of switch we have seen, the second speaker is making the same utterance as the first speaker, reciprocally—as an expressive, the pragmatic status of the reply is no different from the original utterance. Interestingly, changing the sentence type in the reply often makes the switch reading disappear. While changing from a positive to a negative, as in (21), will often allow the switch reading, in (22) and (23), where one speaker is asking a question and the other is not, the switch reading is not available.

- (21) a. Speaker 1: I love you
 b. Speaker 2: I don't = I don't [love you]
- (22) a. Speaker 1: I love you
 b. Speaker 2: Yeah, but do I? ≠ ...do I [love you]?
- (23) a. Speaker 1: Do you love me?
 b. Speaker 2: No, but you do ≠ ...you [love me]

If an oriented dependency is encoded in the structure of (22a) and (23a)—as it must be to derive the switch reading if the replies were *I do, too* or *do you?*, respectively—then why does the switch not occur in (22b) and (23b)? In the reconstruction of numeric dependencies, where one is within a question and the other is not, i-copies are perfectly legitimate. In (24), for example, the sloppy interpretation is fine.

- (24) a. Speaker 1: Alice₁ loves her₁ mother
 b. Speaker 2: Does Larry₄ ? = Does Larry₄ [love his₄ mother]?

However, changing the sentence type does not always prevent switch from occurring. In (25), speaker 2's changing from an imperative to a question switches fine.

- (25) a. Speaker 1: Kiss me!
 b. Speaker 2: Why don't you? = Why don't you [kiss me]?

The lack of switch in (22) and (23) does not seem to be due to the change in sentence type syntactically, but rather a change in pragmatic status that changes the relative expressiveness in the reply. (22a) is a declaration of love, and (23a) is a request for such a declaration—both expressive uses. Note that the *replies* in (22) and (23) are *yeah* and *no*—what follows these is additional, reportive material. The switch interpretation of (23b) would be just be reporting a fact, and in the switch interpretation of (22b), the speaker would questioning his own feelings, which seems to be a question of fact. Since an oriented dependency is a structural possibility in (22a) and (23a), syntactically, an oriented dependency is possible in (22b) and (23b), since the i-copy condition holds. These structures run into a pragmatic problem, however, in that they do not have any expressive interpretation, so the orientation in them is not being used according to convention. On the other hand, in terms of illocutionary force, both (25a) and (25b) are requests or demands, an appropriate expressive use for an oriented sentence. There may also be additional pragmatic requirements coming into play in these examples, such as conditions on what constitutes an appropriate reply, of which I will not attempt here to make even a partial account. As Clark (1979) observes, "In ordinary conversation, many speech acts, whether direct or indirect, come in what have been called *adjacency pairs*. Requests are responded to by promises of compliance, questions by answers, offers by acceptances or refusals and assertions by acknowledgements." (p. 200) It is felicitous, following a declaration like *I love you*, to make another declaration. It is common, following an accusation, to make a counter-accusation. It is happy in response to a declaration to make a denial; however, it is unhappy, in response to a declaration, to question one's own feelings in the matter.

In summary, let's return to the questions that were asked at the beginning of this section. In consideration of the choices that a speaker has in (2), repeated below, pragmatic principles must choose among three structural possibilities.

- (2) a. $\Gamma_{1\alpha}^{\leftarrow}$ love you $\vec{2\beta}$
 b. $\Gamma_{1\alpha}^{\leftarrow}$ love you $\vec{2\alpha}$
 c. Jack_{1 α} loves Susan_{2 α}

Since (2a) and (2b) contain indexicals and are thus syntactically more complex than (2c), there are tasks for which Precision will reject (2c).

The choice between (2a) and (2b), however, does not seem to be decidable under Precision. These two structural choices are available because the grammar provides the option of dependency among syntactic orientations. Following Kimball's terminology, it appears that by convention, sentences that contain oriented dependencies are used expressively, while non-oriented sentences are used reportively. I have argued that this convention follows from the fact that an oriented sentence such as (2a) has an "exclusivity" guarantee that its counterpart (2b) does not, even though both are guaranteed attachable into the discourse situation. Thus the oriented sentence is the best tool for the task of making deals *between* the participants in a conversation, such as in the making of explicit (traditional) speech acts, or more generally, any expressive utterance. Only with (2a) can a speaker *declare* love. When the task that the speaker faces, on the other hand, is to report facts that involve himself or his interlocutor, the oriented sentence will not be the tool for this task. In this case, the speaker will rather select (2b) or (2c), the choice between them resting on Precision.

4.12 Context shift and bifurcated contexts

Under this analysis, the presence of a switch interpretation has become a diagnostic for determining whether a structure contains an oriented dependency. Some problematic cases of switch interpretation occur, however, where an oriented dependency would be expected to be disallowed under the analysis developed in chapter 3. The first kind of case involves quotation—direct and indirect—and the second what I call bifurcation. I will argue that the unexpected switch interpretations in both of these cases are attributable to alterations of the formal context.

To illustrate the first cases, imagine that Max is planning an upcoming declaration of love to his sweetheart Sally. The intuition is that Max can say, to no one in particular or to a helpful friend, either (26a) or (26b), the contents of the embedded sentences to mean that Max loves Sally, and Sally loves Max, respectively. In both (26a) and (26b), the switch interpretation of the embedded elliptical reply is perfect.

- (26) a. First, I'll say, "I love you," then she'll say, "I do, too"
 b. First, I'll say I love her, then she'll say she does, too

Furthermore, assuming everything goes according to Max's plan, the friend can, in a report of what happened between Max and Sally, say either (27a) or (27b), parallel to the above: the interpretation of the elided verb phrase in each switches.³

- (27) a. First, Max said, "I love you," then she said, "I do, too"
 b. First, Max said he loved her, then she said she did, too

The obvious problem raised by these cases for the analysis I have developed is that switch

³ I am indebted to Robert May for this example.

interpretations are occurring in sentences that contain non-indexical expressions, and in (27b), switch occurs in a sentence that contains *only* non-indexical expressions. Under my assumptions, there should be no orientation dependency structure possible in any of (26-27) and thus no switch. That is, the switch should be ruled out in these for the same reasons it is ruled out in *Max loves Sally, and she does, too*.

Let's begin with the direct quotation cases (26a) and (27a). As discussed in chapter 1, the felicitous presence of indexicals in the first place in such embedded sentences is licensed by the context shift made possible by the verb of saying. It seems logical to argue that because of this transplanting, the structure of the quoted sentences is independent of the larger sentence that they are embedded in, since for the embedded direct quotations the syntactic function from orientation to numeric value, as well as the semantic function from numeric value to individual, must be in the shifted formal contexts of Max speaking to Sally and her replying. Thus the presence of oriented dependency among the indexicals in (26a) and (27a) are easily accounted for by assuming that these embeddings are merely lifted from, and have identical structure to, the sentences in the exchange in (28). Thus the switch interpretation in the direct quotation cases is not a surprise.

- (28) a. *Max to Sally*: I love you
 b. *Sally to Max*: I do, too

What is surprising, though, is that the switch interpretation also is available in the indirect quotation versions (26b) and (27b)—cases that do not appear to contain a shift from the "actual" context, since they do not contain indexicals to pick out Max and Sally. How can there be an oriented dependency if there is no orientation? The answer that I suggest is that these indirect discourse cases show that orientation can in fact be, in such circumstances, a structural property of third person expressions.

Why might this be so? The requirement in reporting what someone said indirectly is to remain as true as possible to what they said. But in this case, it is not really what is *said* but what is *done* that needs to be conveyed to ensure a true report. What Max is planning in (26), what is being reported in (27), are speech acts, which according to convention as discussed above, contain oriented dependencies. To be accurate in reporting what Max said to Sally, even indirectly, an orientation dependency must be present, otherwise the speaker is not giving a true report of what happened between Max and Sally. So although in the indirect case, the indexicals of (28) have spun to non-indexicals, it appears that the arrows have remained. Thus the context is a hybrid, altered in such a way that Max is speaking to Sally, but not shifted to the extent that Max is *I* and Sally is *you*.

Note that neither of the sentences in (29) has a switch interpretation comparable to (27b). This is because in neither of these cases are the embedded sentences speech acts, but rather reports, which are contained in the larger report.

- (29) a. Max thinks he loves her, and she thinks she does, too
 b. Max told me that he loved her, then she told me she did too

I would warn the reader here that judgments in these cases may waver: if one reads (26) and (27) too many times before eliciting judgments for (29a-b), the switch may seem to be available in them. But if one approaches (29) cold, the lack of switch is glaring. The reason for this wavering, I believe, is that (26) and (27) somehow leaves the reader in the shifted Max-speaking-to-Sally-context, which incorrectly remains in evaluating (29).

Consideration of the quotation cases leads to the conclusion that contrary to initial observations, there are context shifting circumstances in which third person expressions can be structurally oriented, though we have only seen this grammatical option occurring in the case of indirect quotation. Are there other examples of third person orientation? One other

possible circumstance in which it apparently can occur is in special situations of context bifurcation, to which I now turn. Before discussing the third person cases, however, let's first discuss more common indexical bifurcations in order to appreciate why such contexts are natural places to look for evidence of switch with the third person.

Recall that an entailment of the syntax of oriented dependencies is an "exclusivity" guarantee that I argued above is conventionally exploited for pragmatic purposes. Because of this exclusivity, the formal context against which oriented sentences are evaluated can be a meager structure, required to contain sequence positions for no one beyond the conversational participants. There is no need for a sequence position for Jack (or anyone else) in order to evaluate the oriented sentence, because the structural conditions licensing an oriented dependency entail that *Jack* (or any other referential noun phrase) will not be in the sentence. For economy reasons, it seems reasonable to assume that in natural language, the formal contexts will be partial structures that are no larger than is necessary. The minimum partial context for an oriented sentence is one in which the binary syntactic orientations account for everyone under one orientation or the other—and will thus be a bifurcated structure in which every sequence position is oriented one way or the other. The most reduced partial context possible is one that includes a single speaker and a single hearer; this limiting case—which I call the *I/thou* bifurcation—is the one for which the majority of the examples of switch have been observed.

We have seen an example of a binary distinction that includes more than the speaker and hearer: the *Holiday* example, repeated below as (30).

- (30) a. *Laura*: Oh Susan and Nick, $\Gamma_{1\alpha}^-$ love you $\vec{2}_{\oplus 3\beta}$
 b. *Susan*: Darling, we do, too = ...we $\vec{2}_{\oplus 3\alpha}$ [love you $\vec{1}_{\beta}$], too

(30a) is an example of an *I/you all* context bifurcation, which reverses in (30b) to *we/thou*.

In the reduced partial context for (30), there are three participants—Laura, Susan and Nick. These three individuals, however, comprise two groups that can be accounted for under a binary distinction: {Laura} on the one hand and {Susan, Nick} on the other. In (30a), the "inward" orientation accounts for {Laura} and the "outward" orientation {Susan, Nick}, while in the (30b) reply, these groups reverse.

Evaluating slightly differently from the *Holiday* example is (31) on the *I/you all* bifurcation. The imagined circumstance is a substance abuse group meeting such as Alcoholics Anonymous, in which one participant at a time has the floor.

- (31) a. *Member 1*: Last night I dreamt you (all) were completely recovered
 b. *Member 2*: I did, too = I [dreamt you (all) were completely recovered], too

The name "switch" is a misnomer in (31), because unlike in the *Holiday* case, the groups indicated do not *reverse* in the interpretation of member 2's reply to *we/thou* as in the *Holiday* case, but rather reform under a different *I/you all* bifurcation. If, for example, there are five members in the group, the context bifurcation is {member 1} versus {members 2, 3, 4 and 5} in (31a) and {member 2} versus {members 1, 3, 4 and 5} in the reply. That this interpretation is good leads to a technical challenge for the dependency analysis developed in the previous chapter, because as there is not actually a "switch," the formal description of the dependencies realized in (31) are not identical, as shown in (32).

- (32) a. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), (1,2\oplus3\oplus4\oplus5), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} I]_{\alpha}, [_{NP} you]_{\beta}), (2,1\oplus3\oplus4\oplus5), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$

Although they are differently fused, however, the numeric values in both (32a) and (32b) do exhaust the partial context that needs to be assumed for evaluation of (31)—an observation

that could well lead to a solution, although in the absence of other cases I will leave it here in the form of a suggestion. Note that it needs to be assumed here, as with the *Holiday* example, that orientation is a property of the plural noun phrase, and thus in the formal context structure for (31a), it must be that $\omega(\rightarrow) = 2 \oplus 3 \oplus 4 \oplus 5$. (The ramifications of oriented plurals to the model of formal context will be discussed in more detail in chapter 5.)

It might be expected that switch should be able to occur in any circumstance under which orientation might exhaust a partial formal context. Possible bifurcations might be expected among groups—a *we/you all* bifurcation. The switch interpretation is indeed found in such cases, for example in the exchange of threats between military leaders in (33). The oriented dependencies realized in (33a) and (33b) are identical.

- (33) a. *Serb general to Croat general:* We will burn your cities!
 b. *Croat general to Serb general:* We will, too! = We will [burn your cities], too

So far the bifurcations have stayed among the grammatical first and second person. There is a certain sense to this: if the partial context must be exhausted, both speaker and hearer must be accounted for. However, circumstances are imaginable in which there are two clear groups, one of which includes both the speaker *and* hearer (inclusive *we*) versus everyone else, a bifurcation of the context that would be grammatically expressed by first person versus third person. I call this the *us/them* bifurcation. And interestingly, if the situation has been set up such that the speaker and the hearer are on the *same* side, such as with well-defined teams in the codified structure of a game situation, switch does occur with *us/them*, a third person form. To illustrate, imagine a bridge game, in which the partners East and West are playing against the partners North and South, and suppose each side suspects the other of cheating. If East, during the game, says (34a) to her partner, the switch

interpretation of North's subsequent utterance (34b) to *her* partner is perfect. (The subscripts E, W, N and S are used here instead of numerical indices to indicate the intended readings.)

- (34) a. *East to West*: Should we_{E⊕W} report them_{N⊕S}?
 b. *North to South*: Should we_{N⊕S}? = Should we_{N⊕S} [report them_{E⊕W}]?

Like in the indirect quotation case, the switch reading in (34b) suggests that orientation can in certain circumstances be structurally encoded on third person forms. Although the surface form is the third person plural pronoun *them*, I would suggest that this is actually a hybrid context structure, similar to the Max-speaking-to-Sally context, in which orientation can structurally be encoded on a third person expression. In this case, the context hybrid is possible because of the highly codified nature of the game situation. The oriented dependencies encoded in (34a) and (34b) would be as shown in (35a) and (35b), respectively; as they are identical, the i-copy condition holds.

- (35) a. $\langle ([_{NP} we]_{\alpha}, [_{NP} them]_{\beta}), (E\oplus W, N\oplus S), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} we]_{\alpha}, [_{NP} them]_{\beta}), (E\oplus W, N\oplus S), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$

Note that if instead of addressing her own partner, North's response were to address one of her *opponents* with the same utterance, as in (36), the same switch interpretation occurs, but the person feature of the elided pronoun changes from third to second. Due to the fact that in the reply, speaker and hearer are on *opposite* sides of the bifurcation, an *us/them* bifurcation has, in the reconstruction, become a *we/you all* bifurcation, the indexical expressions of which it is not surprising to find syntactic orientation.

- (36) a. *East to West*: Should we_{E⊕W} report them_{N⊕S}?
 b. *North to East*: Should we_{N⊕S}? = Should we_{N⊕S} [report you_{E⊕W}]?

The oriented dependencies realized in (36a) and (36b) are formally shown in (37).

- (37) a. $\langle ([_{NP} \text{we}]_{\alpha}, [_{NP} \text{them}]_{\beta}), (E \oplus W, N \oplus S), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$
 b. $\langle ([_{NP} \text{we}]_{\alpha}, [_{NP} \text{you}]_{\beta}), (E \oplus W, N \oplus S), \langle \leftarrow, \rightarrow \rangle, \langle NP, V, NP \rangle \rangle$

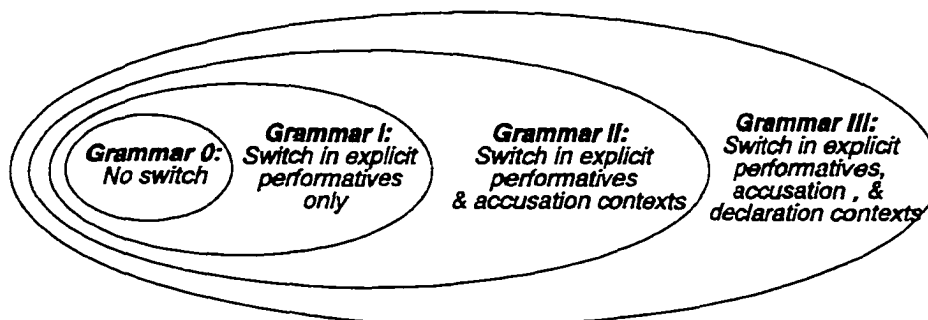
Recall that under the orientation analysis, dependencies remain defined as part of syntactic structure; they occur among noun phrases, not among the lexical items contained in noun phrases. The only difference between (37a) and (37b) is lexical; this is not relevant to syntactic identity. It doesn't matter whom North is addressing, (37a) and (37b) are i-copies just as (35a) and (35b) are, and the switch interpretation is correctly predicted to occur in both cases.

In sum, the quotation cases and the bifurcation cases show that there are special circumstances under which the formal context structure may be altered, such that orientation may structurally be encoded on third person expressions. This appears, however, to be a grammatical option that occurs only in such highly marked circumstances.

4.13 Different switch grammars

The analysis of switch that I have offered has hypothesized an additional syntactic property not previously known, as well as an extension of the licensing of dependencies among numerically contra-valued indexical expressions. I have also sketched in some detail the pragmatic conventions regarding the use of sentences containing this structural option. At this juncture, however, I would like to consider the variability in switch interpretations across speakers. In exploring switch, I have encountered many native English-speaking individuals who do not judge there to be switch interpretations as robustly as has been described in this analysis. Although the differences are at the level of idiolect, it seems that generally, speakers fall into one of four categories, as illustrated below.

(38)



The "grammar" that has been described in this analysis is III, in which switch interpretations are available across the widest variety of circumstances for tasks which I have described as "expressive" uses. For some informants, however, switch readings of any kind are simply impossible ("grammar 0"), no matter what pragmatic circumstances are contrived. Other speakers find switch readings for some expression types, but not others. Explicit performatives seem to be easiest, followed by accusations; the most difficult are declarations. The patterns of judgments seem to fall into a hierarchy, as shown in figure 1: although the sample of informants is not large enough to make statistically significant conclusions, it seems on a qualitative basis that speakers who get switch readings in declarations always get them in performatives and accusations as well; those who get switch readings in accusations get them in performatives, but not necessarily in declarations.

A complete account of switch would offer, in the best of all worlds, a systematic account of why these different "grammars" coexist within the same language. As a lesser goal, the existence of the hierarchy above should be consistent with the analysis of switch and offer lines of further research. The analysis of switch in the previous and this chapter achieves this second goal, in that it can provide a coherent description of what may be happening across these different "grammars." The true grammatical split occurs between "grammar 0" on the one hand and "grammars I, II and III" on the other: dependency among syntactic orientations seems to be an available structural option for the latter but not the

former. In grammar 0, dependencies simply cannot be licensed at the level of orientation, whereas in all of grammars I, II, and III, on the other hand, oriented dependencies are available. The differences among the second group of "grammars" seems to be a matter of pragmatics, perhaps depending on considerations of when an utterance counts as expressive versus when it is reportive, or the conventions concerning the appropriate use of oriented sentences. These observations are merely suggestive; clearly larger samples of speakers would have to be systematically tested to determine the factors at play.

4.2 An alternative semantic analysis

In this section, I examine in some detail an alternative theory of switch developed independently by Georges Rebuschi (1994, 1997) using a small class of French data.⁴ Rebuschi—who calls switch "quirky dependence"—analyzes switch not as a special kind of dependency, but as a special kind of binding. He hypothesizes that the first and second person pronouns act as "counter-anaphors" falling under Principle A, and develops an analysis under which a "functional spell-out" of the pronouns prior to LF leads to a non-quantificational reciprocity, akin to the reciprocal anaphor *each other*.

Rebuschi's analysis has some fundamental problems. First, he builds his theory around the claim that the distribution of switch parallels the distribution of *each other*. This is doubtful, given the English data as well as some additional French data: as discussed earlier, the switch phenomenon is not subject to a c-command requirement and can occur

⁴ The more detailed, comprehensive development of his theory is contained in the 1994 manuscript, and this is the version I have relied on most heavily in this section; the 1997 paper is a summary of the previous analysis, essentially unchanged, that also contains commentary on alternate theories. Although a few of Rebuschi's French examples shown below appear in the later paper, since all can be found in the earlier manuscript, I have cited Rebuschi's 1994 example numbers in square brackets in my text, and unless noted, all other citations are to 1994. (For additional French examples as well as informant judgments for the French data discussed here, special thanks to Sebastien Jeanneret.)

outside of local syntactic domains. Second, the technical apparatus Rebuschi devises to obtain switch interpretations is inadequate to explain even a limited (local, c-commanding) set of data; furthermore, it fails on more complex cases that he does not consider. Finally, because Rebuschi assumes a predicate-based semantics, his analysis has the drawbacks endemic to such a system in accounting for the interpretation of elided material.

4.21 Rebuschi's data

Before discussing his actual analysis, let's review Rebuschi's data and compare his intuitions to those of an independent French informant, as well as to those for English. Rebuschi's data can be divided into three sets: those that he claims have obligatory strict readings, those that have obligatory switch, and those that are ambiguous between strict and switch readings. The first set, shown below in (39-42) (= GR's [11], [12], [15], [16]) have obligatorily strict readings for Rebuschi.

- | | | |
|------|--|----------------------------------|
| (39) | a. Speaker 1: Je crois que Pierre t'a vu | I think Peter saw you |
| | b. Speaker 2: Moi aussi | I do, too |
| (40) | a. Speaker 1: Pierre croit que je t'aime | Peter thinks I love you |
| | b. Speaker 2: Jacques aussi | Jack does, too |
| (41) | a. Speaker 1: Tu prétends que Pierre m'a vu! | You're saying that Peter saw me! |
| | b. Speaker 2: Toi aussi | You are, too! |
| (42) | a. Speaker 1: Pierre croit que tu m'aimes | Peter thinks that you love me |
| | b. Speaker 2: Jacques aussi | Jack does, too |

For (39-42), my French informant agrees with Rebuschi's judgments, and the intuitions for

the English counterparts are in accord with those for the French: no switch interpretation is available when neither of the pronouns is in matrix subject position, or when *Jack* (or *Peter*) is in the sentence (called the "Jack puzzle" in the previous chapter).

The next set of data have, according to Rebuschi, obligatory switch readings in French; these are shown below in (43-50) (= GR's [9a-b], [13], fn. 9 [a-b], [20a-c]). For Rebuschi, the fact that the switch reading is obligatory in these cases relates to the fact that the two pronouns are in co-argument positions.

- | | | |
|------|---|--|
| (43) | a. Speaker 1: Je t'ai vu | I saw you |
| | b. Speaker 2: Moi aussi | I did, too |
| (44) | a. Speaker 1: Je t'aime | I love you |
| | b. Speaker 2: Moi aussi | I do, too |
| (45) | a. Speaker 1: Tu me méprises | You despise me |
| | b. Speaker 2: Toi aussi | You do, too |
| (46) | a. Speaker 1: Me parler poliment
te gênerait-il? | Would it bother you to
talk to me politely? |
| | b. Speaker 2: Et toi? | Would it bother you? |
| (47) | a. Speaker 1: Ça t'ennuierait de me saluer? | Would it annoy you to greet me? |
| | b. Speaker 2: Et toi? | Would it annoy you? |
| (48) | a. Speaker 1: Tu me plais | You please me |
| | b. Speaker 2: Toi aussi | You do, too |
| (49) | a. Speaker 1: Tu me dois beaucoup d'argent | You owe me a lot of money |
| | b. Speaker 2: Toi aussi | You do, too |

- (50) a. Speaker 1: Je ne te rendrai pas ton livre I won't return your book to you
 b. Speaker 2: Moi non plus I won't, either

Here, the intuitions of the independent French informant differ from Rebuschi in terms of the obligatory nature of the switch reading.⁵ For my informant, while the switch interpretation was the "normal" meaning for all of (43-50), many had strict interpretations as well. The examples in which he found the strict meaning unavailable—(46), (47), (49), and (50)—are those sentences where it is a pragmatically very odd response: *would it bother you to talk to yourself politely? would it annoy you to greet yourself? you owe yourself a lot of money, too and I won't return my book to myself, either*. In the English counterparts to these, the strict interpretation is also difficult—complicated circumstances must be contrived such that they make sense.

In the other cases that are not as pragmatically odd, strict readings were available for the French informant in addition to the switch. As in English, he said that the strict interpretation of *moi, aussi* in (44) is commonly used as a "funny" response; and that both (45) and (48) have strict interpretations, although they were less "normal" to him than the switch. In an example where neither meaning is pragmatically less likely than the other, such as in (51), the informant judged both switch and strict equally "normal."

- (51) a. Speaker 1: J'aime ton corps I love your body
 b. Speaker 2: Moi aussi I do, too

While the strict reading for (43)—*I saw myself, too*—seemed strange to my informant, he

⁵ Rebuschi himself suspects his "obligatory" claim; in a footnote, he reports that "some native speakers of French actually say they accept both [switch and strict] readings" for (43) and (44) and also adds that "Finnish...so I am told, consistently allows both readings."

offered (52) as a similar example that has both switch and strict interpretations, but in this case, the strict is more "normal."

- (52) a. Speaker 1: Je t'ai vu à la télévision I saw you on television
 b. Speaker 2: Moi aussi I did, too

Furthermore, these judgments pattern alike whether the pronouns are weak or strong. Even though the informant found the strong pronoun to be odd in these sentences, the presence of *toi* had no effect with regard to switch: for *je t'ai vu toi*, switch is the "normal" interpretation, and *je t'ai vu toi à la télé* has both interpretations. The judgments of the French informant here are in line with the discussion of the English data in chapter 3. Note that the "obligatory" cases seem to be more likely to be used expressively rather than reportively, and in line with the discussion earlier in this chapter, it would be expected that the switch reading would be dominant. The relative saliency of one reading or the other when *I* and *you* (or *je* and *tu*) are in co-argument positions, whether in French or in English, correlates not with their syntax, but rather with the pragmatic circumstances and relationship between the speakers that is imagined by the informant. A comparison of the minimally different (43) and (52)—where switch and strict are respectively the "normal" reading—shows that it is not grammatical obligation but rather pragmatic likelihood that is determining the reading, since the syntactic relationship between the pronouns, as well as the main verb in the sentence, are identical.

Recall that in English, switch readings often become available if the contrived situation is "intimate," which in many cases brought out an expressive use. It might be thought that the high saliency of the switch reading for the French examples in (43-50) correlates with the fact that they contain the "familiar" singular *tu/te/toi*, which is used only with intimate acquaintances, and not the "polite" singular *vous*. Unlike in English, perhaps

there is no background story needed beyond the use of the "familiar" second person to indicate that the situation is indeed intimate. On this reasoning, it might be expected that switch readings would be more likely in *tu/te/toi* sentences, and that strict readings would be more likely—if not the only possible reading—in *vous* sentences. For my informant, however, the "polite" equivalents of (43) and (44), for example, shown below, have the same status as their "familiar" counterparts.

- | | | | |
|------|----|--------------------------|------------|
| (53) | a. | Speaker 1: Je vous ai vu | I saw you |
| | b. | Speaker 2: Moi aussi | I did, too |
| (54) | a. | Speaker 1: Je vous aime | I love you |
| | b. | Speaker 2: Moi aussi | I do, too |

For both (53) and (54), switch is the "normal" reading, and the status of the strict does not improve with the use of the non-intimate, "polite" *vous*. In fact, where the strict reading of (44b) is an available, "funny" response, my informant finds it impossible in (54b), saying that someone would never make this joke with someone he didn't know well enough to call *tu*.

Rebuschi does not discuss any sentences containing the "polite" singular *vous*, but he does give one example using the plural *vous*, finding obligatory switch here as well. To my informant, (55) (= GR's [17]) is ambiguous between switch and strict. (Beyond providing this one example, Rebuschi does not discuss the plural switch case—the analysis is solely concerned with *je* and *tu*.)

- | | | | |
|------|----|--|---------------------------------|
| (55) | a. | Speaker 1: Nous vous avons
toujours respectés | We have always
respected you |
| | b. | Speaker 2: Nous aussi | We have, too |

The obligatory nature that Rebuschi observes in French of the strict reading in (39-42) and the

switch in (43-50) and (55) leads him to the hypothesis that the syntactic configuration between the first and second person pronouns that must hold for switch to occur is akin to the configuration between *each other* and its antecedent. He reasons that parallel to (39), where switch is impossible, is the structurally similar (56a), which is ungrammatical; and parallel to (45), where switch is obligatory, is the structurally similar (56b), which is grammatical.

- (56) a. * They think Peter saw each other
 b. They saw each other

Rebuschi furthers the *each other* analogy with (57) and (58) (= GR's [29a-b]), in which, he claims, only the strict interpretation is available in French, suggesting that c-command is required for switch to occur. Recall that this is contrary to what is found in English—in chapter 3, many examples were given of English switch examples in non-c-commanding relationships. (It is, of course, impossible to bind *each other* from a non-c-commanding position within the subject—compare: * *their fathers hate each other*.)

- | | | |
|------|-----------------------------------|---------------------|
| (57) | a. Speaker 1: Mon père te déteste | My father hates you |
| | b. Speaker 2: Le mien aussi | Mine does, too |
| (58) | a. Speaker 1: Ta sœur m'a frappé | Your sister hit me |
| | b. Speaker 2: La tienne aussi | Yours did, too |

Rebuschi is slightly less sure of his judgments for (57) and (58), however, than he is for the earlier cases. My informant found both (57) and (58) confusing, saying that perhaps they could be either strict or switch, but more likely meant *neither*—if someone responded *Le mien aussi* or *La tienne aussi* in these conversations, he said he would ask "What do you mean?" In the English counterparts to (57) and (58), the switch is available, though perhaps not as

saliently as it is in the counterpart to (59), in which the pronouns are in the same non-c-commanding relationship. In contrast to (57) and (58), my French informant found the switch perfect in (59).

- (59) a. Speaker 1: Ton corps me plait Your body pleases me
 b. Speaker 2: Le tien aussi Yours does, too

The switch interpretation is the "normal" one for (59b), suggesting that contra Rebuschi, c-command is not required for switch to occur in French. That the switch is not available for (57) and (58)—that they are "confusing"—must be due to some other, non-syntactic reason, such as the fact that (57) and (58) seem more likely to be used reportively, while (59) is more likely to be used expressively.

The final set of Rebuschi's data are ambiguous, having both strict and switch interpretations in French. These are given in (60-63) (= GR's [10], [14], [18], [19]). The English counterparts are also ambiguous. (Rebuschi reports only the "across-the-board" readings for (60) and (61) and does not consider whether there is also a "mixed" strict/switch reading. My informant was not able to give reliable judgments on possible "mixed" readings, but agreed that both ATB strict and ATB switch are available.)

- (60) a. Speaker 1: Je crois que je t'ai vu I think I saw you
 b. Speaker 2: Moi aussi I do, too
- (61) a. Speaker 1: Tu crois que je te défendrai? Do you think I'll defend you?
 b. Speaker 2: Et toi? Do you?
- (62) a. Speaker 1: Je crois que tu es malade I think you're sick
 b. Speaker 2: Moi aussi I do, too

switch readings available when the pronouns were in a non-c-commanding relationship, as well as in non-local domains.

Anyone dealing with the switch data faces the same problem: as discussed for English in the previous section, there is a wide variability across informants in judging the saliency of switch readings. Rebuschi's English informant clearly had "grammar 0" illustrated in (38) and thus did not serve him well: in his classification of the languages that have switch versus the languages that do not, English is in the latter group. Apparently informant variability is not limited to English, for the points on which Rebuschi's observations in French differ from my own for English are in fact not supported by an independent French informant.

4.22 Rebuschi's analysis

To derive switch, Rebuschi hypothesizes a post-SS, pre-LF "rewriting" of a first or second person pronoun when it is in the scope of the other. Having concluded that switch is reciprocity in a non-quantificational guise, he builds functional definitions for the first and second person pronouns that enable him to analyze them in parallel to Heim, Lasnik and May's (1991) "*each-movement*" analysis of *each other*. It's to be expected that the analysis fails in the circumstances where the *each other* analogy fails—but in fact, it has serious problems in accounting for even the limited (local, c-commanding) set of data.

Rebuschi's technical analysis begins with the observation that whenever they appear, first and second person pronouns are semantic variables whose values must be given by the situation of utterance. To be interpretable, he reasons, an operator must be prefixed to the logical form of sentences containing these pronouns. The default values are defined, respectively, as:

- (69) a. $[\psi \dots I \dots] \Rightarrow \lambda ego [\psi \dots ego \dots]$
 b. $[\psi \dots you \dots] \Rightarrow \lambda tu [\psi \dots tu \dots]$

The value of the operators λego and λtu are provided by the discourse context to be speaker and hearer. For example, the derivation of a simple sentence *Peter hates me*, said by John, proceeds as follows:

- (70) *John to Mary:* Peter hates me
- line 1: Peter $\lambda x [x \text{ hates } me]$
- line 2: λego Peter $\lambda x [x \text{ hates } ego]$
- line 3: John λego Peter $\lambda x [x \text{ hates } ego]$
- (via λ conversion) \Rightarrow *Peter hates John*

In this conversation, if Mary replies *Mike does, too*, the only possible interpretation of her utterance—the strict reading—is explained in the predicate-based analysis as follows: It is not possible to predicate of Mike a λ -expression containing the free (and thus not interpretable) variable *ego*, so first λ -conversion of *ego* from line 3 must occur to derive (71).

- (71) line 4: Peter $\lambda x [x \text{ hates } John]$

This logical form now contains an appropriate λ -expression to predicate of Mike, and the strict interpretation of Mary's reply is captured.

How, then, is switch derived? Following the idea that for switch to occur, the first and second person pronouns have to be interdefined, Rebuschi first defines an additional variable *nos* to have as its range of values ordered pairs of the form $\langle \textit{speaker}, \textit{hearer} \rangle$ that will be provided by the discourse context. This allows him to build "lexical equivalences" of each pronoun as the "other" individual in the pair selected by *nos* using a two-argument

function *alter*: for example, *you* will be functionally equivalent to $\langle \textit{alter} (\textit{ego. nos}) \rangle$, which reads something like: the individual other than me in the pair consisting of me and you. He stipulates that this "functional spell-out" of one of the pronouns can occur only when in the scope of the other, otherwise, the default values in (69) apply. Rebuschi hypothesizes that these "spell-outs" are syntactically available post-SS, pre-LF, and will be of the form given in (72) (= GR's [50]).

- (72) a. $tu \Leftrightarrow [_{NP} [_{N'} \textit{alter}] \textit{ego nos}]$ when in the scope of *ego*
 b. $\textit{ego} \Leftrightarrow [_{NP} [_{N'} \textit{alter}] \textit{tu nos}]$ when in the scope of *tu*

It is not entirely clear in (72) how Rebuschi intends the three elements *alter*, *ego*, and *nos* to make up the internal structure of the "re-written" noun phrase; whatever the particulars, he assumes that it is possible to move *nos* from its position without violating syntactic movement constraints. On Rebuschi's reasoning, there is now a constituent *alter* equivalent to *other*, and a constituent *nos* equivalent to *each*, such that "*nos*-movement" parallel to "*each*-movement" can proceed at LF. In the derivation of (73a), for example, shown in (74), *nos* first raises from within the object and adjoins to it (line 1), and then raises again (line 2) and adjoins to the subject (designated "informally" by #). Rebuschi is clearly assuming that movement of the *nos* variable proceeds in the manner of A-bar syntactic movement operations, and that it is subject to the same constraints. (The movement occurs prior to cashing in the variables, which will occur in interpretation through λ -abstraction.)

- (73) a. John to Mary: $I_j \text{ love } \textit{you}_m$
 b. Mary to John: $I_m \text{ do, too} = I_m \text{ love } \textit{you}_j$

- (74) line 1: $[\textit{ego} \text{ loves } [\textit{nos} [\textit{alter} \textit{ego} t_{\textit{nos}}]]]$
 line 2: $[[\textit{ego}\#\textit{nos}] \text{ loves } [t_{\textit{nos}} [\textit{alter} \textit{ego} t_{\textit{nos}}]]]$

The derived form in line 2 can be read as something like: I in the pair me and you, love the person other than me in that pair. Interpretation can now proceed: as shown in (75), through λ -abstraction, the pair $\langle \text{John}, \text{Mary} \rangle$ is selected by the variable *nos*, and *John* is selected by the variable *ego*—these values are provided, Rebuschi says, by the discourse context.

Conversion of variables will result in something like: John in the pair made up of John and Mary, loves the individual other than John in the pair John and Mary, simplifying to: John loves Mary.

(75) $\langle \text{John}, \text{Mary} \rangle \lambda_{nos} \langle \text{John} \rangle \lambda_{ego} [[\text{ego}\#\text{nos}] \text{ loves } [t_{nos} [\text{alter ego } t_{nos}]]]$

Now, to derive Mary's (switch) response in (73b), Rebuschi copies the predicate from the logical form in line 2 of (74). The working out of this derivation contains many difficulties; only the more serious problems will be addressed here.⁶

The first problem is, if *nos* is non-quantificational, why does it undergo A-bar movement? There is no answer to this. One way to force *nos*-movement is Rebuschi's idea that interpretation of the *alter*-expression will fail unless *nos*-adjunction to the subject takes place. If "the subject...cannot be interpreted as function of *nos*," Rebuschi states, "the object cannot be interpreted as a function of *ego* and *nos*... either." (p. 15) This claim seems contrary to fact: as defined, the object expression containing either function *alter* (x , $\langle \text{nos} \rangle$) evaluates to the member "other" than x in the pair *nos*, and since the discourse context provides the values of x as well as *nos*, there does not seem to be anything blocking interpretation of the object independently of the subject. Indeed, the interpretation of the

⁶ Rebuschi does not specify line-by-line detail for his derivations, making a step-by-step evaluation difficult, but several small difficulties are obvious. Mixing notations is one of these: for example, to solve a particular problem, he introduces the syntactic indexical types α and β from Fiengo & May's dependency theory within semantic λ -expressions. It is not only unclear that the problem is solved, it is impossible to imagine how abstract predicates containing functional operators, indices and dependencies all together can be interpreted.

object expression seems quite clear without *nos*-movement—far more problematic, it seems to me, is the interpretation of the adjoined subject expression post *nos*-movement that Rebuschi indicates by *ego#nos* in the derivation above, and glosses as "*ego* IN *nos*": John in the pair John and Mary. It is not clear how the adjunction would lead to the interpretation of the head element "in the pair" of the adjoined element. Unlike *each*-movement, which creates a complex expression [*each* [NP]] whose semantic interpretation makes intuitive sense (*each* quantifying over the set of individuals designated by [NP]), Rebuschi's *nos*-movement creates a complex expression [*nos* [*ego*]] that makes no intuitive sense: *nos* is a variable that evaluates to the pair $\langle \textit{speaker}, \textit{hearer} \rangle$, and *ego* is a variable that selects the speaker: *ego* in isolation evaluates to the speaker; why should a complex of the $\langle \textit{speaker}, \textit{hearer} \rangle$ pair adjoined to *ego* evaluate to the speaker as well?

The suggestion Rebuschi offers to force *nos*-movement at LF as in (74) is that, without it, *nos* will be a free variable, and thus illegitimate. But in the original sentence in which *nos*-movement supposedly occurs and must be motivated, the variable *nos* is bound by the pair defined as $\langle \textit{speaker}, \textit{hearer} \rangle$ whether it moves or stays in place. His suggestion, then, actually is that *nos*-movement must occur in order for it to be a predicate, and thus copyable. But curiously, the predicate post *nos*-movement that Rebuschi copies to derive the switch in (73b) contains another kind of free variable—the trace of *nos*. Although Rebuschi does not recognize it as such and therefore a problem, clearly this is a variable trace, which (like the moved variable *nos*) selects a pair of individuals such that the *alter* function is interpretable. Rebuschi in fact binds this trace with an "implicit" *nos* pair that he finds "in Mary's reply." But if a *nos* pair is implicitly available in Mary's reply, why could it not bind the *nos* variable itself?

In the usual way of dealing with a free variable, of course, *nos* would be λ -converted prior to copying. Rebuschi claims that if *nos* were λ -converted, the result would be the strict

reading, but does not show the derivation. In fact, this is not the result: he assumes that the strict reading will ensue because he incorrectly assumes that the function *alter* $\langle ego, nos \rangle$ will always pick out the *second* member of the pair *nos*. If the variable *nos* were some kind of abbreviation for the ordered pair of variables $\langle ego, tu \rangle$, this would be the case, but as defined, *nos* is a variable that selects a pair of individuals directly. As the function is defined, *alter* $\langle ego, nos \rangle$ will pick out the individual other than *ego* in the pair *nos*: the individual the function chooses will only be the second member of the selected pair when the first member of the pair is the same individual that is picked out by *ego*. This is the case in the derivation of (73a), but it is not the case for (73b), as Rebuschi would have realized had he gone through the derivation after conversion of *nos*. λ converting *nos* instead of moving it as in the logical form shown in (74) would lead to (76).

(76) *ego* loves [*alter ego* \langle John, Mary \rangle]

There is now no free variable, and if the predicate from (76) is used to derive Mary's reply in (73b), the result is as shown in (77). After λ -conversion of *ego* takes place to derive line 2, the *alter* function will pick out the individual other than Mary in the pair \langle John, Mary \rangle , to derive in line 3 the switch—*not* the strict—reading.

(77) line 1: Mary λego [*ego* loves [*alter ego* \langle John, Mary \rangle]]
 line 2: Mary loves [*alter* Mary \langle John, Mary \rangle]
 line 3: Mary loves John

In (77), using Rebuschi's own definitions, I have derived the switch reading for (73b) through *nos*-conversion unproblematically. *Nos*-movement did not have to occur for the switch derivation shown in (77), as *nos*-conversion could occur with or without it. As discussed above, post *nos*-movement, Rebuschi's derivation of the switch reply is problematic, because

of the free trace variable that must be "implicitly" bound. The switch reply is, however, derivable independent of *nos*-movement, and this derivation has the additional advantages of not involving the interpretation of a complex, adjoined subject, and not requiring "implicit" binding.

Another reason Rebuschi wants to force *nos*-movement in the co-argument case is to prevent the strict reading in what are, for him, "obligatory" cases of switch. But in fact, the strict reading is derivable whether *nos* moves or not, through λ -conversion of both *nos* and *ego* prior to copying. Regardless of movement, conversion of all the variables must be able to occur, as it must be possible to derive the strict reading when Mary's response is *not* first person (e.g., *Sam does, too*)—a case that Rebuschi did not consider. So in fact, forcing movement does not result in obligatory anything. This result may actually be a welcome one for Rebuschi's analysis of the co-argument case, for as discussed above, the "obligatory" cases of switch that Rebuschi identifies in French do not in fact appear to be grammatically obligatory but rather seem to depend on pragmatic factors, as do the English cases.

To summarize the observations so far, *nos*-movement is not motivated, nor is it necessary for *nos*-movement to occur to derive the simple switch derivation. *Nos*-movement does not derive the "obligatory" switch in the co-argument case, as Rebuschi claims: even if *nos*-movement is forced, both strict and switch readings are derivable, assuming that the complex adjoined subject is interpretable. With or without the movement, λ -conversion of *nos* will lead to the switch reading in the co-argument case, as shown above, and with or without movement, nothing prevents λ -conversion of all the variables—*ego*, *nos*, and/or the trace of *nos*—to derive the strict reading. Furthermore, while a *nos*-movement analysis prevents the switch reading in non-c-commanding cases, as Rebuschi intended, since there are non-c-commanding cases that in fact do switch, the movement account has no justification from these. There is actually a problem of accounting for the non-c-commanding cases under

Rebuschi's analysis no matter what the status of the movement of *nos*—to account for these in an interpretive account of ellipsis, he would have to adopt theoretical assumptions along the lines of Dalrymple et al. (1991), for example, in whose "unification" theory abstract relations over embedded positions can be formed using "second order matching." However, in Rebuschi 1997, a "unification" account is explicitly rejected: "in such a model, there is no room for a functional analysis." (p. 183)

Finally, Rebuschi believes a movement analysis crucial in preventing the switch interpretation in a Jack puzzle example, repeated as (78), when in fact, the switch interpretation is derivable. Rebuschi argues that in the logical form for (78a), shown in line 1 of (79), syntactic movement constraints will prevent *nos* from raising in from the embedded clause over the intervening subject and adjoin to *ego*. Since *nos*-movement is blocked, he says, the only possible λ -expression to predicate in (78b) will contain a constant (namely, speaker 2) in the object position, λ -converting both the variables *ego* and *nos* in line 2. (S1 and S2 abbreviate speakers 1 and 2, respectively.) Thus, he says, only the strict reading will result.

(78) a. Speaker 1: I_1 think Jack loves you_2

b. Speaker 2: I_2 do, too $\neq I_2$ [think Jack loves you_1]

(79) line 1: *ego* thinks Jack loves [*alter ego nos*]

line 2: $\langle S1, S2 \rangle \lambda nos \langle S1 \rangle \lambda ego$ *ego* thinks Jack loves [*alter ego nos*]

Indeed, the strict reading results through conversion of both variables, but as with the derivation of the switch reading for (73), the switch reading is derivable if *nos* stays in place through conversion of *nos* alone. λ -conversion of *nos* in the line 2 of (79) would result in a perfectly legitimate predicate to copy in the derivation of (78b), as shown in (80).

(80) $\langle S2 \rangle \lambda ego \text{ ego thinks Jack loves } [alter \text{ ego } \langle S1, S2 \rangle]$

From (80), conversion derives the switch reading that speaker 2 thinks Jack loves speaker 1, which Rebuschi wanted to prevent. Preventing movement does not prevent the switch interpretation.

Returning to the analysis without *nos*-movement that derived the simple switch in (73), why is there not a problem in deriving a reading other than the strict interpretation if Mary's response is—say—*Sam does, too?* For Rebuschi, the predication is only valid when an *ego* already exists in Mary's response, but this is clearly not the case—after conversion of *nos*, (81) should be legitimate by the very rules of predicate-based semantics.

(81) $\text{Sam } \lambda x [x \text{ loves } [alter \text{ } x \langle \text{John, Mary} \rangle]$

Indeed, nothing should prevent the predication in (81) as it is an "alphabetic variant" that differs from its antecedent, shown in (76), only in the particular variable included. However, in interpretation, Rebuschi's account is saved: the *alter* function in (81) will not be evaluable, as it will not be able to locate the individual other than Sam in the pair $\langle \text{John, Mary} \rangle$. Thus only the strict reading will be available.

There will be a problem for Rebuschi, however, in the "same-speaker problem," discussed in chapter 3. Recall that in a case like (82), the switch does not occur in the second clause of the same speaker's utterance. (Rebuschi did not consider any examples of this sort.)

(82) I love you and you do, too \neq I love you and you love me

The analysis that successfully derives switch in (72) will also incorrectly derive the switch in (82); the relevant logical form is shown in (83). ($\langle J, M \rangle$ stands for the set $\langle \text{John, Mary} \rangle$, assuming that (82) is said by John to Mary.)

(83) John λ_{ego} Mary λ_{tu} [*ego* love [*alter ego* <J,M>]] and [*tu* love [*alter tu* <J,M>]]

The "copied" predicate in the second clause is an alphabetic variant of the predicate in the first clause, and should therefore be legitimate. And in this case, the *alter* function in the second clause will unproblematically evaluate; the entire interpretation will be John loves Mary and Mary loves John.

It is clear that the approach taken by Rebuschi has some serious drawbacks for even the simple cases, but before making an overall evaluation, let's examine how he fares with more complex cases of switch. Rebuschi analyzes one "many pronoun" cases like (84), which has, in French and in English, both switch and strict interpretations.

- (84) a. Speaker 1: I_1 think I_1 love you $_2$
 b. Speaker 2: I_2 do, too

As noted in chapter 3, (84b) is in fact three-ways ambiguous: in addition to the ATB strict and ATB switch readings, shown in (85a) and (85b), it also has one "mixed" reading (85c) that Rebuschi did not consider. The second "mixed" reading (85d) does not occur.

- (85) a. = I_2 think you $_1$ love me $_2$
 b. = I_2 think I_2 love you $_1$
 c. = I_2 think I_2 love me $_2$
 d. \neq I_2 think you $_1$ love you $_1$

On Rebuschi's approach, the ATB strict interpretation results by a single movement of *nos* in the lower clause, shown in line 2 below, while the ATB switch results from a double movement of *nos* to the matrix clause, as shown in line 3.

(86) line 1: *ego* thinks *ego* loves [*alter ego, nos*]

line 2: *ego* thinks *ego#nos* loves [*alter ego*, t_{nos}]

line 3: *ego#nos* thinks *ego#t_{nos}* loves [*alter ego*, t_{nos}]

This latter double movement is allowed in this case but not in (78), according to Rebuschi, because the lower subject is coindexed with the higher subject; on analogy again with *each other*, the ATB strict and ATB switch readings for (84b) have their counterparts in the narrow scope and wide scope readings of *they think they love each other*.

For reasons given above in the two-pronoun cases, however, the movement of *nos*, singly or doubly, does not actually derive the readings Rebuschi desires. In fact, both readings can be derived without *nos*-movement, as there are two possibilities available for copying the predicate in line 1 of (86): λ -conversion of *nos* alone, or λ -conversion of both *nos* and *ego*, shown respectively below.

- (87) a. λ -convert *nos*: *ego* thinks *ego* loves [*alter ego*, $\langle S1, S2 \rangle$]
 b. λ -convert *nos* and *ego*: S1 thinks S1 loves S2

As before, the predicate after conversion of *nos* alone will yield the ATB switch reading for (84b), and conversion of both *nos* and *ego* will yield the ATB strict. Can the observed third, "mixed" reading be derived? The predicate required to derive the mixed reading would have to be of the form shown in (88).

(88) λx [*x* thinks *x* loves S2]

There are two approaches that would result in (88). The first involves re-abstraction of the logical form in (87b), which would directly lead to (88)—this is how it would be done, for example, in the theory developed by Dalrymple et al. (1991). The second would be to suggest that the "functional spell-out" of one pronoun is not *required* when in the scope of the

other, as defined by Rebuschi in (72), but is rather optionally available. (This "requirement" is in fact expendable as it was only needed as part of the attempt to derive "obligatory" switch readings—which, as discussed above, failed for other reasons.) This would yield a possible logical form for (84a) with the Rebuschi's "default" variables from (68), as shown in line 1 of (89). Conversion of *tu*—which would have to take place, as it is a free variable—would yield line 2, which is an alphabetic variant of (88).

- (89) line 1: $\lambda ego \lambda tu$ [*ego* thinks *ego* loves *tu*]
 line 2: λego [*ego* thinks *ego* loves S2]

Whichever approach is taken, the observed "mixed" reading can be thus derived.

Interestingly, the "mixed" reading that is not observed for (84b) is not derivable, as this would only be possible through conversion of *ego* but not *tu*. This would leave *tu* as a free variable, and the unobserved reading would thus not be derivable. The welcome result is that the three readings available for (84b)—and only those three—are explained under a "functional spell-out" analysis, assuming no *nos*-movement.

With the three pronouns in different order, however, as in (90), the result is not as welcome. As discussed in chapter 3, (90b) has only ATB strict and ATB switch readings; no "mixed" readings are observed.

- (90) a. Speaker 1: I_1 think you₂ love me₁
 b. Speaker 2: I_2 do, too

"Functional spell-out" will result in a logical form for (90a) as shown in line 1 below. As before, conversion of *nos* only prior to copying will result in the ATB strict interpretation for (90b), while conversion of both *nos* and *ego* will result in the ATB switch.

- (91) line 1: *ego* thinks [*alter ego*, *nos*] loves *ego*
 line 2: λ -convert *nos*: *ego* thinks [*alter ego*, $\langle S1, S2 \rangle$] loves *ego*
 line 3: λ -convert *nos* and *ego*: S1 thinks S2 loves S1

The problem is that the same kind of additional predicate yielding the observed "mixed" interpretation in (84b) will also yield the non-observed "mixed" reading for (90b) *I think I love me*.

- (92) λego [*ego* thinks s2 loves *ego*]

Deriving too many readings in "many-pronoun" sentences is in fact a common problem for predication-based theories of ellipsis, as noted in Fiengo and May 1994 (see chapter 4).

How does a "functional spell-out" analysis handle extended discourse cases, as discussed in chapter 3? Rebuschi did not consider any examples of this sort in his analysis. Recall the facts of the cases shown in (93-94): where the (b) sentences have the switch interpretation. (93c) has an apparent strict reading with respect to (93b), but (94c) does not. The (93c) reading was analyzed as the "Dahl strict" under the oriented dependency analysis.

- (93) a. Speaker 1: I love you
 b. Speaker 2: I do, too = I love you, too
 c. Speaker 1: You do? = You do love me?
- (94) a. Speaker 1: I love you
 b. Speaker 2: I do, too = I love you, too
 c. Speaker 1: Sam does, too \neq Sam loves me, too

"Functional spell-out" would unproblematically derive the (93c) reading—again, assuming no *nos*-movement. Since the switch occurs in the (b) response, *nos* must be converted in the

logical forms for (93a) and (93b), shown respectively below.

- (95) a. $S1 \lambda ego, ego \text{ loves } [alter \text{ ego } \langle S1, S2 \rangle] \Rightarrow S1 \text{ loves } S2$
 b. $S2 \lambda ego, ego \text{ loves } [alter \text{ ego } \langle S1, S2 \rangle] \Rightarrow S2 \text{ loves } S1$

To derive (93c), *ego* must be converted from (95b) in order to not be a free variable in the next predication, yielding the logical form in (96). This correctly yields the strict interpretation of (93c) relative to (93b).

- (96) $S2 \lambda tu, tu \text{ loves } S1 \Rightarrow S2 \text{ loves } S1$

But conversion of *ego* could also take place in (94), and the same process would incorrectly derive the unobserved reading for (94c):

- (97) $Sam \lambda x, x \text{ loves } [S1] \Rightarrow Sam \text{ loves } S1$

There seems to be no way, on an approach such as Rebuschi's, to block the strict reading in (94c) while deriving it in (93b).

To summarize this evaluation of Rebuschi's technical analysis, it is clear first of all that the hypothesis that movement of some element is involved in deriving switch interpretations is untenable. The initial movement hypothesis was based in Rebuschi's intuition that the switch cases paralleled the distribution of *each other*, which is not the case. No reasonable answer is given to the fundamental question of why syntactic movement of a non-quantificational element can (or should) occur. Furthermore, movement causes technical problems in the analysis, including the question of the interpretation of the complex, adjoined subject, as well as the problem of free variables. The movement analysis does not achieve the separation of "obligatory" cases of switch from "optional" ones, as Rebuschi desired, nor does it prevent switch derivations in places where it never occurs, such as the Jack sentences.

If the movement hypothesis is eliminated from the analysis, as seems warranted, what remains is the "functional spell-out" post SS, pre-LF of one of the pronouns in the scope of the other. As discussed earlier, the spell-out need not be required, but could be provided as a grammatical option, and achieve the same results. I have shown that switch readings, as well as strict readings, are indeed derivable using "functional spell-outs" pre-LF, assuming no *nos*-movement. Unfortunately, switch readings as well as strict readings are derivable on this approach in *any* sentence containing both pronouns, where one of them is the subject. No explanation is available for the lack of a switch reading in sentences containing another referential noun phrase such as *Jack*. Neither is there an explanation for the lack of a switch reading in the "same-speaker problem." Furthermore, switch readings are not derivable at all in cases where the initial pronoun is *within* the subject, under Rebuschi's assumptions concerning abstraction. While the approach derives three—and only three—readings in three noun phrase cases, which is correct for examples where the first two noun phrases are numerically covalued, it is incorrect for examples where the first two noun phrases are not. Finally, "functional spell-out" fails to separate cases where the Dahl-strict occurs from cases where it does not.

4.23 Can a "functional spell-out" account be saved?

What would be needed in addition to "functional spell-outs" to make a working analysis of switch, and how would such a theory compare to the orientation-dependency analysis developed in the previous chapter? I will attempt to lay out the basic positions.

In a working theory, "functional spell-outs" would be taking the place of orientation, but without the advantage of dependency theory. In such an account, it would have to be stipulated that a "spell-out" of one pronoun can only occur if preceded by the alternate pronoun. No comparable stipulation is needed on an orientation analysis, as this follows from

dependency theory: a noun phrase cannot be "dependent" unless an "independent" noun phrase is available. Assuming a predicate-based semantics, the "functional spell-out" account cannot prevent the legitimate alphabetic variant from incorrectly deriving the switch in the "same-speaker problem," which is fairly easily solved as not being an i-copy in the dependency account. Furthermore, in a "functional spell-out" analysis, it seems impossible to account for the "Dahl" strict readings without being highly stipulative, which comes for free assuming dependency theory.

Some of the problems that the "functional spell-out" theory has could be avoided if certain assumptions of Rebuschi's predicate-based semantics were abandoned. To derive cases of switch in which the first pronoun is *within* the subject, for example, something along the lines of "unification" theory of Dalrymple et al. (1991) would have to be assumed, in which abstract relations over embedded positions can be formed. The explanation of switch in these cases is unproblematic in the orientation analysis, as dependency is a linear notion. As Rebuschi himself suggests in his rejection of the approach, however, adopting "unification" assumptions to account for switch would have to involve major adjustments not only in "unification" theory itself but also in how interpretations are derived in Rebuschi's theory—in particular, how the variables *ego*, *tu*, and *nos* would have to be interpreted, among other issues.

Necessary in any theory is an account of why switch occurs sentence-wide or not at all. In the oriented dependency analysis, this was argued to follow from licensing conditions at one level or another in logical form. The "functional spell-out" theory cannot account for this phenomenon without additional baggage. In addition, any analysis of switch must be consistent with the fact that the availability of switch varies at the level of idiolect of speakers within the same language, and in the best of all worlds a theory of switch should account for this variation. The extent to which switch varies across language should also be accounted for

in a general theory of switch—although data for this enterprise might be hard to gather. Finally, any theory requires an account of the pragmatic conditions concerning the varying availability of switch in similar or identical syntactic configurations.

On my view, the "functional spell-out" approach does not have much theoretical appeal. A functional re-write of certain elements in certain environments has to be motivated, since at other times no such re-write will occur. Thus such a theory must posit a theoretical difference between pronouns that are rewritten and those that are not. While it can be imagined that a working functional account may one day be technically clever enough to derive the cases of switch, it does not seem possible either to relate an account such as Rebuschi's to other existing theoretical phenomena or to embed such an account in a larger theory of indexicals. Assuming that there is syntactic orientation, on the other hand, and allowing the existing machinery of dependency theory to do the rest, is simpler and more theoretically elegant. On the analysis developed here, all indexical expressions are syntactically oriented—not just the ones that lead to switch interpretations. Built within a proposed new model of indexicals, the dependency processes that explain the switch phenomenon are found operating elsewhere in the grammar.

4.3 The theory of indexicals, given "switch"

Over these last two chapters, a thorough account of the switch phenomenon has been achieved. I have shown that if syntactic orientation exists, the switch phenomenon can be subsumed under dependency theory. For a dependency analysis to have the correct results in predicting switch in the configurations where it does occur, as well as in ruling out switch where it cannot, it has been shown that the new dependency must be licensed at a different derivational line than the numeric level. Thus the analysis of switch has provided support for the hypothesis that orientation is a syntactic property operating at a pre-numeric derivational

level of logical form. Both the orientation level, and the numeric level, have been shown to be required to explain the full range of observations surrounding the switch phenomenon.

The proposed new model of formal context developed earlier thus has additional empirical support. In chapter 2, I argued that a two-tiered formal context through which numeric indices may be functionally derived through orientation in the syntax was a highly explanatory model, providing a unified account for sentences containing indexicals and non-indexicals alike, and allowing a natural explanation of context shift. Now we have seen that the explanation of "switch" reference has also followed naturally in the new model, assuming that dependencies may be licensed at the derivational level of orientation.

As yet, however, the operation of the new model has not been tested much beyond the singular indexical pronouns, with the exception of the unexpected switch readings in indirect discourse, and of plural pronouns in the cases of context bifurcation. In the next and final chapter, I will ask whether the new model can be extended to other indexical expressions.

Chapter 5: A new theory of indexical expressions

5.0 The derivation of plural indexical pronouns

To this point, most of the examples that have been exploited to establish and illustrate the workings of the new model have contained singular first and second person pronouns. A few examples containing plural pronouns have been considered briefly in chapter 4, in the discussion of bifurcated contexts. When the procedure for the derivation of plural expressions is examined in more detail, however, it becomes clear that the cases already considered are in all likelihood exceptional, in that the explanation for the bifurcated context examples involves special assumptions concerning the context structure itself. I will claim in this section that more usually, plurals are interpreted without altering the standard actual context, which is also used for singular expressions.

Let's return to the *Holiday* example, repeated below as (1). As remarked earlier, I assume, following Fiengo and May, that the numeric value of a plural expression is a "fused" index, indicated by \oplus , as introduced by Link (1983).

- (1) a. *Laura*: Oh Susan and Nick, $\Gamma_{1\alpha}^-$ love you $\vec{2} \oplus_{3\beta}$
 b. *Susan*: Darling, we do, too = ...we $\vec{2} \oplus_{3\alpha}$ [love you $\vec{1}\beta$], too

It was mentioned in the previous chapter that for the switch reading to be derivable for (1b), it must be the case that the ω function return a fused index. That is to say, at the orientation level of structure, the plural pronoun would be marked only with orientation, from which the fused index may be derived. Therefore the structure of the formal context for (1b), for example, would have to be as illustrated in (2), in which $\omega(\leftarrow) = 2 \oplus 3$. The derivation of (1b) at logical form would then proceed as shown in (3) (ignoring index types, which are irrelevant to the point being made here). At line 1 of this derivation, there is only

orientation.

(2)

→		←	
1	2	3	...
\⊙/ Laura ∧	\⊙/ Susan ∧	\⊙/ Nick ∧	

- (3) line 1: $We_{\leftarrow} [\text{love you}_{\leftarrow}]$, too
 line 2: $We_{2\oplus 3} [\text{love you}_1]$, too

However, there is another method of deriving the fused numeric values for plural expressions in the model—which I will argue is the more usual—that does not involve an alteration of the context structure. Instead, at the orientation level of logical form the index of a plural indexical expression is analyzed to be a fusion of orientation with one or more numeric values. Such an account can assume an unaltered context, in which only one sequence position at a time is oriented, with the ω function returning a single value as opposed to a fused value. Under this alternative analysis for plural indexical expressions, the derivation of a sentence such as *we think you should visit* proceeds as shown in (5), assuming the context illustrated by (4).

(4)

→		←	
1	2	3	...
⊙ /X\ ∧	⊙ /Y\ ∧	⊙ /Z\ ∧	

- (5) line 1: $We_{\leftarrow\oplus 3}$ think you $_{\leftarrow}$ should visit
 line 2: $We_{2\oplus 3}$ think you $_1$ should visit

Note that unlike in (3), there cannot be an oriented dependency at line 1 of (5), because at that derivational level, there is a numeric value that would be unaccounted for.¹ So a context structure such as (2) must be possible, since without it the switch reading for cases like the *Holiday* example would be underivable on this alternative account. The question then becomes whether there is reason to believe that both kinds of derivations can occur for a plural indexical.

Support for the idea that the derivation of indexical plurals not only can, but more usually does, proceed against unaltered contexts such as (5) comes from everyday sentences like (6).

(6) Since we went to my family's on Thanksgiving, we'll go to his family's for Christmas

Assuming again the unaltered context (5), through the fusion of orientation with numeric value at the level of orientation, the derivation of the numeric values for (6) proceeds unproblematically, as shown in (7).

¹ There is also good reason to believe that, in general, a dependent occurrence of an index cannot be licensed by a independent occurrence *within* a fused index. There is a sloppy interpretation in (ia), for example, that is not available for (ib).

- (i) a. Susan₅ and Jack₆ believe him₆ to be crazy, and Alice₇ and Ted₈ do, too
 b. They_{5⊕6} believe him₆ to be crazy, and THEY_{7⊕8} do, too

The problem with this is that it is the intuition of some that there is a "disjointness effect" in (ib), so for these people the reading of the first clause in which the individual indicated by *him* is a member of the group indicated by *they* is unavailable (cf. Lasnik 1981). However, everyone agrees that (ii), in which a noun phrase is *bound* from within a fused index, is ungrammatical.

- (ii) * They_{5⊕6} believe himself₆ to be crazy

From the other direction, it can be shown that a plural noun phrase bearing a fused index may be coindexed with, but not bound by, "split antecedents"—for discussion, see chapter 1 in Fiengo and May 1994.

(7) line 1: Since $we_{\leftarrow\oplus 3}$ went to my_{\leftarrow} family's on Thanksgiving, $we'll_{\leftarrow\oplus 3}$ go to his_3 family's for Christmas

line 2: Since $we_{2\oplus 3}$ went to my_2 family's on Thanksgiving, $we'll_{2\oplus 3}$ go to his_3 family's for Christmas

However, if the context for (6) were instead the altered (2), in which the output of the ω function were a fusion index, (6) could only be derived through the assumption of the context shifting at the two points indicated by \parallel in line 2 of (8). The derivation of the first $[we]$ would be unproblematic in context (2), as $\omega(\leftarrow) = 2\oplus 3$. However, to derive the numeric value for the following $[my]$, the context would have to shift to (5). Then the context would have to shift back again to (2) to derive the numeric value for the following $[we]$.

(8) line 1: Since we_{\leftarrow} went to my_{\leftarrow} family's on Thanksgiving, $we'll_{\leftarrow}$ go to his_3 family's for Christmas

line 2: Since $we_{2\oplus 3}$ went to $\parallel my_2$ family's on Thanksgiving, $\parallel we'll_{2\oplus 3}$ go to his_3 family's for Christmas

If the numeric values for all plurals were derived by the method proposed for the *Holiday* example, there would in general need to be a context shift every time the speaker switched from singular to plural or from plural to singular. This seems counterintuitive—why should the context shift at these \parallel junctures? Unlike in the "dreamscape" and counterfactual sentences analyzed in chapter 2, where it seems reasonable to conjecture that a new formal context is shifted to which reflects the dream world or hypothetical situation, there does not seem to be any justification for context shift just because a speaker chooses to refer both to himself individually and to a group of which he is a member. I therefore conclude that in the usual case, the appropriate derivation is one that proceeds as in (7), against an unaltered formal context, and that no shifting takes place.

However, the *Holiday* example shows that there *are* contexts that have an altered

structure like (2), in which the ω function returns not a single value but a fusion of values. Switch readings for sentences including plurals are only derivable under this analysis assuming such an altered context. Therefore, a first person plural expression, for example, will be derivationally ambiguous between (9) and (10), depending on the formal context.

(9) line 1: [we]_←
line 2: [we]_{2⊕3}

(10) line 1: [we]_{←⊕3}
line 2: [we]_{2⊕3}

I have claimed that (10) is the more usual derivation in that it can occur without assuming an altered context, or shifting contexts such as in (8). But how *unusual* is (9)? I would suggest that a special context structure in which indexical plurals can be derived as in (9) can only occur under bifurcation circumstances, as discussed in the previous chapter. Recall that it was proposed there that it is only in circumstances where a binary opposition can be established that the context can acquire the special status such that third person expressions may be syntactically oriented. I would now propose that it is not just oriented third person expressions that are exceptional, but also oriented indexical plurals. That is to say, an establishment of a binary opposition is necessary for the context to be altered such that ω returns a fusion of values instead of a single value.

Evidence that in non-bifurcated circumstances plural indexical expressions bear a fusion of orientation and value, and not orientation alone, comes from the lack of switch readings for sentences that, like (6), contain a mixture of singular and plural indexical expressions. For example, in (11b), (12b) or (13b)—where the first person plural is taken to indicate the inclusive group comprised of speakers 1 and 2—only the strict reading is

available; there is no switch. Note that along with noun phrases containing first and second person singular pronouns, a first person plural expression occurs medially in (11) and (12), and finally in (13). All other conditions of switch having been met, if that indexical plural could be marked with only orientation, we would expect a dependency to be licensable and the switch reading to occur in these replies. But if it is assumed instead, as proposed above, that an indexical plural can be only oriented only in cases of context bifurcation, then this will not be the case for (11-13), as there is no individual or group in these circumstances in binary opposition to the group comprised of speakers 1 and 2. Thus on this account the noun phrases [*we*] or [*our*] must be marked $\leftarrow\oplus n$, and not \leftarrow , at the orientation level, and an oriented dependency will not be possible, explaining the lack of switch.

- (11) a. Speaker 1: I'd love it if we ran into your ex at the party
 b. Speaker 2: I would, too \neq I'd love it if we ran into your ex at the party, too
- (12) a. Speaker 1: I think our children will grow up to hate you
 b. Speaker 2: I do, too \neq I think our children will grow up to hate you, too
- (13) a. Speaker 1: I think you should give our relationship another chance
 b. Speaker 2: I do, too \neq I think you should give our relationship another chance, too

In light of what I have called the "usual" derivation of plural indexicals, it is now clear that switch between plural indexicals under the *we/you all* bifurcation is as exceptional as the *us/them* bifurcation, in which switch occurs between first and third person. That is to say, it is as unusual for an indexical plural to be marked only with orientation as it is for a third person expression. These cases of switch occur through altered formal contexts, and the

formal context is alterable due to a circumstance of binary opposition of groups. In the *Holiday* example, Laura is friends with Susan and Nick not as individuals but as a couple. In the case of the military leaders exchanging threats, it is the two nationalities in binary opposition. In the codified structure of the bridge game, there is an opposition between the two sets of partners. Thus the altered formal context of the bridge game, from the perspective of—say—East, as illustrated in (14), is available not only for *we/you all* cases, but also for cases of *us/them*. The former is as highly marked as the latter.

(14)

←		→	
E	W	N	S
\⊙/ East ^	\⊙/ West ^	\⊙/ North ^	\⊙/ South ^

Assuming that in the usual method of derivation the fused index of indexical plural expressions are partly oriented and partly not allows the numeric level to be derived unproblematically at logical form without assuming unmotivated shifting contexts. In addition, it also allows a natural way to describe the pronominal systems across languages, in which functionally different indexical expressions bear different specific combinations of syntactic orientation and numeric values. For example, in a language that has a plural indexical that is both "dual" and "inclusive," to use traditional descriptive terms, an expression containing that form would bear the fusion index $\leftarrow\oplus\rightarrow$ at the orientation level of logical form. Combinations of the two syntactic orientations that have been hypothesized here, along with variables for numeric value and orientation or numeric value, are sufficient to account for the different pronominal possibilities that are—to my knowledge—attested. Shown below are the functional indexing at the orientation level for expressions that comprise, according to Ingram's (1978) typology, the four most common pronominal systems across

languages. Listed in order of their frequency, these four systems together account for 71% of the languages in Ingram's sample. (The remaining 17 systems are generally one of these with one or more gaps.)

(15)	a. "Six-person system"	$* \geq 1$	<i>singular</i>	<i>plural</i>	
	<i>first person</i>		←	←⊕ x^*	
	<i>second person</i>		→	→⊕ n^*	
	<i>third person</i>		n	n⊕ n^*	
	b. "Eleven-person system"	$* > 1$	<i>singular</i>	<i>dual</i>	<i>plural</i>
	<i>first person (exclusive)</i>		←	←⊕n	←⊕ n^*
	<i>first and second (inclusive)</i>			←⊕→	←⊕→⊕ n^*
	<i>second person</i>		→	→⊕n	→⊕ n^*
	<i>third person</i>		n	n⊕n	n⊕ n^*
	c. "Seven-person system"	$* \geq 1$	<i>singular</i>	<i>plural</i>	
	<i>first person (exclusive)</i>		←	←⊕ n^*	
	<i>first and second (inclusive)</i>			←⊕→⊕ n^*	
	<i>second person</i>		→	→⊕ n^*	
	<i>third person</i>		n	n⊕ n^*	
	d. "Nine-person system"	$* > 1$	<i>singular</i>	<i>dual</i>	<i>plural</i>
	<i>first person</i>		←	←⊕ x	←⊕ x^*
	<i>second person</i>		→	→⊕n	→⊕ n^*
	<i>third person</i>		n	n⊕n	n⊕ n^*

(where n = numeric value; x = orientation or numeric value)

The indexing patterns indicated in the grids in (15) match intuitions concerning their respective expressions. Assuming the minimal formal context, for the expressions that are solely comprised of orientations at this level—first and second person singular, and inclusive dual—only knowledge of language is needed for their interpretation. For the

expressions that are oriented only in part—the remaining first and second person duals and plurals—knowledge of language alone will only partly determine their interpretation. For the third person expressions that are oriented not at all, other knowledge beyond that of language must be assumed.

5.1 Other indexical expressions

The majority of this analysis has centered on the indexical pronouns, and it is through the syntactic behavior of these pronominal expressions that the new model has been constructed and motivated. However, this account would not be complete were it not to examine whether the proposed model can be extended to include indexical expressions beyond the pronominal system.

I have claimed that there are two syntactic orientations, informally described as "inward" and "outward." Expressions containing first person pronouns are syntactically marked with the former, second person with the latter, and third person expressions are not oriented. Support for the model set up in this way has appeared throughout this analysis. When other expressions in the "indexical" family are considered, however, we find in English a difference between these expressions and the pronouns: where there is a three-way contrast—first, second, third—in the pronominal system, there is instead a two-way contrast among non-person expressions. For places and things in the proximity of the speaker, English has *here* and *this* corresponding to the first person, but contrasting with *here* and *this* there are no expressions for places and things in the proximity of the hearer. Rather, in contrast to *here* and *this*, English has *there* and *that*, which intuitively correspond not to second person but to third person. This is evident in the traditional way of talking about these words; while the pronouns are usually described in terms of "speaker" versus "hearer," the *here/there* and *this/that* contrasts are usually described instead as "proximal" versus

"distal," and the distal *there* and *that* are generally classed as "demonstrative" and not indexical. This way of talking may lead to confusion: it is important to realize that it is not a matter of one kind of binary contrast versus another, but a ternary versus a binary contrast.

In terms of a model that assumes syntactic orientation, these observations lead to the hypothesis for the non-pronominal indexicals that only the proximal member of each pair is syntactically oriented, while the distal member of each pair has no orientation, as illustrated below.

(16)	←	→	<i>no</i>
	<i>orientation</i>	<i>orientation</i>	<i>orientation</i>
	<i>people</i>	I	you
	<i>places</i>	here	there
	<i>things</i>	this	that

Note that under this proposal, occurrences of *here* and *this* will be syntactically marked with the *same* orientation as occurrences of *I*. On the face of it, this will cause a technical difficulty in the operation of the ω function: will $\omega(\leftarrow)$ return an index that evaluates to a person, place or thing? One obvious way to avoid this difficulty would be to propose, alternatively, that the two orientations that I have called "inward" and "outward" are reserved for the pronouns, and that there are other orientations for the proximal indexicals, for example "downward" and "cater-cornered," as illustrated in (17).

(17) [I]← [you]→ [here]↓ [this]↙

Indeed, something similar to (17) is assumed by Larson and Segal (1995) in their alphabetic indexing proposal. As discussed in chapter 2, Larson and Segal hypothesize that first person pronouns have index *a* and second person pronouns *b*. In addition, other indexical expressions are assigned other, different alphabetic indices in their system: *here*, for

example, is indexed *c*, and *now* is indexed *d*. Under Kaplan's assumptions, as well, each of the indexicals has its own "character" function unrelated to the others—it is only through stipulation that the "agent of the context" is located at the place determined by the character of *here*. However, not only do multiple orientations as in (17) lack the intuitive appeal of (16), but in the derivation of specific cases it turns out that explanatory problems would result if such an alternative were to be assumed. I will adopt the schema in (16), deferring until the next section the discussion of these cases and the solution to the technical difficulty with the ω function.

Support for this proposal for the non-pronominal indexicals will be found through the examination of the syntactic behavior of the pairs *here* and *there*, and *this* and *that*, in relation to the indexical pronouns, which will comprise the next two sections. In particular, syntactic orientation for the non-pronominal indexicals is supported by observations of "cross-indexical" dependencies. Once examples containing these other expressions are considered, it becomes clear that the formal context structure proposed in chapter 2 must be adjusted, leading to a stronger, more explanatory model. In addition, the status of the time indexicals *now* and *then* in the model will be discussed. To complete the discussion of "other" indexicals, I will ask whether the hypothesized two syntactic orientations are sufficient. Finally, I will return to the question of what makes a "demonstrative" a demonstrative.

5.11 *Here and there*

Evidence that there is syntactic orientation for expressions containing the locative adverbial *here*, but not for *there*, comes from observations that *here* can vary with the indexical pronouns. That is, under verb phrase ellipsis, sentences containing *here* can have "sloppy," as well as "strict" readings. Such sloppy readings can be readily explained under an analysis that hypothesizes that oriented dependencies are possible "cross-indexically"—that

The lack of the sloppy reading in (20) shows that the presence of *I* is crucial to the sloppy reconstruction of *here* in (18), which therefore cannot be analyzed as being explainable under some notion other than dependency, such as word-identity.

How will the dependency analysis of (18) proceed? First, it must be the case that the oriented occurrence of [*here*] can be dependent, licensed by the oriented independent [*I*].

Assuming the orientation schema in (16), the licensing would be as shown below.

- (21) a. Speaker 1: $I_{\leftarrow\alpha}$ love it $here_{\leftarrow\beta}$
 b. Speaker 2: $I_{\leftarrow\alpha}$ [love it $here_{\leftarrow\beta}$], too

The structures in (21) represent the pre-numeric, oriented level of structure, at which the dependency is licensed. In deriving the numeric values, however, the technical difficulty discussed above comes to the forefront: how does the function $\omega(\leftarrow)$ evaluate on the different expression types? Although they are co-oriented, it is clear that *I* and *here* are not coreferent: in (21a), for example, the pronoun evaluates to speaker 1 and the locative to New York.

There are two possible solutions to this difficulty. The first would propose that *I* and *here*, though co-oriented, are *not* numerically covalued, from which it would follow that they need not be coreferent. The second solution assumes that *I* and *here* are both co-oriented *and* numerically covalued, but that nonetheless they are not coreferent. Although the former may seem more intuitive, it will be the latter solution that is workable. To see why, let's run through both possibilities.

Under the first suggestion, co-oriented expressions would not necessarily be covalued. This could be, if it were supposed that ω takes not one argument, as previously assumed, but two arguments, $\omega(o,c)$ where *o* = orientation and *c* = subcontext. The idea would be that the conceptual division of individuals from locations and from objects—which is after all reflected in the lexical categories of the language—is also reflected in the structure of the

formal context. On this idea, the context would have a defined subpart dedicated to "individuals," another to "locations," yet another to "objects," and so forth. Thus the ω function would be relativized to a subsection of the context: for example, $\omega(\leftarrow, i)$ would be the value of \leftarrow in the "individuals" section of the formal context, while $\omega(\leftarrow, \ell)$ would be evaluated in the "locations" section. For the derivation of the numeric level of (21), this would lead to the representations in (22). The modified context for (22a) would be as shown in (23). Note that $\omega(\leftarrow, i) = 1$, and $\omega(\leftarrow, \ell) = 51$, thus *I* and *here*, though co-oriented, would be contra-valued.

- (22) a. Speaker 1: $\Gamma_{1\alpha}^-$ love it here $_{51\beta}^+$
 b. Speaker 2: $\Gamma_{2\beta}^-$ [love it here $_{52\beta}^+$], too

(23)

\leftarrow	\rightarrow		\leftarrow	\rightarrow	
1	2	...	51	52	...
\odot /S1\ \wedge	\odot /S2\ \wedge		New York	Los Angeles	

However, assuming such a context structure would lead to a problem for the dependency analysis, as the dependencies in (22a) and (22b) are not *i*-copies, under the analysis developed in chapter 3. Recall that according to the *i*-copy condition, dependencies may differ by no more than a singleton indexical value. Although the encoded dependencies have identical orientation patterns, their value sets differ: (1,51) versus (2,52). Thus the altered context structure as depicted in (23) must be rejected. Note too that if multiple orientations for the other indexicals were assumed, as suggested in (17), that the same *i*-copy problem would result, giving added support to the rejection of (17) on intuitive grounds.

On the other hand, if the second solution is adopted, identity of dependencies holds without further assumptions. Under this proposal, the ω function has a single argument,

orientation, that returns a numeric value, as originally proposed. The relativization to subsections of the context does occur, but not at logical form in the derivation from orientation to numeric value, but rather in the second, semantic stage of interpretation. In fact, it makes more sense to suppose that such conceptual categories as "individuals" or "locations" are available at the semantic stage, and not at the earlier, syntactic stage. Thus the σ function has two arguments: $\sigma(n,c)$ where n = numeric value and c = subcontext. On this solution, I and *here* are not only co-oriented, they are also numerically covalued, as in (24). They will not, however, be coreferent—as can be seen from the formal context for (24a) shown in (25). The i-copy condition for dependencies as defined in chapter 3 remains intact: while the value sets of the encoded dependencies in (24a) and (24b) differ, it is only by a singleton value (1) versus (2), which is by the condition allowed. Note that under these assumptions, numeric covaluation will only entail coreference under a constant subcontext c .

- (24) a. Speaker 1: $\Gamma_{1\alpha}^-$ love it here $\bar{\Gamma}_{1\beta}^-$
 b. Speaker 2: $\Gamma_{2\beta}^-$ [love it here $\bar{\Gamma}_{2\beta}^-$], too

(25)

←			→			
1			2			...
\ominus /S1\ ^	New York	...	\ominus /S2\ ^	Los Angeles	...	

The sloppy reading for *here* is thus derived through dependency on co-oriented I .

Are there also cross-indexical "switch" readings? This analysis predicts that they will occur, and the prediction appears to be borne out. Consider, for example, (26). To construct a suitably "intimate" situation, imagine that speakers 1 and 2 are lovers, who live in separate places, in a telephone conversation late at night. The switch interpretation is quite strong for (26b). (Note that the strict interpretation would be quite odd.)

- (26) a. Speaker 1: Why don't you take a cab over here?
 b. Speaker 2: Why don't you? = Why don't you take a cab over here?

As would be anticipated under a dependency analysis for (26) that parallels the analysis for switch between indexical pronouns, there is no switch in (27), that contains a proper name instead of the locative indexical, nor in (28), parallel to the Jack puzzle, nor in (29), in which there is no earlier oriented expression to depend on. Rather these only have strict readings, even though for (27b), the interpretation is as odd as for (26b).

- (27) a. Speaker 1: Why don't you take a cab to Mulberry Street?
 b. Speaker 2: Why don't you? \neq Why don't you take a cab to Mott Street?

- (28) a. Speaker 1: Why don't you tell Jack to take a cab over here?
 b. Speaker 2: Why don't you? \neq Why don't you tell Jack to take a cab over here?

- (29) a. Speaker 1: Why doesn't Jack take a cab over here?
 b. Speaker 2: Why doesn't Ted? \neq Why doesn't Ted take a cab over here?

The representations at logical form to derive the switch in (26) are as shown in (30), assuming an altered formal context along the lines of (25). The encoded dependencies in (30a) and (30b) are both of the orientation pattern $\langle \rightarrow, \leftarrow \rangle$, and have identical value sets (1,2), thus the i-copy condition holds.

- (30) a. Speaker 1: Why don't you $_{2\alpha}^{\rightarrow}$ take a cab over here $_{1\beta}^{\leftarrow}$?
 b. Speaker 2: Why don't you $_{1\alpha}^{\rightarrow}$ take a cab over here $_{2\beta}^{\leftarrow}$?

As with the sloppy *here*, if the modified formal context were instead assumed to be as

depicted in (23), the i-copy condition would fail for the switched *here*, as the value sets would differ: (2,51) versus (1,52).

Unexpectedly, once these "intimate" circumstances of lovers-on-the-telephone-late-at-night are contrived, sloppy and strict interpretations of *there* become available, where *there* is taken to indicate the location of the hearer. For example, in the back-to-back exchanges in (31), suddenly a switch interpretation is available for (31b) and a sloppy interpretation is available for (31d). These examples suggest that contrary to initial assumptions, *there* can in fact be syntactically oriented.

- (31) a. Speaker 1: Maybe I should take a cab over there
 b. Speaker 2: Maybe I should = Maybe I should take a cab over there
 c. Speaker 1: No, you should stay there
 d. Speaker 2: You should, too = You should stay there, too

I would argue, however, that while *there* has syntactic orientation in (31), allowing the switch and sloppy readings to be derived along the same lines as for *here*, that this is a highly marked option, similar to the exceptional *us/them* cases discussed in chapter 3, in which it was found that a third person expression could have orientation. The contrived situation of the lovers for (31) is, like the bridge game, simply another bifurcation circumstance—in this case not for groups of people, but for locations. For the purposes of these two lovers in this conversation, there are only two relevant locations, her place and his place, and *here* and *there* can divide and exhaust the context in this regard. I conclude that (31) is not counter-evidence for the "no orientation" status of *there* proposed in (16), but rather an exception that parallels the exception found earlier in the pronominal system: in bifurcated contexts, orientation can appear on *there* as it can on third person pronouns. That this is the correct way of thinking about (31) is further supported by efforts to construct other circumstances in

which sloppy or switch readings for *there* are available—such efforts are generally fruitless, as the reader may verify. For example, the status of the exchange in (31c-d), which in the contrived circumstances has a sloppy reading, deteriorates sharply to the status of (19) when these circumstances are removed.

The final evidence that the locative indexical *here* is syntactically oriented comes from cases that parallel the "many pronoun" examples discussed in chapter 3. Consider another exchange between the friends in different cities, shown in (32), that contains a mixture of indexicals, the two singular indexical pronouns followed by the locative *here*. An across-the-board strict reading is available for (32b). But if there is a dependency in the structure, it appears that *here* must be included therein, for if *I* and *you* switch in the reply, *here* must also switch and cannot be interpreted strictly. This reading is certainly not pragmatically odd, for example in the case where speaker 1 does not actually live in New York but is staying in a hotel there. This lack of a "mixed" reading is what would be predicted under the assumption that *here* is oriented; as discussed in chapter 3 for the "many pronoun" cases, only across-the-board interpretations are available for oriented dependencies, due to the requirement that all dependencies be licensed at the same level of structure.

- (32) a. Speaker 1: I_1 wish you₂ lived here_{NY}
 b. Speaker 2: I_2 do, too = I_2 wish I_2 lived there_{NY} (*ATB strict*)
 = I_2 wish you₁ lived here_{LA} (*ATB switch*)
 ≠ I_2 wish you₁ lived there_{NY} ("*mixed*")

The parallels between sentences containing *here* to those containing only indexical pronouns are striking. These cases are readily explained in the model I have proposed, assuming that *here*, like the indexical pronouns, is syntactically oriented. By assuming that oriented dependencies can be licensed among any expressions that are syntactically oriented, and not just among expressions containing the pronouns, no further explanation is required to

In terms of switch interpretations, one is available in (35b) for *this* following an earlier *you*, but there is no switch for *that* in (36b), which can only have the strict, joke interpretation that speaker 2 wants to keep the meat balls all to himself.

- (35) a. Speaker 1: Would you like some of this_{CS} ?
 b. Speaker 2: Would you? = Would you like some of this_{MB} ?
- (36) a. Speaker 1: I sure would like some of that_{MB}
 b. Speaker 2: I would, too ≠ I sure would like some of that_{CS}, too

The pattern of readings observed for *this* and *that* is duplicated for their plural counterparts *these* and *those*. Imagine that instead of spaghetti, our diners had ordered countable food, such as sushi, speaker 1 having tuna (T) and speaker 2 having mackerel (M). Parallel to (33) and (34), the sloppy reading is available for *these* in (37b) but not for *those* in (38b).

- (37) a. Speaker 1: I think these_T look delicious
 b. Speaker 2: I do, too = I think those_T look delicious, too
 = I think these_M look delicious, too
- (38) a. Speaker 1: Do you like the way those_M look?
 b. Speaker 2: Do you? ≠ Do you like the way those_T look?
 = Do you like the way these_M look?

Similarly, substituting plural expressions in (35) and (36) leads to the same readings as for the singular *this* and *that*: switch is available for *these* but not for *those*.

Finally, consider a "many indexical" example containing a final *this*, such as (39). Imagine for (39) that speakers 1 and 2 are holding the gifts that they are about to exchange. The observed readings for the reply parallel those that were observed for *here*, as well as for

the many pronoun examples: ATB strict and switch are both possible, but the "mixed" reading is out of the question.

- (39) a. Speaker 1: I₁ hope you₂ like this₁ present
 b. Speaker 2: I₂ do, too = I₂ hope I₂ like that₁ present (*ATB strict*)
 = I₂ hope you₁ like this₂ present (*ATB switch*)
 ≠ I₂ hope you₁ like that₁ present ("*mixed*")

These observations of *this* and *that*, as well as their plural counterparts, lend further support for the schema proposed in (16), that *this* but not *that* is syntactically oriented. Unlike the case for *there*, which under exceptional bifurcation circumstances apparently can bear syntactic orientation, *that* seems to be exempt from this possibility, perhaps because *this/that* bifurcations are conceptually difficult. In other respects, the *this/that* pair is the same as *here/there*. We will return to *that* and *there* in the discussion of demonstratives below.

5.13 *Now and then*

It seems reasonable to hypothesize that like *here* and *this*, *now* is syntactically oriented, and that like *there* and *that*, *now*'s contrastive partner *then* has no orientation. In so doing, the time adverbials would be assimilated to the schema proposed in (16). Although such assimilation is attractive for its own sake, direct evidence for syntactic orientation of *now* is scarce. The reason for this is illustrated by (40). Although the reply in (40b) might look at first glance like a "sloppy" reading, it is also the reading that would be derived "strictly," since the time indicated by *now* is the same for both speakers.

- (40) a. Speaker 1: I have to go now
 b. Speaker 2: I do, too = I have to go now, too

No one would disagree that *now* is indexed to the circumstances of utterance.

However, it differs from the other indexical expressions that have been examined in that it is indexed to the dimension of time, rather than spatially. The appeal of the schema in (16), in which *I*, *here* and *this* all share the same syntactic orientation, rests on the intuition that all of these are in the same spatial proximity relativized to the speaker. But since the time picked out by *now* in ordinary conversation is not any different for the speaker than it is for the hearer, arguments that *now* shares the same orientation as second person are as likely as first person. Furthermore, when the "speaker" and "hearer" are separated in time, as is the case with written communication or recording devices, in some cases *now* is interpreted with the former and other cases with the latter. Fillmore (1997) distinguishes these different times as "encoding time" versus "decoding time." The occurrence of *now* in *I wish you were with me right now*, written in a love letter, would be interpreted as indicating the "encoding time," while in the same letter the occurrence of *now* in *Close your eyes right now and think of me* would be interpreted as indicating the "decoding time." But to conclude from this that *now* may be syntactically ambiguous between one orientation or the other would be mistaken. In line with the discussion of the answering machine example in chapter 2, the second of these different "times" is actually a case of indexical transplanting. There is no syntactic ambiguity: *now* has a single orientation that in non-shifted contexts evaluates to the "encoding time." However, the context may be shifted to the future in a letter or recording, and *now* will evaluate in the shifted context in the normal way. The question is, what is the single orientation that *now* has—is it one of the two orientations already hypothesized, or perhaps a third, different orientation?

If there were "sloppy" readings of *now* varying with *I*, similar to those observed for *here* and *this*, this would constitute evidence that the orientation of *now* is the same as for *I*. Such cases are quite difficult to construct, because to test whether *now* can vary with *I*, it has to be the case that the two speakers exist at different times, but the test for sloppy readings

involves verb phrase elision, which generally occurs in immediate conversation. There are science fiction scenarios in which all of the above conditions are met, but let's first try to construct a real life case. Suppose that a young woman, having just received a letter from her sweetheart far away, reads (41a). Claspng the letter to her bosom, she sobs to the wind, *Oh darling—I do, too!* The intuition is that *now* in the letter reader's "reply" can go sloppy as well as strict.

- (41) a. Letter writer: I wish you were with me right now
 b. Letter reader: Oh, darling—I do, too!

As mentioned above, *now* in (41a) picks out the "encoding time" of when the letter was written. The dilemma for the sloppy interpretation of the "reply" in this example, however, is that it is not clear that the letter reader has not instead "transplanted" the written sentence, interpreting it according to the "decoding time" in which she is reading. That is, has she not in claspng the letter to her bosom and replying to the wind, imagined that her lover was somehow standing before her? Taking this argument to its conclusion, both possible readings of (41b) can be analyzed as strict with respect to the different context assumptions for (41a).

Perhaps some clarity can be found in a science fiction scenario, constructed to be parallel to the situation, discussed with *here* and *there*, of two friends speaking on the telephone who are in New York and Los Angeles, respectively. Imagine that time travel has become common, and that there is an across-time telephone device that allows people to converse who have traveled to, or have chosen to live in, different times. Imagine that the exchange (42) occurs between two avid time travelers using this device: speaker 1, having traveled two hundred years into the past, is conversing with speaker 2, who has traveled two hundred years into the future. The question is whether there are both the "sloppy" and "strict" readings of *now* in the reply.

- (42) a. Speaker 1: I love it now₁₇₉₇
 b. Speaker 2: I do, too = I love it now₂₁₉₇
 = I love it then₁₇₉₇

Given the time-travel story, both readings are indeed available for (42b)—if anything, the sloppy reading is stronger than the strict. In the same circumstances, a "switch" reading of (43b) with *now* opposed to *you* is less strong but nonetheless available. This suggests that *now* and *I* do indeed share the same orientation.

- (43) a. Speaker 1: You would love it now₁₇₉₇
 b. Speaker 2: You would, too ?= You would love it now₂₁₉₇

Unfortunately, parallel examples containing *then* are just confusing. Although time travel may have to actually come to pass before we can determine for sure that *now* shares the same syntactic orientation as *I*, *this*, and *here*, this preliminary evidence seems promising. Moreover, there would seem to be no contradiction if *now* and *then* are assimilated within the schema proposed in (16), which, as mentioned at the outset of this section, is attractive for its own sake. The picture that emerges is uniform across the different expression types, in which the two hypothesized orientations account for all the basic contrasts made in the language.

5.14 Are two syntactic orientations sufficient?

At the beginning of this chapter, I claimed that the hypothesized pair of syntactic orientations, informally described as "inward" and "outward," provide a sufficient and natural account of different pronominal systems across languages, as described by Ingram. And throughout this discussion of non-pronominal indexical expressions in English, there has been no reason to hypothesize additional orientations. In fact, there is evidence from examples involving *here/there* and *this/that*, as well as with *now*, that hypothesizing additional

orientations would lead to the wrong predictions. Are two orientations enough? In English, the answer is apparently yes.

A brief glance at languages other than English indicates that as with the pronominal system, the contrasts made for the non-pronominal indexicals do differ across languages. For example, where English has the two-way distinction *here* and *there*, Anderson and Keenan (1985) report that Palauan has a three-way contrast that parallels the first-second-third distinction in the pronominal system: *er tia*, *er tilęcha*, and *er se* for "here" (near speaker), "there" (near hearer), and "there" (distant). The two orientations seem sufficient to account for Palauan locatives, with \leftarrow , \rightarrow , and no orientation accounting for the ternary locative distinction in the same way as for the pronouns. It is possible that more orientations might well be necessary, however, for indexical contrasts that go beyond a ternary distinction. For example, there is a seven-way locative distinction in Malagasy, also reported by Anderson and Keenan, as mentioned in chapter 1: the forms *ery*, *eto*, *eo*, *etsy*, *eny*, *eroa*, and *ery* lie along the dimension closer-to-the-speaker to further-away-from-the-speaker.

At this point, the cross-language data are too incomplete to decide the matter; the question whether more orientations are in fact required must be left to future research.

5.2 Demonstrative expressions

Given the new model of formal context that has been developed in this dissertation on the evidence of indexical expressions, we are now in a position to better identify the class of expressions that are used "demonstratively." Recall from chapter 1 that it was necessary to reject the identification of a demonstrative with its accompanying demonstration, paradigmatically thought of as a pointing gesture. To briefly review, it was established that demonstratives do not necessarily occur with demonstrations, that demonstrations do occur without demonstratives, and that even a demonstration that does occur along with a

demonstrative does not necessarily indicate the object or individual that is being referred to by the linguistic expression. What, then, is a demonstrative use? A demonstrative use is one in which an "underspecified" expression is felicitous through the situational prominence of the intended referent—prominence that may in many cases be achieved through demonstration.

On the analysis that has been offered in this dissertation, what makes the expressions that are used demonstratively a class is that they have *both* of the following properties: first, they are *not* syntactically oriented, and second, they contrast with expressions that are *exactly like them* except for syntactic orientation.

Let's review the expressions that are used demonstratively in English. Among the personal pronouns, there are the third person *he*, *she*, or *they*, and among non-pronominals, the distal *there*, *that*, and *those*. Note that all of these fulfill both of the above conditions: except in special bifurcation contexts, none has syntactic orientation, and all contrast with oriented expressions: *he* or *she* contrasts with *I* and *you*; *they* contrasts with *we*; *there* contrasts with *here*; *that* contrasts with *this*; *those* contrasts with *these*. An additional curious fact about English follows from the above conditions, for which I know of no explanation in any other theory of indexicals or demonstratives, and that is the fact that the third person pronoun *it* in English does not have a demonstrative use.² Note that although *it* is not syntactically oriented, it fails the second condition above, in that it does not contrast with another expression that is exactly like it but *is* oriented, thus *it* cannot be used demonstratively.

In the usual, non-bifurcational circumstances, these non-oriented, contrastive expressions constitute the class of expressions that can be used demonstratively. The demonstrative expressions are in complementary distribution with indexical expressions.

² The adviser to this dissertation attributes this observation to James Higginbotham.

differing from them only in terms of orientation. Note that because they have no orientation, the numeric value of expressions that contain demonstratives will not be syntactically derivable at logical form. Grammatically speaking, they are seriously "underspecified." Unlike their indexical counterparts that contain the "internal pointing" of syntactic orientation, the deficient demonstrative expressions require external assistance.

As discussed in chapter 1, the purpose of the physical act of pointing is to draw attention to something, and this is all that pointing does. Pointing can and does co-occur with both indexical expressions and demonstrative expressions. In the case of indexical expressions, pointing has a variety of effects—but it would be mistaken to conclude that when pointing occurs along with an indexical that the indexical has gained a "demonstrative" use. On the contrary, the evidence is that indexical expressions do not have demonstrative uses. When a speaker says *I* while pointing to himself, the linguistic expression he has chosen unambiguously refers to himself. In addition, he has drawn attention to himself by pointing—in most circumstances, superfluously, in that referring to an object entails drawing attention to it. The purpose of the pointing in such a case seems similar to additional stress in English—it may be for extra emphasis, or for contrastive purposes "I (and not someone else)," or perhaps because the speaker believes that the addressee is hard of hearing.

There might be different reasons why a pointing gesture would accompany the indexical *you*, such as in the case where a speaker says *I'll take you and you*, pointing at Jack and Teddy, respectively. But this is *not* a case of *you* being used "demonstratively." The effect of the pointing is to make clear who is being addressed with each utterance of *you*. Through its orientation, each occurrence of *you* unambiguously refers to the addressee in the context—the pointing simply helps makes clear the context in each case. Note that if while looking into your eyes I say *I think you're guilty*, taking care to point with my index finger at the orange cat along with the occurrence of *you* in my utterance, that I have accused you and

not the cat, because I am addressing you and not the cat—although my pointing may have drawn attention to the cat. Recall as well the discussion in chapter 2, in which it was argued that the so-called demonstrative use of *here*, involving a pointing gesture to a map, is actually a case of the gesture effecting a context shift. In none of the cases of a pointing gesture accompanying an indexical is the gesture used to bring the intended referent to prominence, in order that the expression will unambiguously refer, as is the case with demonstratives. Thus in normal circumstances, indexical expressions are in complementary distribution with demonstratives, which contrast with indexical expressions in that they are non-oriented.

Thus in the theory developed here, the syntactically oriented indexical expressions are never used demonstratively. However, demonstrative expressions can in special cases behave "indexically," due to circumstances in which at least some of them *can* have syntactic orientation. These are the bifurcation situations, where an indexical expression and one of the usually non-oriented expressions split and exhaust the context. As has been shown, under such exceptional circumstances, an occurrence of *they* can be oriented under bifurcations of *us/them*; and *there* can be oriented where only two locations are assumed. Ready examples are not available for the third person singular pronoun *he* or *she*, or for *that*, perhaps because, as mentioned earlier, context bifurcations delimited by these singular terms are conceptually difficult.

5.3 Concluding remarks

I began this analysis with arguments in support of the "uniformity thesis," the idea that all expressions—indexical and non-indexical alike—are syntactically individuated in the same way at logical form. I have claimed that indexical expressions are syntactically oriented, and proposed a two-tiered model of the formal context, in which the numeric values of indexical expressions are functionally derived in the syntax, through the mechanism of

orientation. In the new model, observations of the syntactic behavior of the indexical expressions are readily explained, and in addition, the model provides a natural way of accounting for indexical "transplantation" through context shift.

Direct evidence for the existence of syntactic orientation has come from observations of the interaction between dependency theory and indexical expressions, first revealed through observations of "switch" interpretations among the indexical pronouns. The assumption that dependencies may be licensed among the syntactic orientations at the syntactic level of orientation has led to an explanatory account of when such readings can occur. The further availability of "sloppy" and "switch" readings for certain of the non-pronominal indexicals in sentences containing an earlier indexical pronoun lends credence to the extension of this theory to all indexicals expressions. The schema in (16)—along with the assimilation of the time indexicals—shows how the two hypothesized syntactic orientations are realized on the different indexical expressions in English, assuming non-bifurcational circumstances. First person pronominal expressions share the same syntactic orientation as the proximal indexicals *here*, *this*, and *now*; second person expressions have the alternate orientation; third person expressions, and the distal *there*, *that* and *then* have no orientation. In bifurcational contexts, these latter expressions can be exceptionally oriented the same as second person pronouns.

Through examination of the larger range of indexical expressions, the proposal for the formal context has been developed beyond the original model in chapter 2, its final modified form repeated below.

(44)

←			→			
1			2			...
☺ /S1\ Λ	New York	...	☺ /S2\ Λ	Los Angeles	...	

In the formal context, the orientation function will return a numeric value, derived at the syntactic level of logical form. The second function within the formal context, the semantic function that operates from index to individual, has two arguments: the numeric value and the subcontext. Thus more than one indexical expression may share the same syntactic orientation.

Importantly, the overall analysis offered here is consistent with, and allows a natural description of, what is known concerning the acquisition of indexicals, discussed in chapter 1, which before closing I would like to review. Recall that according to Clark (1978) a demonstrative based on *that* or *there* is often among a child's first ten words, and always in the first fifty. This is not surprising, given that like names, *that* and *there* have no syntactic orientation, and thus are structurally less complex than indexical expressions: mastery of the functional operation of orientation is not necessary to their effective use. When pronouns appear, first person forms arrive first, but for most children, the contrast between first and second person takes a while to figure out. Given the proposed model, there is a natural way to describe what is going on during this time for the language learner. To master these pronouns, the child needs to have straight not only the binary distinction of orientation associated with the correct forms, but also full command of the additional tier in the formal context.

After the first and second person contrast is mastered, there follows the other "deictic contrasts," first *here/there*, and then *this/that*. In terms of syntactic orientation, these contrasts are between orientation and no orientation, unlike the three-way distinction for the pronouns, so it is not very surprising that they come later than *I/you*—although it is not clear why *here/there* should precede *this/that*. Despite the fact that *that* and/or *there* is found being used demonstratively among the child's first fifty words, Tanz (1980) noted that in terms of the pairs in which these *contrast*, the proximal member is learned first—which is to say, used

consistently for a location or object that is near the speaker. Again, given the model I have proposed here, this is not so surprising: the proximal *here* and *this* are syntactically oriented, while their distal partners are not. Consistent evidence of "inward" syntactic orientation for *here* and *this* is thus predicted to appear in the child's input and so in their production, where there remains inconsistency for the non-oriented *there* and *that*.

As a percentage of expression types, the English language contains a very small number of "pure indexicals." The importance of indexicality to human language, however, cannot be underestimated. To paraphrase what Bar-Hillel argued more than forty years ago, an account of language that does not include indexical expressions is not an account of human language. It is my hope that this dissertation has contributed towards the goal of achieving an explanatory account of this aspect of our knowledge of language.

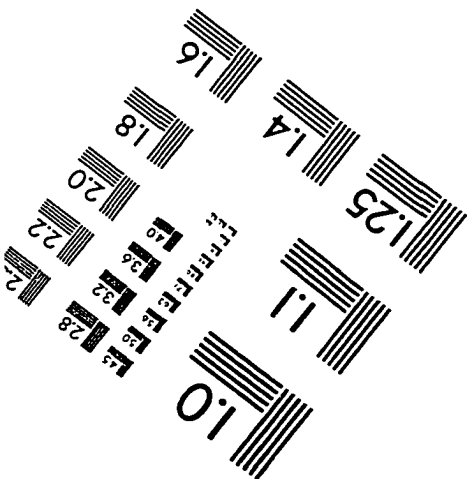
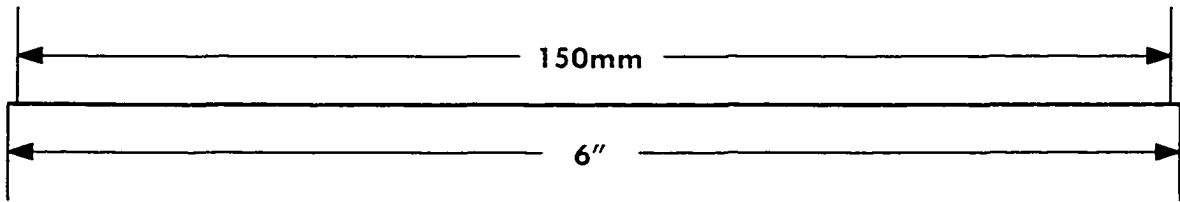
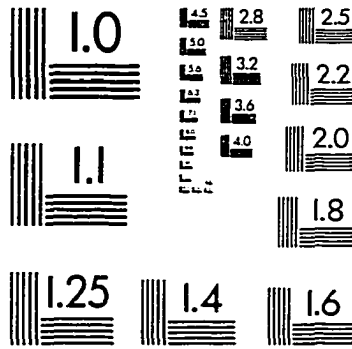
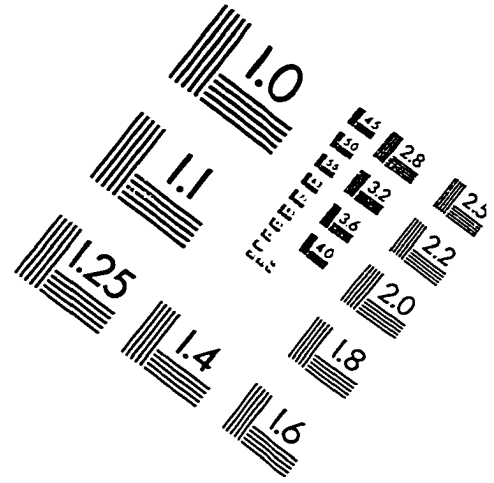
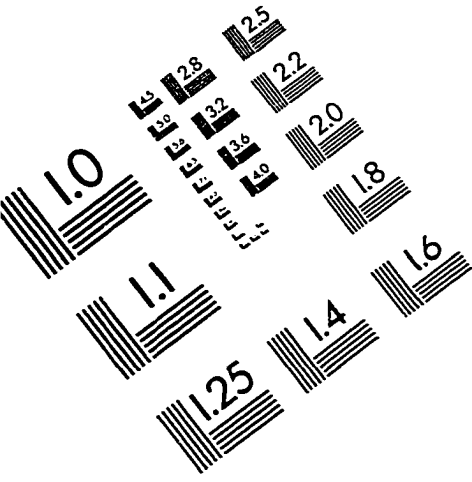
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